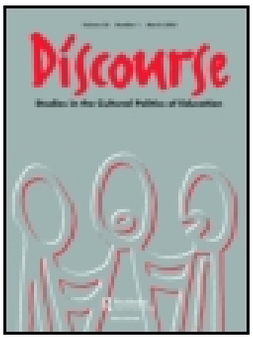

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# Players chatter and dice clatter: exploring sonic power relations in posthuman game-based learning ecologies

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**ABSTRACT**

Responding to both recent interest in sound within qualitative education research and sound studies literature that conceptualizes sound as a posthuman technology, we use this paper to explore the following research questions: How does sound both enact and unveil posthuman learning ecologies? And how can education scholars engage sound within posthuman research? Through a posthuman framework, we position noise as an analytical tool for exploring and unveiling more-than-human relations. We then draw parallels between posthuman qualitative research into sound (via noise) and the ideological foundation of experimental music, a musical tradition deeply invested in working with sound as an agentic actor. Within this alignment, we propose using graphic scores to transcribe sonic data without reinscribing humanist research aims. To illustrate, we provide a micro-analysis of preservice teachers engaged in a role-playing game activity and uncover the ways sound asserts its agency within learning ecologies.

**KEYWORDS**

Posthumanism; noise; sound-based research; qualitative research; transcription methodologies; informal learning

## Introduction

Beyond inviting researchers to reimagine teaching and learning outside of a humanist worldview, the growing embrace of posthumanism within education research challenges scholars to attend to 'the entangled relations present in their work, attending to all matter acknowledged in posthuman and new materialist frameworks' (Sheridan, Lemieux, Nascimento, & Arnseth, 2020, p. 14). Drawing on this provocation, the recent interest in sound within education research provides a potentially rich avenue for further posthuman inquiry (see Brownell, 2019; Gershon, 2017; Hall, 2013; 2015; Wargo, 2019). To this end, we use this paper to explore the following research questions: How does sound both enact and unveil posthuman learning ecologies? And how can education scholars engage sound within posthuman research? In response, we position our inquiry within posthuman definitions of sound (see Cecchetto, 2013) and Serres' (2007) definition of noise before presenting a new transcription methodology inspired by experimental music, a genre deeply engaged with posthuman relations (see Woods, 2019, 2021), and

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the graphic scoring techniques of Oliveros (1989). We then provide an example of this transcription methodology by analyzing two recordings of preservice teachers (all of whom consented to participate in this study and subsequent publications) engaged in a role-playing game activity. In doing so, we illustrate the value of this tool in making posthuman sonic relations legible within qualitative research.

## Envisioning sound-as-posthuman-actor in education research

Within academic contexts, posthumanism challenges scholars to replace the human as the central focus and beneficiary of research and instead consider a broader matrix of human and non-human actors (Snaza & Weaver, 2015). While this conceptualization of posthumanism only provides a foundation, one in which multiple posthumanisms can coexist (Hayles, 1999; Pedersen, 2010), Snaza and Weaver (2015) argue that all forms of posthumanism challenge education researchers 'to figure out how to ask what education means without presupposing that the answer will always, at least implicitly, take the form of: "Education will make the kind of human who can … "' (p. 2). The notion of learning changes dramatically under this contention, shifting from the construction and/or acquisition of knowledge (a thoroughly humanistic invention) towards a collaborative process of making meaning and becoming (Kouppanou, 2022; Snaza et al., 2014). For instance, multiple scholars advocate for an ecological model of posthuman education in which multiple actors (including non-human animals, environments, and technologies) all contribute towards the construction of ecologies and the physical world (Pedersen, 2010). This aligns with Keune and Peppler (2019) and Sheridan et al.'s (2020) argument that space and materials both act as pedagogical actors and not just passive objects, equally affecting (and being affected by) the construction of meaning within these contexts. The generative approach embedded within posthuman education does not involve a person merely absorbing skills or knowledge but instead distributes learning across all types of actors who co-construct meaning through their interactions while challenging figurations of the human (and human-as-student) simultaneously (Eglash et al., 2020; Lindgren, 2020). Posthumanism therefore provides a generative lens to investigate learning ecologies, one that produces a nuanced and situated understanding of education rooted within specific contexts.

