**Spatial Music**

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Abstract. Everyone agrees that musical works are individuated by essentialelements such as tone, harmony, and rhythm. Some argue that timbre or instrumentation can individuate musical works, too. I argue here that there can be a further element of musical works: spatial location. Some works of music are partly constituted by the location and motion of their sound sources. I begin by describing works of spatial music and arguing that they exist. I then consider the implications for the ontology of music. Hardcore formalists cannot allow for spatial music. I argue that two other views, which allow a close relationship between sounds and musical works, can allow for works of spatial music. However, their ability to do so turns on issues in the philosophy of sound. I appeal to work in philosophy of sound to show that music is an art not just of hearing, but of sounds.

Keywords: philosophy of music • musical ontology • philosophy of sound

1. **Introduction**

Everyone agrees that musical works, *qua* musical works, require certain integral elements in their performances such as tone, harmony, and rhythm. For a performance to count as a performance of, say, Beethoven’s seventh symphony, it needs to involve the faithful reproduction of these elements [Wolterstorff 1980; Levinson 1980; Dodd 2007; S Davies 2001]. Philosophers debate about what other elements are, or may be, integral for musical works. Some philosophers [e.g. Levinson 1980] have argued that a faithful performance must involve certain instruments, while others [e.g. Dodd 2007] have argued that only the sounds of instruments are required, not instruments themselves.[[1]](#endnote-1) In this paper, I argue that some musical works have another element: *spatial properties*, the location and motion of sound sources. In other words, there are works of spatial music.[[2]](#endnote-2) To argue for this claim, I show that some music is spatial; spatial music constitutes purely music content. [[3]](#endnote-3)

Here’s an example of spatial music. A few years ago, I attended a performance of Roderick Williams’ work *O Adonai, et Dux domus Israel*, scored for chorus and vocal soloists. The chorus was located at the front of the audience, in its usual location. But the soloists were scattered throughout the audience. The chorus and soloists sung different parts. In the front, the choir sang a solid, unified, blurry block of sound. This contrasted against the voices of individual soloists in the audience—sharp, clear, and unique. The soloists wandered individually around the audience as they sung, and eventually gathered together. At the end, they exited together; their voices echoed. There seems to be spatial music at this performance: the contrast, wandering, and echoing all contributed to its musical content. Williams’ *work* is a work of spatial music only if a performance of the work ought to have those spatial elements—location and motion.[[4]](#endnote-4)

My point here is not that performances of musical works require spatial extension. That’s obvious. Musical performances require performers, and often instruments, both of which are spatially extended. My point is that spatial elements in some works—the motion and location of sound sources—partly constitute or are essential to the musical content of those works. To follow phrasing of David Davies, a work of music is spatial if the location or motion of sound sources contributes essentially to the work’s identity—if a proper performance requires a particular location or motion of sound sources (D. Davies 2011). In spatial works, the spatial location of the performers is as much a part of the music as the melody or rhythm.

To show that some works are spatial, I will show that some *music* is spatial—some musical content is constituted partly by spatial relations. My case for spatial music rests on the role that spatial effects play in polyphony—in unifying or distinguishing multiple musical parts. I have a second goal: I explore implications of spatial music for musical ontology. I focus on two prominent accounts of musical ontology: indicated type theory and timbral sonicism. Whether these accounts allow for spatial music depends on two issues in philosophy of sound: a phenomenological question about hearing (*do we hear sounds to be located?*) and an ontological question about sounds themselves (*are sounds themselves located?*). I will suggest that both hearing and sounds involves location; music is not just an art of hearing, but of sounds themselves. The broader significance is that philosophers of music ought to engage with philosophy of sound. To do philosophy of music properly, we have to do philosophy of sound.

In the next section, I explain spatial music in more detail and argue that it exists. In §3, I consider three brief objections to spatial music. In §4, I consider whether prominent accounts of musical ontology can allow for works of spatial music.

Two clarifications. First: Many philosophers have argued that musical perception is *metaphorically or conceptually* spatial; hearing a melody involves hearing notes as ‘high’ or ‘low’.[[5]](#endnote-5) On this view, musical perception exploits spatial or visual systems, often in imagination. My topic, by contrast, is the literal use of space in performance as a constitutive element of music and musical works. Second: Some people have argued that musical perception is influenced by cross-modal streams such as vision [Bergeron and Lopes 2009]. The spatial qualities I consider here are not cross-modal effects involving vision or tactition. Spatial effects in audition can be *unimodal*—purely auditory. To hear distance, you just need an ear (and a brain). And it helps to have two ears; the ability to hear location is heightened by binaurality (Culling and Akeroyd 2010).

1. **Characteristics**

In spatial music, musical content is constituted by spatial relations. Let’s quickly review some plausible examples of spatial music, both rare and ubiquitous. Familiarly, musical parts are separated in stereo recordings [Moylan 2012]. In David Bowie’s 1969 track “Space Oddity,” for example, you hear distinct musical parts in different speakers. This makes a perceptual difference; it is easier to distinguish these musical parts because of the separation.

Consider the American folk singing tradition of Sacred Harp. Singers are separated into groups according to their part: treble, alto, tenor, or bass. Each group sits on one side of a square, facing inward; singers take turns leading from the center. Because of the spatial segregation, each part is more robust and distinct (Steel 2013).

Spatial music occurs in fine art music, too. Contemporary composers like Henry Brant and Iannis Xenakis have used spatial effects. But Western art-music made use of space well before the twentieth century. Beethoven’s *Fidelio* (1814) calls for a distant, off-stage trumpet. In Berlioz’s *Requiem* (1837), “four separate brass ensembles make their dramatic entrances, as from the four points of the compass, heralding the entrance of the choir” [Zvonar]. Verdi and Mahler also employed brass ensembles off-stage. And antiphonal (“call-and-response”) choral music existed in the renaissance. It often involves multiple choirs, separated, singing ‘against’ each other. At its height, antiphonal song was designed with spatial effects in mind.[[6]](#endnote-6)

Following Anna-Maria Harley, we can give a quick taxonomy of spatial elements in music. The basic division is between motion and location.

