CROSSMODAL AESTHETICS: HOW MUSIC AND DANCE CAN MATCH

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The relationship between music and dance can sometimes be a ‘match’, a remarkable fit between the audible manifestation that music is and the visual or kinaesthetic manifestation that dance is. A match between two things seems to require a common measure with respect to which the match obtains. What can this be for two so different phenomena as music and dance? I argue that the most promising answer is: movement. This answer will not be satisfactory unless the movement of music and the movement of dance are the same on some level. I suggest that they are: there are qualities of movement that guide both dancers and musicians when producing dance and music as perceptible phenomena. But the match in qualities is elusive, since the qualities are instantiated in different ways in music and dance, respectively.

Keywords: perception, audition, music, dance, kinesthesis, crossmodal correspondence.

I. INTRODUCTION

It is striking how music and dance sometimes match. Perhaps you have appreciated this in the middle of a dance; the feeling of your dancing being simply spot on or of letting the music create movement in you. Or perhaps you have seen other people dance to music in a way that intensifies the experience of both; perhaps the dance and the music have seemed like a unity. If you have, you are far from alone. There is a significant amount of empirical research on ‘matching’ or ‘congruence’ between music and dance from the perspective of observers. Such matching occurs for both emotional and kinaesthetic responses to music (e.g. Kratus 1993; Krumhansl & Schenck 1997; Mitchell & Gallaher 1991). There is a large degree of intersubjective agreement about these matches, also across cultures (Sievers et al. 2012).

Despite these compelling reasons to think that match between music and dance can occur it remains difficult to say what the match consists in. Presumably, a match is a kind of correspondence, as when the colour or the style of one’s
gloves matches that of one’s hat. Or, alternatively, matching may amount to complementation, as when the sourness of the rhubarb matches the sweetness of the vanilla cream. Both for correspondence and complementation there is a common measure with regard to which the two matching things are compared: they correspond in colour or they have complementary flavours. But both from the perspective of audiences and from the perspective of dancers and musicians it is hard to identify a parsing of music and dance along a common axis. For the audience, both the object perceived and the sensory modality used to perceive it differ between music and dance. We see the dance, but we hear the music. And whatever exactly dance and music are—e.g. bodies moving or patterns of movement versus the playing of instruments or abstract types—they seem to be quite different things. This difference is also evident from the perspective of dancers and musicians, in so far as their training, tools and physical activity differ. Thus, it looks hard to answer the question: What is it about the music that can have its match—its correspondence or complementation—in dance, and vice versa?

Hard, but not impossible. In the next section, I outline some alternative answers. I suggest that the most promising and encompassing answer is that music’s movement matches the movement in dance. I develop this suggestion in more detail in Section III.

Throughout the paper, I leave the notion ‘match’ fairly broad. Matching, both as correspondence, complementation and in other guises that there may be, does not require identity: for instance, the dance can be half-time to the music’s beat. Matching can be partial, as is Balanchine’s choreography to Stravinsky’s cello solo in Calliope’s variation from Apollo, where the dancer matches the pizzicato accompaniment, rather than the cello (see Joseph 2002: 105). Matching is also non-unique, in the sense that there are many ways a dancer can match a piece of music, and that music can match a choreography. Still, not just any intentional relationship between music and dance is a match. And it may not always be easy to tell. Cage and Cunningham often developed the music and dance separately within different sections, but collaborated with regard to concept and overall form (Miller 2002: 156–7). Perhaps the latter match, for instance that the aleatoric method is reflected both in Cage’s music and Cunningham’s choreography. Moreover, even in cases where music and dance clearly match, this need not be deemed a good-making feature of their relationship. Mark Morris has in fact been criticized for making the dance match the music to too large an extent.1 For the purposes of this paper,

1 Witness Macaulay’s review in The New York Times in 2018: ‘Mr. Morris’s musicality, not for the first time in his long career, becomes an awkward form of musical analysis. Really, that little flourish of the wrist is a more specifically acting gesture than Schubert’s little iamb; and all those repetitions, by way of pinning recognizably human behavior to musical structure, have the effect of making the music feel far less expressive than it actually is.’ See: https://www.nytimes.com/2018/08/10/arts/dance/review-mark-morris-the-trout.html.
I do not wish to restrict the notion of match more than this. My focus is the relata of the match, not the relation itself.

However, I take as given the objectivity of matches between dance and music, documented empirically by the broad intersubjective agreement that, e.g. Sievers et al. (2012) found. A child’s or a drunk person’s immediate response to music based on how it makes them feel may seem like the most fundamental case of match. One widespread response is to move in synchrony with the music’s beat, as even some animals do (Fitch 2009). But a well-known fact is that one’s moves may have felt just right in response to the music, and yet regrettably, as one absolutely agrees when watching the video, look nothing like how they felt. Then there is no match. For there to be match, the feeling the music creates in one must be cultivated by checking in on how the dance looks, so that the dance comes to look the way it feels in its raw and immediate form (and then additional feels may enter, such as stretch or pain). Thus, while matches may often be based on a private feeling, it is a perceivable product judged by intersubjective standards that I take to be the object of my discussion in what follows.

Finally, match between music and dance could be a special case of the more general phenomenon of crossmodal correspondence (see e.g. Deroy & Spence 2017), a typical example of which is the Kiki-Bouba effect. When visually presented with one spiky and one rounded shape, test subjects consistently match the former with the sound ‘kiki’ and the latter with the sound ‘bouba’ (Ramachadran & Hubbard 2001). However, rather than worrying that my account of match between music and dance may be out of line with a unified explanation of crossmodal correspondence (if there is one), I think examining this special case can shed light on such an explanation, as well as reveal interesting details of its own.