To further investigate education contexts through the lens of posthumanism, education scholars need to build on this framing by recognizing all agentic bodies (both human and more-than-human) within learning contexts and closely examining the relationships between (or entanglements of) those actors (Kouppanou, 2022). Although numerous types of bodies can provide avenues for future research, this paper will focus on sound as an agentic body within education. As multiple scholars have argued, sound exists as a powerful actor within learning contexts (see Brownell, 2019; Gershon, 2017; Wargo, 2019). However, this research often frames sound as an extension of the human, one in which human actors use sound to control or act on other humans. Learning sciences research reaffirms this practice, often positioning sound as merely supportive of other learning practices (see Hall, 2015; Hollett, Peng, & Land, 2022; Sullivan & Wilson, 2015) or as an extension of embodied learning situated entirely within the human (see Erickson, 2004; Hall et al., 2020) rather than position 'sound as agentic entanglements' (Daza & Gershon, 2015, p. 639) outside of the human as subject. To this end, we

enact Cecchetto's (2013) understanding of sound as a differential and relational phenomenon, one that acts both as a medium for techno-human relationships and as a posthuman actor in its own right. Gershon (2013) extends this argument, positioning sound as a tool for revealing the myriad of relationships students have to each other, spaces, institutions, and knowledges. Sound, in this sense, must be understood as both an agentic and relational body, one that constantly reveals relational webs outside of humanist intentions or aims.

To theorize sound outside of an anthropocentric/deterministic framing, Serres (2007) conception of noise proves helpful. To arrive at his definition of noise, Serres starts by defining the parasite. As a relational entity, the parasite represents an unspoken third that intrinsically acts on and disrupts the relations of other actors. But more than being an uninvited guest, the parasite forms the medium or milieu within which relations can occur. The mice living in one's walls, for instance, both disrupt inter- and more-than-human relations (ending a conversation by running across a room, eating or spoiling someone's food, etc.) while also existing as part of the medium (here meaning the house) that allow these relationships to materialize. But rather than simplifying our understanding of the system by ignoring or overlooking the parasite, Serres contends that the goal should involve tracing the constantly evolving interactions with and within the system (as actors constantly take on and abandon the role of parasite as they change position).

Drawing on this definition, Serres (2007) proposes that noise itself exists as a parasite. For him, noise inherently comes from and exists as part of the milieu or medium that connects two bodies, a contention that positions noise as a relational entity. Noise emerges as a legible body within posthuman relations when the milieu 'parasites', acts on, reorganizes, or inherently changes the affective relationship between bodies contained by the milieu. Noise, in this sense, exists as an agentic actor, a body that holds the capacity to reorient affective relationships in its own right (see Thompson, 2017). Thinking through noise within the context of sound specifically, a singer coughing loudly in the middle of a song exemplifies sonic noise: the medium of the human body, one that allows vocal music to exist, acts on the expected relationships between listener and performer (or audience and the body of music itself) by disrupting the performance through this uncontrolled reaction.

In educational contexts, Gershon (2017) argues that 'sounds combine to create embodied educational systems of meaning regardless of their apparent organization or categorization' (p. 27), revealing a growing need to attend to the educative potential of sound (and noise) outside of intentional/formalized pedagogical or curricular practices. Hall (2015), for instance, attends to this need when he considers how ambient sounds in a media lab shaped youth multimodal composition processes, revealing 'group performance[s] of composing built from the symphonic layering of individual activity' (p. 309). Brownell's (2019) description of an alarm in a classroom setting provides another example of how sonic noise agentically acts on the relational curricula of classrooms, instilling and challenging the authority of the teacher at different times and representing one piece of a posthuman matrix that contributes to the myriad of learning ecologies that constantly emerge and dissolve within education contexts. Sound-as-posthuman-actor is particularly audible in educational gaming spaces. Gaming disrupts the traditional classroom discourse expectations of one person speaking at a time as players engage in loud

activities such as rolling dice, laughing, speaking simultaneously, and taking up various character voices (Jones, Storm, Castillo, & Karbachinskiy, 2021). In escape room contexts, Wargo and Garcia (2021) reconceptualize sound as a 'text' to be collectively read, and trace what role sound had in producing collectively experienced affective intensities. Collaborative gaming contexts therefore provide a fruitful space for reimagining education research through posthumanism, both in terms of sound-based qualitative inquiry and otherwise. For this reason, we focus on gaming in this article.