According to Harley, there are two kinds of musical motion: literal and nonliteral motion. *Nonliteral motion* occurs when stationary performers create specific ‘moving’ musical features while remaining stationary themselves. [Harley 1994: 292]. If volume, timbre, and location are coordinated in the right ways, music ‘moves’ across different locations in virtue of passing across different instruments. Here are two examples. In Xenakis’ *Pithoprakta* (1955/56), the instruments systematically rise and fall in tone and volume, from one side of the stage to the other. As a result, there is “a shift of the sound mass” across the stage [Harley 1994: 295].[[7]](#endnote-7) In Xenakis’ *Persephassa*, the audience is surrounded by groups of percussion instruments. Because of the timbral similarities, the musical lines that rotate between percussionists are each perceived as distinct, continuous musical voices passing around the circle. This is a stereo effect.

*Literal motion* occurs when sound sources move. In a marching band, for example, the sound changes as the band marches away. Let’s highlight two effects of literal motion. Both occur in Xenakis’s chamber music piece *Eonta* (1963-64), scored for piano and brass. The first effect is *timbral*; movement changes the way things sound. At one point during *Eonta*, brass players are supposed to “turn slowly to the right or to the left while performing a continuous chord” [Harley 1994: 298]. Due to this movement, the sound “varies in timbre depending on the direction and loudness of the individual sounds” [Harley 1994: 298].

Second, motion affects *contrapuntal clarity*: spatial location affects how distinct musical elements seem related to one another. Contrapuntal (or polyphonic) music, as I use the term here, refers to music that consists of more than one part, whether that part is played by one instrument (as on a piano) or several (as in a band). Most of the music we listen to is contrapuntal. Contrapuntal clarity in general refers to a relationship between multiple musical parts; these parts have more clarity when they are perceived to be distinct from one another, and less clarity when they are perceived as unified.[[8]](#endnote-8) Some kinds of motion decrease clarity. There is another point in *Eonta* when brass players move around the stage. This creates a mobile effect; due to the movement, the different parts seem ‘tangled up’ together [Harley 1994: 299; see also Brant 1967: 240]. A far more common example of this occurs when musical parts are stationary. When performers do not move around each other, listeners do not perceive parts as ‘tangled’.

In cases of *location*, sound sources are separated by a distance. The distance produces a contrast quality. We have already discussed some examples: The scattered singers in Williams’ *O Adonai*, the Bowie track, Sacred Harp, and the offstage trumpet in Beethoven’s *Fidelio*. Brant’s *Ice Field* (2001) calls for orchestral performers scattered around the concert hall.

Just like literal motion, distance affects both timbre and contrapuntal clarity. Let’s start with the timbral effects of distance. The musicologist Walter Lippman explains that the sonic quality of distance is not merely a matter of volume:

The perceived characteristics of sound that change with distance are by and large quite different from those due to varying dynamics in musical performance. When the effect of a distant trumpet is called for in Beethoven’s *Fidelio*, for example, it is not sufficient for the performer to play the passage softly; he must remove himself some distance from the singers and orchestra in order that the quality of the trumpet tone be the desired one. *Forte* and *piano* will never be mistaken for near and distant sources… [1963: 25]

Second: Spatial distance affects contrapuntal clarity. Distance increases contrapuntal clarity, and proximity decreases contrapuntal clarity. I will focus on contrapuntal clarity caused by distance for two reasons: It is the most familiar spatial quality of music, and it makes the best case for spatial music. Contrapuntal clarity in distance goes beyond the ‘tangled’ effect mentioned above.

Contrapuntal clarity can be affected by familiar features such as timbre and pitch. Imagine two flutes playing the melody and harmony of “The Dance of the Sugar Plum Fairies”. We hear these parts to be unified partly because of the timbral similarity of the two flutes; they would seem less unified if they were played by a flute and a violin. In the case of pitch, imagine a flute and a tuba playing a melody and the baseline. We hear these parts as less unified not just because of the timbre, but also because of the pitch; they are octaves apart. It is difficult to explain musical unification, but the intuitive idea is that musical voices seem to sing together rather than apart; they are part of the same musical content.

Location and motion create a unique kind of contrapuntal clarity. In experimenting with spatial acoustics, Brant found that spatial separation creates “very considerable contrapuntal clarity” [Brant 1955: 15] similar to octave separation. Imagine you are playing the melodies of two songs concurrently on the piano: “Georgia on My Mind” and “Hit the Road, Jack.” If you play both melodies in the same octave, it’s hard to distinguish one from the other. (It’s also hard to play them, but set that aside.) Suppose you play the melodies in different octaves, one very high and the other very low. It’s easier now to distinguish them. Separation by octaves creates contrapuntal clarity; it is easier to distinguish musical parts. What goes for octave separation goes for spatial separation. The further two musical lines are apart spatially, the more distinct they are. This is utilized in musical works to make it seem as though there are multiple musical voices, and multiple musical content, in the same work.

It is difficult to overstate how important contrapuntal clarity is for musical perception; perceiving distinct musical parts concurrently is foundational for musical listening, since almost all music we hear involves more than one part. Composers, producers, and recording artists pay a lot of attention to contrapuntal clarity when they are composing a work or producing a track. It is significant, then, that spatial location constitutes contrapuntal clarity. [[9]](#endnote-9) But the kind of contrapuntal clarity offered by distance is unique. Space ‘separates’ or ‘unifies’ musical parts in a way distinct from pitch, timbre, and volume.