## Sounding the posthuman through qualitative research and graphic scores

Beyond simply providing a new theoretical context, research into posthumanism and affective theories of noise necessitates a shift away from methodologies that prioritize the ocular to the detriment of sound in qualitative inquiry (Daza & Gershon, 2015; Gershon, 2017). In one example of sound-based qualitative research, scholars have transcribed incidental sounds and speech within learning ecologies into standard musical notation (SMN) in a process called partiture (Edwards, 2005; Ehlich, 1993; Erickson & Shultz, 1982). Also known as 'dots on paper', SMN translates the pitch and length of notes into a written communication system (see Figure 1), one that has served as the foundation of western music composition throughout its history. However, SMN remains a highly humanist technology that foregrounds human actors and hides implicit power relations within its structure (Bamberger, 1991). What we see and hear in SMN are human actors and the sounds they intentionally create while other (more-than-human) sounds heard during a performance 'don't count' as part of the music. Moreover, human speech often gets favored over more-than-human sounds and, as Gershon (2006) attests, collective learning practices within extant approaches to sound-based qualitative research like partiture, further revealing humanist assumptions. A new methodology is therefore required for posthuman inquiry.

Similarly, framing sound as a posthuman actor also amplifies the role of listening within sound-based qualitative research by asking 'who and what can speak, what we hear, and what gets listened to' (Flint, 2021, p. 7). Posthuman formations of listening, in contrast, exist as a practice that openly embraces an ethics of thinking within and through more-than-human relations by listening to the contributions of more-than-human actors and allowing those actors to listen as well (Flint, 2021). For some, this listening stretches beyond the realm of sonics and aurality and invokes a practice of attuning to all types of vibrations from tangible and intangible bodies (see Campt, 2017). In doing so, a practice of posthuman listening allows the researcher to take up Flint's (2021) and Thompson's (2017) call to think past what sounds are and instead attend to what sounds do, a process that Serres (2007) argues involves constantly mapping and remapping the ever-fluctuating sonic relations between bodies that position sound as both a body itself and the milieu through which other bodies interact.

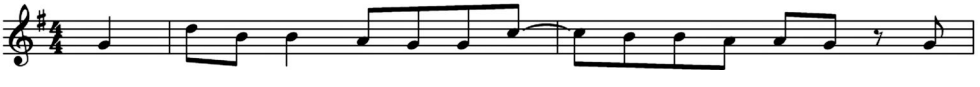

**Figure 1.** An example of standard musical notation (SMN) (Camp, 1999).

To expand notions of partiture beyond humanist frames, we propose the use of graphic scores as a means towards posthuman education research that foregrounds sound as an agentic actor and relational body (see Woods & Jones, 2020). Historically, graphic scores rose to prominence through the emergence of experimental music as composers and musicians working in this tradition intentionally broke from definitions of music that relied on the tenets of the western musical canon including pitch, rhythm, and temporal understandings of structure (see Nyman, 1974). Since SMN inherently produces definitions of music reliant on these tenets, experimental music composers developed a series of highly personal graphic scoring methods to communicate their new sounding practices through symbols, pictures, colors, and texts (see Figure 2). Importantly, graphic scores break from the hierarchical structure embedded in SMN (see Small, 1998). They allow for more agentic understandings of both performance and sound by encouraging musicians to interpret notation and intentionally creating space for unexpected sound within the piece.

By reframing music in this way, important overlaps emerge between experimental music and posthuman qualitative research: the need to think beyond human agency (Woods, 2021), the positioning of music/sound/noise as a relational entity (Small, 1998),