In fact, Brant found that distinct instrumental parts, when they are far enough apart, seem totally unrelated. Physical separation, Brant wrote, “has a considerable influence in *minimizing or even eliminating perceptible harmonic relationships* between any two or more groups, depending upon their distance from one another” [1955: 14; emphasis his]. In terms of the “auditory scene analysis” model of auditory perception [e.g. Bregman 2015], spatial relations seem to constitute a basis for *stream segregation* in polyphonic music. The degree of stream segregation co-varies with the spatial distance between sound sources. A reviewer for this paper points out that that his implies that musical works can encompass multiple musical contents; “there can be a *single work* where two melodic lines are separated (in some way) such that they are not heard as part of the *same music*.”

The importance of contrapuntal clarity explains why location has been so important for musical practices across multiple genres. In jazz ensembles and rock bands, the drums are almost always in the back. Composers and conductors have thought hard about the ideal arrangement of an orchestra. Harley emphasizes that much orchestral music is latently spatial:

Chamber and orchestral music has a *latent* quasi-spatial structure when the ensemble placement is standard, well-known and does not have to be specified. Most of the music composed for specific instrumental groups takes for granted certain types of spatial relationships inherent in the kind and size of the ensemble. [Harley 1993: 126; emphasis hers)

Imagine a performance, of, say, a Mahler symphony, with a spatial switch: the brass section is located towards the front, and the strings are in the back. This switch would drastically affect the sound. The brass would be foregrounded, and the strings muted. So, the mere configuration of an orchestra is a significant spatial aspect, even if it is latent. In what follows, I will focus on the more striking examples of spatial works above. But since many performances are latently spatial in their organization, remember that spatial effects are ubiquitous.

Contrapuntal clarity is a constitutive feature of music, and spatial relations in turn constitute a unique kind of contrapuntal clarity. When musical works call for this clarity in performances, they are spatial musical works.

1. **Three Brief Objections**

A skeptic of spatial music may allow that the works above use space, but insist that their use of space is not musical; motion and location are not necessary for a faithful performance of a musical work *qua* musical work. In this section, I’ll quickly consider three objections that arise from this line of thought. These objections stem from misunderstandings about spatial music.

First: Someone may claim that spatial relations are too audience-specific to be truly musical. “Different audience members will hear spatial aspects differently, depending on where they sit in a room. But truly musical elements are not relative in this way. So spatial aspects are not truly musical.” This argument misunderstands spatial music. Spatial effects aren’t bizarre, quirky illusions. They are reliable features of the works, accessible to any ordinary audience member. And anyways, many standard musical elements are affected by audience location—you can hear the brass better in the back of the hall, for example. But nobody thinks that these standard elements are thereby less musical.[[10]](#endnote-10)

Second: Someone may claim that spatial effects are extramusical and cannot be elements of absolute music, or pure music. Harley [1993: 127] notes that, according to Reinhard Sacher, “all spatialization of music is essentially theatrical” since “visual cues tend to dominate over their aural counterparts” [Harley 1994: 299]. Let us focus on the issue that spatial music involves visual cues that tend to dominate over aural features. First of all, note that a tendency to be visual is not an essential part of spatial music. It seems clear that contrapuntal clarity is a spatial phenomenon that doesn’t essentially have a visual component. Most clearly, contrapuntal clarity exists in cases where no visual stimuli are present, i.e. in stereo effects in recordings where a listener cannot see the performer.[[11]](#endnote-11)

Third: Someone may try to show that spatial works are primarily works of sound art, not music. Consider space-based theories of sound art (e.g. Bernd Schulz [2002: 15], Brandon Labelle [2004:7]). One may claim: “Sure, the works you point to employ spatial aspects. But sound art is essentially spatial. So spatial aspects of these works are sound-art aspects, not musical aspects.” This sort of objection fails on three counts. First, such a tight connection between spatial music and sound art is unacceptably revisionist about sound art. The use of spatial relations in music is very old; sound art is very young. Second, this objection relies upon a questionable account of sound art. Many other definitions of sound art do not prioritize space; some are based upon performance context [see Licht 2009: 3], and others give it no essential characteristics [Wong 2012]. Finally, even if sound art is essentially space-based, the argument requires an exclusivity thesis: if some element can constitute sound art, then that element cannot constitute music. This exclusivity thesis is implausible.

1. **Making Space in Musical Ontology**

A bigger question remains: Why think that that spatial elements themselves can be elements of musical works? Brant clearly thinks they are: “The way I do it, space is part of the composing plan. If you change the space in a piece of mine, it’s no different than changing the notes or the rhythms in someone else’s piece.” [[12]](#endnote-12) So there are intentional reasons. But one may insist that intentional features only go so far. One may claim that the spatial features are not necessary for works themselves; even if spatial effects are necessary for a certain kind of contrapuntal clarity, these spatial effects could be achieved by means other than literal spatial relations. Imagine an acoustically special building, or special speakers, which create auditory illusions of distance. In such cases, one could argue, *actual* spatial locations are irrelevant; only *apparent* distance matters. Whether there can be spatial music, then, depends on what kinds of things musical works can be, and what music can be. In this section, I will examine different accounts of musical ontology.

Hardcore formalist accounts of music straightforwardly exclude the possibility of spatial musical works. Scruton’s objection to spatial music begins with his account of music itself, not just musical works. According to Roger Scruton’s *pure formalist* account of music, music is purely formal; sounds become music when they are organized into tone, rhythm, harmony, and so forth. Music, on this view, transcends the actual sounds and the actual instruments that are used. According to Scruton, music is an art of pure tones, not mere sounds. As Andy Hamilton states the view, “sound becomes tone when organized by pitch, rhythm, melody, and harmony” [Hamilton 2007a: 59]. Tonal qualities exist in a purely formal realm, since organizations of pitch, rhythm, and so forth, constitute musical relations; mere sound is not organized, so it cannot be music. Musical works, on Scruton’s view, are repeated patterns of music. So, since there can be no spatial music, there can be no spatial musical works.