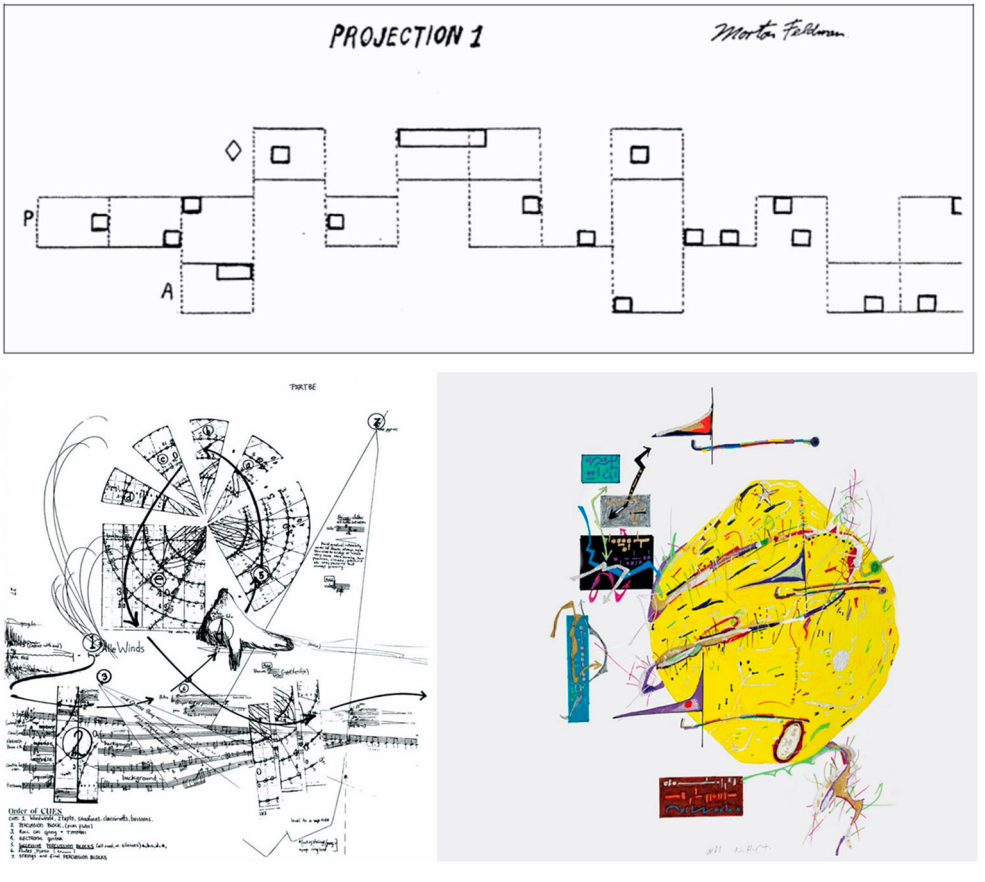


**Figure 2.** Three examples of graphic scores. Top: Feldman (1950). Bottom left: La Barbara (2009). Bottom right: Smith (2015).

and a need to break from traditional language to engage new types of thinking (see Nyman, 1974). Building on this convergence, we argue here that a new form of partiture that embraces graphic scores could provide 'a critical entry point for analysis' (Flint, 2021, p. 3) into posthumanism through sound. Graphic score transcription methodologies hold the capability to reveal how sound, as an agentic body, contributes to situated forms of learning and meaning making that other transcription processes (such as partiture) overlook because of their humanist assumptions. To this end, we now turn towards one example of graphic score transcription to highlight the affordances of this methodology.

## Mapping sonic actors in tabletop gaming

To take up Wargo and Garcia's (2021) charge to consider how all curriculum – including those of gaming spaces – is intertwined with 'spatiality, materiality, or ever-present and always shifting affect' (p. 21), we turn to graphic scores as a way of exploring the 'embodied educational systems of meaning' (Gershon, 2017, p. 27) produced by sound. Although numerous types of graphic scoring techniques exist, we focus here on Oliveros (1989) *Wind Horse for Chorus* as a model for transcribing audio and video data (See Figure 3). In the piece, Oliveros lays out a mandala with basic actions at each node. Performers then move in a self-determined path through the mandala, performing each action for an undetermined amount of time when they arrive at the node. The score therefore amplifies