Scruton gives an explicit argument against spatial music. According to pure formalism, music occupies a realm that is necessarily divorced from the sonic realm of cause and production—music exists in a non-causal, ‘acousmatic’ realm. On Scruton’s view, to perceive sound musically is therefore to perceive it as fundamentally non-physical [Scruton 2009]. And, since it’s non-physical, music is not spatial. Scruton says: “[Musical] relations … have nothing to do with physical space, or physical causality” [1997: 74]. If spatial elements can’t be musical, then they can’t be elements of musical works. So there are no works of spatial music.

There is a familiar reason to be skeptical of the acousmatic view of music (e.g. Hamilton 2007b, S. Davies 2008): Musical listening involves an inescapably causal dimension that pure formalism rules out. Imagine hearing the sound of a kettledrum, but divorced from its causal origins; imagine, in other words, that no kettledrum is struck. This seems impossible. In hearing the sound of a kettledrum as music, we seem to hear its causal production. So, hearing causes can be partly constitutive of musical perception. The above argument about spatial music give us another reason to be skeptical: Contrapuntal clarity is a musical feature created by spatial relations. Pure formalism can allow that this feature exists in some sense, but not that is relevant to the appreciation of music as such.[[13]](#endnote-13)

In addition to this familiar argument, the above considerations about spatial music give us another reason to be skeptical about pure formalism: Pure formalism cannot explain the contrapuntal clarity that spatial relations can create. However, I will not press this objection. My goal here is to consider the implications for accounts of philosophy of music according to which music is an art of sounds. Since the pure formalist rejects any such account of music, they will not have much interest in exploring spatial music anyways.[[14]](#endnote-14)

I will focus instead on two accounts of musical ontology which hold that musical works are more intimately connected to sounds: Julian Dodd’s timbral sonicism and Jerrold Levinson’s initiated type theory. Like Scruton, both hold that musical works are types. Like Scruton, both yield constraints on musical workhood that are rooted in accounts of musical content. But unlike Scruton, they hold that musical works, and musical content, can involve sounds as such. The question is how far these sounds extend out into the world. For Levinson, musical works can include elements which are indicated in the score. This includes instruments. I’ll show that it can be extended in a principled way to include sound locations. For Dodd, musical works could not include elements such as instruments, because music is an art of sounds and nothing other than sounds. Dodd’s account is more ambiguous—but it reveals what it means for musical works to be spatial.

* 1. **Musical Works as Indicated Sound Structures**

According to Levinson (1980), musical works are types of sound structures. But they are not pure types of sound structures. Instead, these types are created under a specific *indication*. Musical works have properties that their composers make normative by indications. Moreover, these indications are context-sensitive. Mahler’s seventh symphony has some of the properties it does because it was created or indicated in a particular historical context. Had those same notes been composed in a different historical context, a different work would have been written.

This view allows for instruments to be integral to musical works. As Levinson says: “Musical works must be such that specific means of performance or sound production are integral to them.” (1980: 19). Call this claim *instrumentalism*. Instrumentalism holds that a faithful performance of a musical work requires not just the right kinds of sounds; it also requires that those sounds have the right source. Levinson gives four arguments for instrumentalism, a varied bunch of reasons that appeal to intentions, notation, and aesthetic and artistic properties:

1. **Intentional authority.** Composers specify means of production intentionally, and intentions are determinate of musical works.
2. **Scores.** “Scores are… definitive of musical works,” (1980: 15) and “scores of musical works call for specific instruments in no uncertain terms.” (1980: 16)
3. **Aesthetic Properties.** The aesthetic content of musical works depends upon their use of instruments. “The character of a musical composition, e.g., Beethoven's Quintet Opus 16 for piano and winds, is partly a function of how its sound structure relates to the potentialities of a certain instrument or set of instruments designated to produce that structure for audition.” (1980: 17)
4. **Artistic Properties.** The artistic content of musical works depends upon their use of instruments. Paganini’s piece is rightly regarded as having an artistic property, being virtuosic. But Paganini’s piece is virtuosic only in virtue of what it demands from a performer on the violin. If the piece were transposed to another instrument, or if it were a quality only of the sounds, then the piece would not be virtuosic.

Whether or not one is persuaded by these reasons, Levinson’s strategy is relevant for spatial musical works. It can be generalized as a strategy to show that the *causes of sounds* can be essential to musical works. Spatial location and motion satisfy each of these conditions in some works. Composers of these works intend for them to be performed with the spatial aspects; the spatial elements are included in descriptions and/or charts in scores; they are essential for aesthetic properties of these works (the polyphonic and stereo effects seem to be ineliminable aesthetic dimensions of the pieces in which they occur); and these works have artistic properties which require space—they require performers to move and perform at the same time. (These properties are more mundane than the kinds of artistic properties Levinson appeals to, such as virtuosity, but they are artistic properties nevertheless.)

This shows that an extension of Levinson’s argument to spatial works of music is possible. I want to show, further, that such an extension is well-motivated. Notice that Levinson must place some limitations on the four arguments above so that they do not generate unintuitive results. It seems reasonable to hold that there must be limitations on what can count as a relevant intention for an indication regarding a sound structure. Suppose I compose a piece and indicate that it is to be played only in a room with green walls. Arguably, the indication regarding green walls is not relevant to the work as a musical work, since it is not an indication that makes a difference to the sound structure’s aesthetic or artistic properties as a musical work. On Levinson’s view, after all, musical works are fundamentally *sound* structures. So, when it comes to musical works, there should be restrictions. Not just any intention matters; not just any notational specification matters; not just any aesthetic quality matters. This presses a general question for a Levinsonian account of musical works: Levinson needs a criterion that shows either why musical works include things beyond sounds themselves, or he needs to show why sounds themselves involve instruments. We need an account of sounds which grounds an explanation of why instruments are relevant but (say) the color of the performance hall is not relevant. Call this *the relevance requirement*. The relevance requirement plausibly a requirement not merely on musical works, but on musical content.[[15]](#endnote-15)

One way to satisfy the relevance requirement is to hold that music involves extra-sonic features. On this view, music is an art of more than sounds. This line of thought is consistent with Stephen Davies’ (2001, 2008) practice-based ontology of music. According to Davies, musical works are to be identified with sets of instructions that exist within a practice that involves instruments and abilities about how to play them. Such an account easily allows for spatial music, since musical practice allows for spatial location and motion in ways I described above. On a Levinsonian view, however, musical works are fundamentally sound structures. Presumably, there must be some tight connection to sounds.

To answer the relevance requirement in a way that’s more friendly to Levinson’s view, we might look to features of sounds themselves to ground limitations of what counts as a feature of an indicated sound structure and what doesn’t. One might hold that sounds are essentially related to their sources. Musical works are still sound structures, but sounds are properties of particular objects. In fact, some philosophers of sound have said just this: Sounds are essentially related to their causes. Kulvicki (2008) holds that sounds are properties of objects—stable dispositions to sound certain ways, when stimulated in particular ways. Others hold that sounds are events involving objects. Casati and Dokic (1994) hold that “sounds are events happening to material objects” (2010). O’Callaghan (2007) holds that “sounds are events which involve both the source and the surrounding medium” (Casati and Dokic 2010). On these views, sounds come from their sources. It is at least plausible that sounds are individuated by the kinds of things that produce them. The sound of a saxophone is different than the sound of a synthesizer, even if they seem identical. Such a view of sounds is not enough to fully explain why instruments are required—perhaps one needs the further claim that sounds have their sources essentially. But it’s a reasonable start.

And that’s all we need. If we adopt any of these views about sounds, then it follows that sounds are located. Importantly for our purposes, ontological accounts of sound are classed according to location; the views above are known as *distal views*, since they hold that sounds are located at their sources. They can be contrasted with medial views (according to which sounds are properties or events of sound waves) and proximal views (according to which sounds are stimuli located at the hearer). So, if music is an art of sounds, then musical works can involve motion and location, because sounds involve the locations of heir sources. This is true both in cases of explicit and implicit specification in the score. Of course, I hope that the ubiquity of spatial features already made this view intuitive. The distal theory of sounds spells out what seems to be a clear phenomenon in music in the previous section.

Let’s recap. Levinson says that, on his view, “a musical work consists of at least two structures. It is a compound or conjunction of a sound structure and a performing-means structure.” (1980: 19) I’ve raised a question: What intentions are relevant to specifying a performing-means structure and what intentions aren’t? Given Levinson’s inclination to include instruments as part of sound structures, we might appeal to an ontological account of sounds. We might hold that sounds are properties of or events of their sources. But according to these views, sounds are located at their sources. So location and motion can be properties of sounds. So, on one well-motivated way of understanding Levinson’s view, and on one prominent cluster of views about sounds, it is natural to hold that there are works of spatial music.

* 1. **Musical Works as Timbral Sonic Types**

According to timbral sonicism, musical works include all and only sonic elements: They include the organizational and acousmatic elements of pure formalism (pitch, rhythm, melody, harmony); but they also include what David Davies calls “color” properties—properties like timbre (D. Davies 2011: 32). Stephen Davies [2001: 64] first articulated this view; it has been defended by Julian Dodd [2007a, 2007b, 2010]. Dodd formulates timbral sonicism as follows: “Musical works… are entities individuated purely in terms of how they sound.” [Dodd 2007a: 2] Or, more carefully: “A work of music *W* and a work of music *W* \* are numerically identical if and only if *W* and *W* \* are acoustically indistinguishable: just in case, that is, they have exactly the same acoustic properties normative within them.” [2007a: 2] Dodd argues against instrumentalism; instruments themselves could never be necessary for a faithful performance of a musical work [Dodd 2007b: 25]. It is enough that a performance of a piano sonata *sounds* like it was produced on a piano—it need not have actually been played on a piano.[[16]](#endnote-16)

Dodd’s defense of timbral sonicism relies upon two theses. The first thesis is *musical empiricism*, which Dodd takes to be intuitively true. Drawing on Monroe Beardsley [1958], Dodd articulates musical empiricism as follows: “to appreciate a piece of music, we need only use our ears.” Dodd continues: “The limits of musical appreciation, the empiricist claims, are what can be heard in the work, or derived from listening to it.” [Dodd 2007a: 205] On the basis of musical empiricism, Dodd advances the second thesis, a supervenience thesis: Acoustic properties are responsible for all of a musical work’s aesthetic properties. “[A] work's aesthetic properties are in some sense dependent upon, though not reducible to, its acoustic features” [Dodd 2007a: 208]. If musical appreciation extends only to the aesthetic, and all aesthetic properties supervene on the acoustic, then sonicism follows: all musical properties are acoustic.

The acoustic nature of music is supposed to imply that instrumentalism is false—that is, that instruments themselves are irrelevant. One popular way of putting this is that instruments are only means to producing sounds. They are not essential to the sounds themselves. This is a classic objection to spatial music, too: Spatial location is only a means for producing the aesthetic property of contrapuntal clarity; it is not constitutive of this property. But given our discussion of Levinson above, an obvious question rears its head. Why think that acoustic properties cannot involve instruments? Suppose that acoustic features just are sounds. On the distal account canvassed above, sounds are events or properties of objects. If the timbral sonicist accepts this account of sounds, then their account will allow for spatial music. But it will also yield the result that instrumentation can sometimes individuate musical works! This shows that the timbral sonicist needs to be careful about what account of sounds they endorse.[[17]](#endnote-17)

The timbral sonicist has a couple options that avoid this result about instrumentation. One option is to fiddle with the ontology of sound. The timbral sonicist might to reject the distal account of sounds, appealing instead to some account of sounds (medial or proximal) according to which sounds occur not in sources, but in media such as sound waves or in aural stimuli internal to hearers. Or the timbral sonicist might accept a distal account of sounds, but deny that sounds essentially involve their sources. I will return to this option later. But first I want to explore another option. Instead of fiddling with an ontology of sounds, the timbral sonicist may fiddle with their ontology of music. The timbral sonicist may hold that music is an art not of sounds but of *hearing*—music is an art of the observational or apparentqualities of sounds. In this way, they bypass the ontological issue altogether. Music, on this view, is an art of the observational or apparent qualities of sounds. Let us call this the *hearing* account of timbral sonicism.