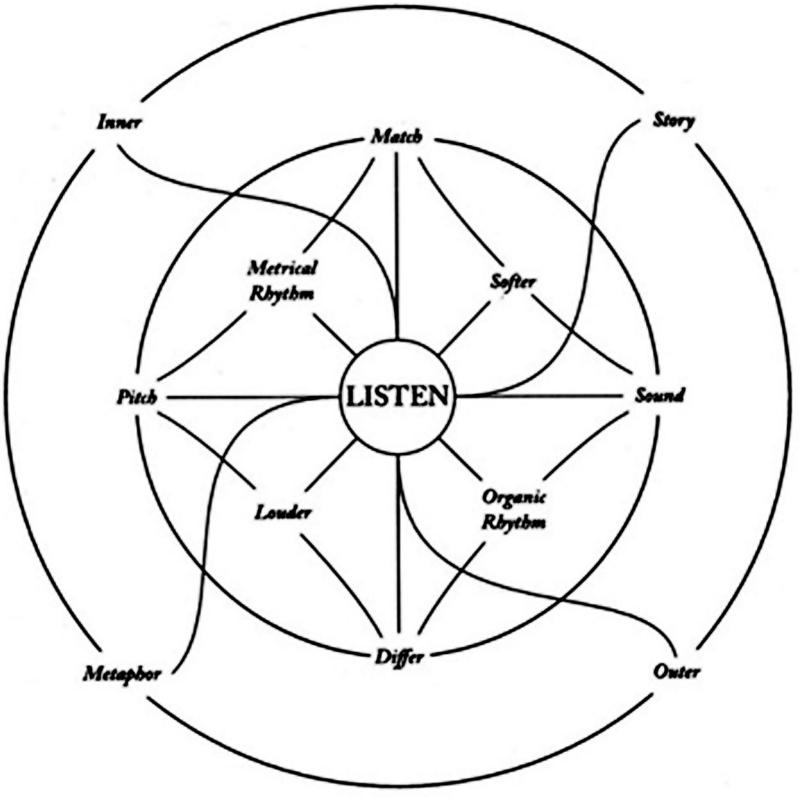


**Figure 3.** Score for *Wind Horse for Chorus* (Oliveros, 1989).

the agency of the performer, allowing them to perform the score through their own interpretation, and foregrounds a relational definition of music that highlights how sounds, actions, and bodies interact. Additionally, this score attends to Serres (2007) contention that the ability to make sound/noise represents a form of power. Oliveros, in constructing her score this way, returns creative agency to the performers and builds on experimental music's practice of shifting control to performers and other actors (Nyman, 1974). As a model for qualitative research, this score therefore acts as means to investigate sound as a medium for posthuman relationships and how sound as an agentic body itself interacts with human and non-human actors.

Converting this score into a qualitative research transcription methodology broadly involves two steps. First, researchers should categorize the sounds within a piece of data, arranging these sonic artifacts into related groups. Much like *Wind Horse for Chorus*, every iteration of a sound in a given category does not need to be identical (e.g. 'speech' can represent one node despite the uniqueness of every person's voice). These categories then become the nodes on the score. Next, researchers should map the relationships between these sounds by drawing different lines between the various nodes. While Oliveros only used one line to represent one type of relationship, we recommend transcribing multiple types of relationships by including variations in color, size, or shape.

To illustrate this methodology in practice, we provide a graphic score transcription of two 90-second video clips of a university classroom's sonic ecology during a role-playing activity. Although not commonly used in schools, table-top role-playing games (TTRPG) have been taken up in and across educational spaces as a way to teach language skills (da Rocha, 2018; Lu & Chang, 2016), to give students space to build and apply knowledge of traditional classroom texts (Cook, Gremo, & Morgan, 2017) and encourage students to engage in transformative and justice-oriented restorying practices (Storm & Jones, 2021). Representing an affordance for posthuman education research, TTRPGs are 'mediated by materiality' (Garcia, 2020, p. 10) as players often interact with things such as handbooks, dice, character sheets, writing implements, figurines, background music, props, etc. There is a unique soundscape of roleplaying as well, exemplified by the popularity of roleplaying podcasts (KC, 2016). Thus, we find this unique context to be useful for exemplifying the role of sound in posthuman learning interactions.

We selected this data because of the rich sonic elements at play in the learning activity (conversation, dice shaking and rolling, background music playing, papers and pencils moving). These clips feature two small groups of pre-service English teachers positioned side-by-side and collectively restorying the events of the poem *Rime of the Ancient Mariner*. The groups each consist of five students: four players role-playing characters they have created and one game master (GM) who acts as the narrator for the story. Two clips were selected from the same time frame, ending when one of the groups finishes singing a few lines from the song 'American Pie'.

In analyzing these two clips, we transcribe the data using two intertwined approaches: the graphic score transcription method described above and a narrative description of the event focusing on the entangled intra-actions between bodies for comparison. To do so, we draw on Barad's (2007) distinction between interaction and intra-action, the former relying on an understanding of agency positioned within individuals while the latter foregrounds a becoming of forces and relationships that

together produce a phenomenon. Learning, understood here as a phenomenon produced through intra-actions, then reframes learning as a distributed process wherein human, more-than-human, technological, and other material actors not only collectively produce curricula and pedagogies but collectively produce each other (see Kouppanou, 2022). Observing the emergent relationships in the transcript, we then returned to the data to trace the development of entangled relationships between sound and learning using intra-active analysis (Krishnamoorthy, 2021; Sheridan et al., 2020). To this end, we now present both transcriptions in full.

### *Graphic score transcription*

Building on a previous iteration of this project (see Woods & Jones, 2020), we produced a graphic score transcription using the method described above focused on the intra-actions between sounds as agentic bodies in this sonic ecology (see Figure 4). To convert the sounds of these videos into the graphic score, we first coded each type of sound (and the bodies producing those sounds) using a combination of descriptive and pattern coding techniques (see Saldaña, 2015). In the score, the gray boxes represent sounds made by students (laughter, singing as a group, and speaking as both individuals and as a chorus of voices), the blue rectangles represent the dice hitting different objects (a desk and a folder, both of which produced significantly different sounds), the green box represents knitting needles clicking together, and the dark green background represents the music playing in the room.

To combine the two videos, we started by coding the sounds from the video focused on Crew 1 (represented by the smaller rectangles inside of the bigger rectangle) and then did the same for the video of Crew 2. In doing so, we realized that the only sounds being created by Crew 2 involved individuals talking (and rigidly taking turns while doing so). However, the audio from each crew is clearly audible in both videos, with Crew 2 providing ambient sound for Crew 1 and vice versa. Because of this overlap, we have used the rectangle representing individual speech in Crew 2 as the background or ambient sound

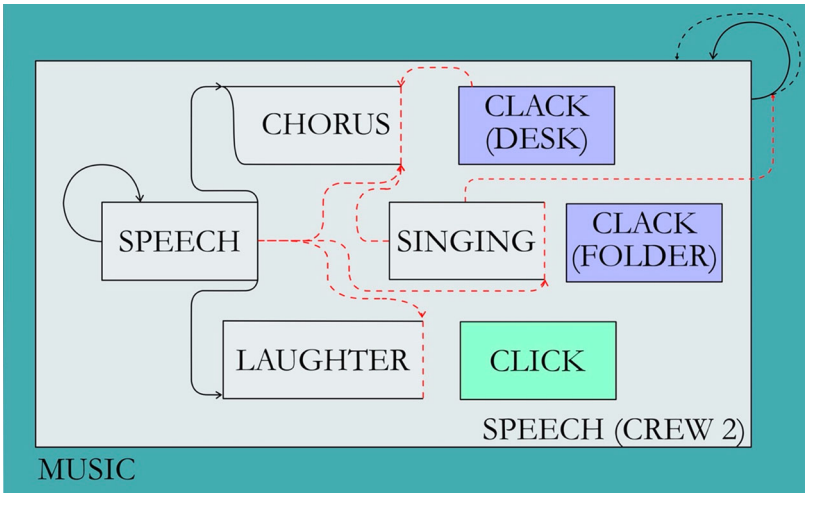


**Figure 4.** Graphic score transcription of a classroom-based role-playing activity.

for Crew 1's sonic environment. From another angle, Crew 1 would provide the same for Crew 2. Similarly, the background music also acts as an ambient backdrop for both groups.

Once we coded all sonic elements, we mapped the relationships between sounds. The solid black lines represent one sound directly preceding and (assumedly) leading to another. The circular arrow on the 'speech' rectangle, for example, indicates a conversation occurring within the group as one instance of speech led to another and the arrow from the speech rectangle to the laughter rectangle shows that the group laughed at something an individual said. The red dotted arrows represent moments in the clip where one sound interrupted another. The dice clacking on the desk, for instance, halted a group conversation. Finally, the dotted black line indicates that the same relationship between bodies exists, but another sound has altered that relationship (specifically, the singing of Crew 1 slowed the tempo of Crew 2's conversation). In transcribing these relationships, the score positions sound as both a medium for affective relations and an agentic body within this posthuman learning ecology.