There is some reason to think that Dodd would accept the hearing account. He frequently claims that musical works are individuated by acoustic qualitative appearances. For example: “whether a sound‐event counts as a properly formed token of *W* is determined purely by its acoustic qualitative appearance. Nothing else matters.” [2007a: 201] “If a work's aesthetic properties are all present in its acoustic appearance, then we need look no further than this appearance when providing identity conditions for pieces of music. There is no more to the individuation of such works than how they sound.” [2007a: 6] I do not mean to saddle Dodd with this hearing account; I raise it only as one plausible interpretation of his account.

If music is an art of hearing, can musical works be spatial? Well, there is good reason to think that the experience of sounds involves spatial awareness. Casey O’Callaghan (2009) argues that “auditory experience has spatial characteristics” (124). O’Callaghan starts with a claim about what kind of information audition provides. Audition represents location—it furnishes information about sounds as being located at a distance in some direction. “Conscious hearing presents the world as being a certain way with respect to space and locations, in addition to its qualitative features and particulars.” (124) To argue for this claim, O’Callaghan appeals to empirical research in spatial sounds. O’Callaghan’s second claim is a phenomenological claim about sounds themselves: “auditory experience represents sounds themselves to be located.” As he says, “in a wide range of central cases, we experience a sound to be located in the neighborhood of its source” (126). We hear sounds to be both at a distance, and coming from a particular direction. And when we cannot identify a precise location, O’Callaghan argues, we hear the sound as coming from all around us. If we hear sounds to be located, as this account suggess, then he hearing account of timbral sonicism allows for spatial music. If acoustic experience itself represents sounds as located, and if the representation can be more or less veridical, then Dodd could hold that music represents sounds as located even if it’s an art of hearing.

Some have argued that we do not hear sounds to be located anywhere. If this is true, then the hearing account is not consistent with the existence of spatial musical works. Famously, P.F. Strawson argues that a purely auditory experience would not involve spatial awareness. Brian O’Shaughnessy (2000) and Matthew Nudds (2001, 2009) have both argued for this thesis. The idea is that we infer spatial relationships in audition from other sense modalities, such as vision and tactition. But audition itself does not disclose spatial elements.

Prominent arguments for this view come up short. One such argument is that sounds do not represent empty space. But, as Nick Young (2017) argues, sounds *do* represent empty spaces. One can identify a concert hall or a carpeted room by its reverberation. Another prominent argument is that sounds themselves do not have spatial structures (Nudds 2001). Sounds involve volume, pitch, and timbre, but none of these aspects involves space. While there might be a temporal ‘middle’ to a sound, there is no spatial ‘middle’. Sounds don’t have internal spatial structures. The problem with this argument is that internal spatial structure is not the only kind of spatial organization (O’Callaghan 2010: 139).

Consider one more argument that Nudds (2009) makes—in my view, the best argument for the view that hearing is not intrinsically spatial: Hearing is not intrinsically spatial because spatial elements can be overridden in auditory perception by other elements. Nudds appeals to two examples. First, he gives an example of a stereo system; multiple speakers separated from each other. When both speakers present the same song, the fact that sounds are coming from two different places seems to be overridden by the unity of the song; we hear the song as one block of sound. In this case, harmonic grouping overrides spatial grouping. Second, Nudds appeals to Diana Deutsch’s scale illusion. In the scale illusion, two scales are played, one ascending and one descending, one note in each ear. But, crucially, notes in the scales alternate between the right and the left ear. Yet most subjects perceive the ascending scale to be in one ear and the descending scale to be in the other ear. Nudds argues that, in this illusion, harmonic grouping overrides spatial grouping. Since spatial grouping can be overridden, it is not an essential component of auditory perception.

Nudds’ analysis of Deutsch’s scale illusion is insightful, but it is too quick. First of all, we should be reticent about taking lessons about general audition not only from illusions, but from illusions which rely upon earphones. This is especially true if, as Nudds himself claims, we ought to aim for an ecologically natural account of audition. Second, it is too quick to say that harmonic grouping overrides spatial grouping. If this were true, there would be no more spatial grouping. But there is spatial grouping in the scale illusion. The scales are still spatially grouped; they are just grouped wrongly. Harmonic grouping *reorders* spatial grouping and thereby creates an illusion. Third: Even if Nudds’s interpretation were right and harmonic grouping overrides spatial grouping, this shows only that spatial grouping is defeasible. It does not show that spatial grouping is not an intrinsic element of spatial hearing. Finally, here’s a crucial fourth point. Remember from Brant’s experiments that, given enough distance, instruments start to lose any sense of relatedness if they are far enough away. This shows that spatial grouping can sometimes override harmonic grouping. So the overridingness goes both ways. Therefore, we shouldn’t use it in any one direction to draw lessons about the essential nature of audition.

So, if music is an art of hearing, then it involves apparent location. We hear sounds as being located at their sources. But again, the big question is looming: If music is an art of hearing, and hearing involves the phenomenology of location but not location itself, then the locations of sounds themselves may not be required for music. And therefore music itself is not spatial in the sense specified for spatial music. It requires only heard location, not actual location.