## *Intra-active narrative*

To further illustrate this data (and provide a comparison to extant transcription methodologies), we also transcribed our audio data through the following intra-active narrative. In doing so, we draw not only on posthuman methodologies but Daza's (2013) understanding of storytelling as metaphor for qualitative research, agentically crafting a narrative that unfolds over time in the interplay between actors, texts, visuals, and sounds. While still holding to the posthuman impetus behind our work, this approach relies on a temporal unfolding of events. Yet the narrative still foregrounds the sonic as relational actor through the emergent story of this space:

> The flow of talk is constant, though there are ebbs and flows across the room. Some sounds do not interrupt the stream of chatter, such as the nautical music playing in the background or the clacking of papers and props. However, some sounds have the power to interrupt local flows of talk. Crew 1 is a semi-circle assemblage of five students sitting at slanted desks overflowing with papers, 2 six-sided miniature dice provided by the instructor, pencils, phones, and computers, many of them in costume or sporting props (eye patches, jackets, bandanas, and even knitting needles). As one student acquiesces to the game master(GM)'s request for her to perform an action, she sets down her pencil with a click and scoops up her dice. Laughter spreads as the dice rattle against her cupped hands. The dice clatter to the desk as they are dropped, and then suddenly the chatter ceases as the dice roller says, 'oops', and the dice begin sliding down the desk (which the student quickly blocks with her arm). While the conversation across the room continues, this group is silent and everyone's eyes are focused on the dice, with the GM leaning forward and craning her neck to see the results. The dice click again as the player picks one die up and moves it next to the other, announcing the result. As soon as she says the number, the GM jumps in to give directions, pointing around the circle and asking that the rest of the group also roll their dice. While the discussion continues (with one player requesting not to roll and another asking about adding modifiers), two players' dice rattle in their hands. One pair of dice clatter to the desk as one student drops her dice and they slide down the desk, and then the other drops them, with the dice landing squarely on a paper with a crunch. A moment after each die lands, the players announce their result. The GM gives them directions to sing 'Bye Bye Miss American Pie', which starts a series of questions, with one player's knitting needles clicking as they point toward him

and then away. Though the players continue to talk, the GM talks over them, shouts distinctively, '3-2-1', while waving her arms like a conductor. As she starts singing, waving her hands, two of the players who made a roll begin to sing with her, with the last player (who rolled poorly) waiting until they finish a phrase to explain her action and make a purposely feeble attempt at singing.

Here we see how sound is entangled with authority, as certain sounds (like dice clattering to the desk) can hold space in the conversation. No single entity in this group is clearly the leader, if leading is defined as local control of the soundscape. Sound does have authority at times, as even the dice have a moment where they exert power on the group, taking a 'turn' as they roll. However, we also see that different sound qualities and distinctness of sound (often entangled with gestures) have different affordances for authority. For instance, when multiple players are talking at once, the GM talks over them with a distinctive '3-2-1' count-down, and when she starts singing, the singing takes predominance over the talk. In fact, the singing also permeates across boundaries of assembled groups, as seen in the next paragraph.

Crew 2 is arranged in a semi-circle immediately next to Crew 1, with players sitting at the same slanted desks and interacting with props (goggles and medical gloves, a military jacket, a stuffed dolphin). However, during the same stretch of time as the previous interaction, their conversation is much less boisterous, with ordered turns of talk and no rolling of dice. During pauses in the conversation, however, the noises from the other group (always present) become actors in this group's local soundscape. For instance, during a pause from the GM while she consults a paper, one of the players visibly turns his head to look toward the other group's chatter. Later, as the volume of Crew 1 crescendos and the song erupts into the sonic ecology, the dialogue of Crew 2 slows down to exchanges of short phrases ('Base stat?' 'Two'. 'Two. Skills?'), interspersed with long pauses. Though none of the players verbally acknowledge the other group, the one player glances away from the conversation between the GM and the other player and toward the singing twice during this interaction. This exchange between the two groups – especially the slowing down of the conversation and the player turning his head toward the other group multiple times – shows that there is a capability of sound to travel, interact as an agent, and redirect focus. This permeates the boundaries of the 'separate' groups assembled by the instructor.

## Unveiling sonic actors and relationships in learning ecologies

Rather than forwarding any definitive conclusions, we present these two transcriptions to highlight the affordances of posthuman listening (Flint, 2021) embodied by our graphic score methodology. First, our analysis builds on Brownell's (2019) assertion that sound can subvert hierarchical relationships within learning ecologies and aligns with Gershon's (2013) argument that sound/noise transcend social boundaries between assemblages of actors and forge new intra-active relationships. Specifically, the sound of dice hitting the desk (and not the captain's orders or a visual cue) clearly ended Crew 1's conversation and an individual player speaking halted, or 'parasited' (Serres, 2007), the singalong. The shift in focus and change in behavior happened because a sound acted on the relationship between the players. In contrast to the dominant – and problematic – conservative politics of silence (Thompson, 2017), one that positions silence as good for learning and sound/noise as detrimental (Gershon, 2017), our score amplifies how sound was an important aspect of participatory learning between student groups and created an opportunity to learn/interact across group boundaries. This emergent finding reveals how graphic

score transcriptions could make sound as both a pedagogical technology and posthuman actor legible, thus potentially furthering posthuman education research.

Second, the graphic score transcription foregrounds sonic relationships (and their absence) as intra-actions in a way the narrative (and any text-based data set) does not (see Gershon, 2017). While the narrative description does provide an illustrative snapshot of the clips and acknowledges examples of sound acting on affective relationships, this narrative approach still centers on 'what sounds are' and not 'what they do' (Flint, 2021, p. 6). The graphic score transcription, in contrast, maps these relationships while simultaneously visualizing the fact that the sound of the knitting needles clicking together and the dice hitting the folder did not affect any of the bodies (sound, physical or otherwise) in the space. This distinction then raises questions about why certain sounds result in this circulation while others go ignored. Future research is therefore needed to understand what qualities within sounds, both in terms of their physical characteristics (volume, pitch, timbre) and their contextual significance (a new sound entering the sonic landscape), allow them to act on affective relationships or relegate them to the background. Additionally, foregrounding the relationships between all of the actors in this space also inherently relies on Barad's (2007) notion of an intra-action. While our transcription does recognize specific actors within the space, it also produces a singular understanding of learning, meaning making, and educational practice as a phenomenon. Rather than following individual actors through the narrative, the full scope of the myriad of relationships from the clip become apparent within our graphic score and thus provides a useful tool in exploring learning practices through a posthuman lens.

Finally, our transcription methodology builds on Gershon's (2017) assertion that sound-based qualitative methods hold possibilities and potentialities not contained with text-based approaches. While the intra-active narrative provides a step-by-step description of the actions and intra-actions within this learning ecology, the graphic score transcription amplifies and foregrounds the sonic relations within while simultaneously providing 'a means for more democratically observing the many layers and complexities of [pedagogical] interactions' (Gershon, 2006, p. 132) that do not necessarily rely on a temporal ordering. While analyzing texts (both visual and written) within qualitative research metaphorically relies on storytelling (see Daza, 2013), the graphic score methodology presented here builds on the strengths of Oliveros (1989) original work by reimagining transcription outside of a temporal unfolding of a narrative. Instead, mapping the relational outside linear notions of time allows researchers to engage posthuman interpretations of sound in new ways, similar to the diagrammatic approach taken by Serres (2007) in mapping posthuman relations. Where the intra-active narrative centers on actors within an unfolding story, our graphic score instead transcribes the relational outside of this temporal unfolding, representing both what occurred in time and what could possibly occur within this relational web. We therefore attend to the heard and unheard elements of sound (see Gershon, 2017) in ways that written text cannot. However, we also contend that 'sound is not more truthful than text' (Gershon, 2017, p. 142). Instead, we see this paper as an illustration of the possibilities that emerge when both the visual and the auditory play a role in qualitative research. In other words, the fullness of learning as a posthuman practice can only emerge through the fullness of experience, one that recognizes the role of all actors in creating meaning.

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No potential conflict of interest was reported by the author(s).

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