One response may be to loosen our account of spatial works: We might say that spatial works require locations to be heard as coming from a particular location. Notice that the satisfaction conditions for a sound to be heard as coming from a particular location will, as O’Callaghan says, ordinarily require spatial locations themselves. While this is enough to get the right result in practice, however, it is not enough to secure the idea that some musical works are necessarily spatial. I concede the point that the hearing account is not enough to individuate musical works on the basis of spatial location.

However, I believe we should reject the hearing account. Recall O’Callaghan’s argument not just that hearing is spatial—hearing furnishes information about the locations of sound sources—but that hearing presents *sounds themselves* as located. Audition “consciously furnishes information about the locations of objects and events in the environment by or in consciously presenting sounds themselves as located in the surrounding environment.” (2010: 126) Call this *spatial phenomenology*. The best explanation of spatial phenomenology is that sounds have are in fact located. More simply: Since sounds seem to be located, they are located. This includes musical sounds, too.

This gets at a prominent argument for distalism as an ontological proposal about the nature of sounds themselves: If you deny distalism, you hold that hearing is massively misleading (Casati and Dokic 2014). One could resist the move to the ontology of sounds, and hold that, while hearing presents sounds as being located, they are in fact not located. But if you think that the phenomenology is a good guide to the ontology, this will be a hard pill to swallow.

Where does this leave the timbral sonicist who endorses the hearing account? I’ve suggested that hearing is spatial, and this suggests that hearing presents sounds as located. But there are good reasons to reject the hearing account. O’Callaghan shows that, if hearing presents sounds as located, then this gives us good reason for thinking that sounds are located. I suggest that the timbral sonicist should accept that music is an art of sounds, not hearing. In the next section, I will argue that there are other reasons—reasons from the direction of music—for thinking that music is an art of sounds rather than an art of hearing.

* 1. **The argument from media**

The argument is a reductio of the hearing account. In brief, the argument is that if the hearing account is correct, then music cannot involve a medium. But music does involve a medium.

The argument has three steps. The first step is this: *If music is an art of hearing, then music is an art of pure appearances*. This step trivially restates the hearing account of music.

The second step is this: *If music is an art of pure appearances, then music does not have a medium.* Here I take it that media, whatever they are, must be constituted by something more robust than mere appearances. A medium may be material, as so-called medium materialism says. Or a medium may be based upon resource plus technique, as in Lopes’ recent [2014] account. A medium may be based upon use, as Carroll’s [1985] account of medium says. On all of these conceptions, a medium is more than mere appearance. (Media need not be physical. Perhaps the medium of poetry is words, and perhaps words are abstract objects; perhaps the medium of conceptual art is concepts. But, whatever words are, they are surely more than mere appearances.) Since a medium is more robust than a mere appearance, then the proponent of the hearing account must hold that music is not technically a medium, since it is mere appearance. Under the hearing account, music must be *medium-insensitive*.

The third step is this: *If music does not have a medium, then music cannot be an artform*. The idea is just that all art necessarily involves a medium or a set of media. This is a very minimal constraint: It does not say that artforms are individuated by their media, only that artforms must have associated medium or set of media.[[18]](#endnote-18)

The final step says that this implication is false: Music is, of course, an artform. Putting the argument the other way around: If music is an artform, then it has a medium; and if music has a medium, then it is not an art of pure appearances.

It seems clear, then, that the timbral sonicist should reject the hearing account interpretation of their view. They should claim that music is an art of sounds, even if it does not include the causes of those sounds.

In any case, it is not clear that Dodd endorses the hearing account of work-individuation. For one thing, it’s not obvious that this is what Beardsley has in mind in his defense of aesthetic empiricism (and, for this reason, I do not attribute this view directly to Dodd). Beardsley presumably does not mean that the only properties of an artwork are observational properties; he means instead that the properties of the artworks can be *retrieved* from observational properties. So it is open to the timbral sonicist to hold that all of the conditions of a correct performance can be retrieved from observational properties, but include extended properties of sounds.

Furthermore, if the timbral sonicist allows that music is an art of sounds, they can still hold that instruments themselves are not essential to sounds. On this view, a work could be performed with perfect synthesizers, as long as they are located in appropriate places. While I suggested above in the discussion of Levinson that there may be ways to hold that sounds are individuated by their sources, it’s not the only view. One could hold that sounds are properties of their objects but hold that sounds are not individuated by their objects. For example, it seems plausible to hold a property view of colors—that colors are properties of objects—and yet hold that colors are individuated by their intrinsic visual characteristics.

I hope to have shown that both instrumentalists and timbral sonicists should hold that music is an art of sounds, not hearing. Furthermore, I have argued that sounds are located at their sources. I haven’t just tried to show that instrumentalists and timbral sonicists ought to allow for spatial music; I’ve argued that this is the most plausible version of their views, since it accords best with considerations from philosophy of sound. This discussion reveals, however, that philosophers of music ought to address key issues in philosophy of sounds. Perhaps the timbral sonicist wants to maintain that music is an art of hearing and not sound—it’s going to take a positive argument. Even if one wants to go this way, however, musical works may not be strictly spatial in the sense I’ve required above; yet they still may seem spatial.

1. **Conclusion**

I’ve argued that some musical works are spatial. This is because musical content can be spatial. The contrapuntal effects of spatial music need explaining, and my view offers an explanation. This helps us make progress in musical ontology. Spatial music provides some evidence against pure formalist, nonphysical views of music. And, while both indicated sound structure and timbral sonicist views of musical works can allow for spatial music, this shows that a philosophy of sounds matters for musical ontology. It is worth emphasizing again that Stephen Davies’ [2001, 2008] social practice account of musical ontology seems to have no problem explaining spatial music, since it emphasizes the essentially artifactual nature of music-making.

I’ll close with a methodological point. Philosophical accounts of musical works often proceed by accepting dominant assumptions about music making. But those assumptions can be mistaken, given an adequate externalism about music. Brant explicitly claims that space is a musical element whether it is commonly employed or not.

Even today the resource of space is still, by most composers, considered an optional or peripheral aspect of music… This view… places serious restrictions on musical expressiveness—it could also be compared to a method of composing which made no specific provision for the control of time values or of pitches. [Brant 1967: 223]

Morgan makes a similar point: “Sounds, of course, have physical sources, whose locations are to at least some extent perceptible to the listener. Yet traditionally, Western music has made little use of spatial direction as a compositional resource.” [Morgan 1980: 536] If music is grounded in musical perception, and if musical perception is not transparent, then philosophy of music can do more than describe musical practice as it is. If music is an art of sounds, then music can have any property that sounds do—even ones that composers still haven’t made use of.[[19]](#endnote-19)

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1. Stephen Davies (2001) argues that the matter is contextual. [↑](#endnote-ref-1)
2. Spatial music has been considered in other disciplines. In musicology, see Lippman [1963], Harley [1994b], and McClary [1991]. In auditory psychology, see Bregman [1990] and Blauert [1996]. The view that some musical works are spatial has not been defended from a philosophical angle, with an eye to philosophical concerns. [↑](#endnote-ref-2)
3. Indeed, this paper could just as easily focus exclusively on spatial musical content. I focus primarily on musical works rather than musical content, since that’s where most of the action is. But, as I hope this paper shows, a substantial part of philosophical discussion about musical works really exposes issues in musical content. [↑](#endnote-ref-3)
4. The spatial elements are recommended but optional in the score. [↑](#endnote-ref-4)
5. See e.g. Budd [1983]; Davies [1994: 235]; Carroll and Moore [2013]; Kania [2015, forthcoming]; Langer [1957], Morgan [1980]. For empirical evidence see Rusconi *et al* [2006] and Park [2015]. [↑](#endnote-ref-5)
6. The musicologist Richard Rastall says that “with Monteverdi and his Venetian-trained successors there is a clear indication of spatial effects designed for an audience” [Restall 1997: 269; also Morgan 1980: 536]. Monteverdi’s *Vespers* (1610), for example, involves strategic placement of performers around the San Marco Basilica. And Howard and Moretti [2010] argue that spatial (architectural) features of Renaissance cathedrals influenced liturgical compositions at the time. [↑](#endnote-ref-6)
7. A similar effect occurs in Charles Ives’ *Symphony No. 4* (1909-1916), Xenakis’ *Terretektorh* (1965-66), Henry Brant’s *Millennium II* (1954) and *Ice Field* (2001), and John Tavener’s *Ultimos Ritos* (1972). [↑](#endnote-ref-7)
8. By ‘distinct musical parts’ I mean different harmonic, melodic, bass, or rhythm parts; these parts can in principle be played on different instruments or on the same instrument. Contrapuntal clarity here does not refer to the specific music-theoretic feature of counterpoint. [↑](#endnote-ref-8)
9. See especially Bregman 1990: space can be (though need not be) a determining criteria of musical perception. [↑](#endnote-ref-9)
10. A reviewer points out that “we often blame or praise a *performance space* (e.g. the particular concert hall) rather than the musicians (performers or composer)” for standard musical elements. While this is true in some cases, it is still true that ordinary musical features are standardly affected by spatial relations. It a constant across every concert hall that you can hear the brass better in the back (and at the top) of the hall, and that you can hear strings better near the front of the hall; this is not due to unique features of particular performance spaces. [↑](#endnote-ref-10)
11. The objector, of course, might challenge the claim that polyphonic effects are constitutively musical. I will take up this challenge in the next section. [↑](#endnote-ref-11)
12. Quoted in program notes from San Francisco Symphony Orchestra, 18-20 September 2014. [↑](#endnote-ref-12)
13. Thanks to an anonymous referee for this journal for helping me to sort out this issue. [↑](#endnote-ref-13)
14. On perhaps the other end of the ontological spectrum, views of musical works as continuants do not relate musical works to musical experience or even to the nature of music itself. Views such as Rohrbaugh (2003), Caplan and Matheson (2006), and Tillman (2011), hold an anti-Platonist, physicalist view that musical works are sets or collections of performances. These views place no restrictions on what might count as a proper performance of a musical work, so they can trivially allow for works of spatial music. [↑](#endnote-ref-14)
15. I believe that the debate about insrumentalism is often presented as a debate about musical workhood, when in fact it is a debate about musical content. The question is whether instruments can form musical content. Indeed, the discussion in this section could be framed, perhaps even more fruitfully, as a discussion about musical content. I’ve framed it as a discussion about musical works because that’s where the philosophical action has been. Thanks to a reviewer for this journal for insightful comments on this. [↑](#endnote-ref-15)
16. Dodd allows that *beliefs about cause* may be sonically relevant to the perception of timbre, since they can make a difference to something’s acoustic qualitative appearance. So a piano sonata needs to be *heard as ordinarily produced* by a piano. “In order for an audience to hear a performance as it ought to be heard, the performers need not use certain specific instruments; they need only produce sounds that *seem* as if they have been produced by such instruments.” [2007a: 215] [↑](#endnote-ref-16)
17. Thanks to an anonymous referee for encouraging me to make this point more explicit. [↑](#endnote-ref-17)
18. One may think that conceptual art is a counterexample to this claim, since conceptual art does not have a medium. But, for one thing, conceptual art seems to involve ideas, and ideas are more robust than seemings; they can be shared and created and mistaken (Cray and Schroeder 2015). In fact, Goldie and Schellekens (2007) hold that conceptual art takes ideas as a medium. Cray (2014) argues that conceptual art involves artifacts. So it does seem that to be an artform, something must take a medium. [↑](#endnote-ref-18)
19. [ACKNOWLEDGEMENTS REMOVED] [↑](#endnote-ref-19)