II. SOME ALTERNATIVES

One suggestion as to what the match between music and dance consists in is that both represent the same thing. The suggestion may seem plausible considering how both music and dance can mimic, e.g. a bird; its movements in dance and its song in music. Arguably, music and dance can also represent conventionally, as is done in program music and by using mime in dance. Doubt about this suggestion arises from questioning whether such representational elements constitute part of the music or the dance, or if they merely accompany it. However, the main problem for the suggestion is that the vast majority of musical pieces and dances are not representational, at least not in the sense of being mimetic or representing by convention. Match between music and dance can nevertheless occur for these. Thus, even if some matches may be accounted for by means of representational features, there are also many that remain unaccounted for.
What might be a more general measure of music and dance than representation? A candidate answer is: rhythm. Thus, a second suggestion would be that the match between music and dance consists in the temporal pattern of tones in music matching the temporal pattern of movements in dance. This suggestion seems especially apt for at least some dance forms, e.g. disco dance, where as far as I can tell (due to lack of expertise, I am told) rhythmic match is almost all that matters.

Difficulties concerning rhythm analysis and identification may pose problems for the application of this suggestion, for instance when new music technologies create rhythmic feels that confuse pulse location (see Danielsen 2010). However, the main problem is that there are some aspects of matches between music and dance that it does not capture. If rhythm was all there is to the match between music and dance, we could as well dance to the sound of a metronome's beat, but presumably also disco dancers would find this lacking. Of course, if music's rhythm is not merely understood as a temporal pattern, but as involving, say, the intensity and timbre of sounds, or even non-auditory components like vestibular and touch experiences (see Judge 2019), then a metronome will not capture it all. But it is not straightforward how, if at all, these audible rhythms match rhythms in dance. In any case, even with an inclusive understanding of rhythm there are some dance styles, e.g. classical ballet, where it is important to match other aspects of music than rhythmic ones, such harmony and melody. Some matches thus remain unaccounted for with the present suggestion.

Perhaps part of what is lacking in a narrow focus on rhythm is the emotional aspect of music and dance. That music and dance have a connection to emotion seems clear, although the nature of that connection is debated, especially with regard to music; is it arousal (Matravers 1998), expression (Collingwood 1938), expressiveness (Kivy 1980; Davies 1994), etc.? Bracketing this issue, one might suggest that music and dance match in so far as the emotions ‘connected’ (in some loose sense) with the one match those ‘connected’ with the other. To the extent that emotions inspire action, in the sense that one has an urge to express emotions one has and to react to emotions that are not one’s own, this could explain why we are sometimes motivated to produce dance in response to music. The music has or makes one have a certain emotion, and one expresses it or reacts to it through dance. The suggestion concerning rhythmic match has no such explanatory biproduct. For it is hard to explain why hearing a rhythm motivates the production of a matching one; there are many everyday rhythms around—such as the regular splashing sounds from the washing machine—that one is not normally inclined to match.

2 Some correlations are documented by Burger et al. (2013), who show that percussive sounds tend to be related to head and hand movement.
The suggestion concerning emotion may also extend beyond matches between music and dance. In so far as facial expressions and words also are ‘connected’ to emotion, matches between, e.g. music and lyrics, or between a musician’s expression of emotion and the music they play, can be accounted for as well. However, while such broadening of the suggestion is interesting, the suggestion nevertheless seems too narrow: There is much music and dance that is not expressive of, or in other ways ‘connected’ to, emotion.

However, why we respond with dance to music could also be explained if we add the claim that music has movement (see Davies 1994; Scruton 1997; Carroll & Moore 2011). The idea would be that we respond to music in terms of music’s own language of movement. A fourth suggestion for how music and dance can fit together would thus be: the movement of the music and the movement in the dance match. This suggestion can accommodate rhythmic as well as harmonic and melodic match. For music’s movement is considered due not only to music’s rhythm, but also its melody and harmony. The suggestion can also accommodate emotional aspects of music. As Davies (1994: 230) notes, many theorists ‘locate the basis of [music’s] expressive power in its dynamic character’. In other words, one might think that the deeper reason why music arouses, expresses or is expressive of emotion is that it has movement. I suggest that the movement generating the emotion is what we can match with our dance. In sum, accounting for the match between music and dance in terms of their movement facilitates unifying the rhythmic, harmonic and emotional aspects of this relationship, by explaining these as grounded in a more basic feature common to them all.

There is also independent motivation for the suggestion. One reason to think that music has a movement that can match the visible movement of dance can be gleaned from practices such as hambone, which was developed by American slaves when drumming was banned in 1767. The hambone artist makes music and dance by tapping, stomping and slapping his or her body. Some of the movements made produce no auditory stimulus, e.g. a circular movement of the hand made as part of a series of slaps on one’s knee. But they nevertheless have an impact on the music; e.g. the music acquires a circular character as well. Why is this a reason to think that the movements in music and dance match? Well, the simplest explanation as to why the music acquires a circular character would be that the visual movement is showing a movement in the music, and not that it gives rise to, e.g. an emotion that, in turn, matches a movement in the music. There is a direct match between the movements of music and dance.

Hambone is admittedly a special case, in that the music and the dance come as a unity, produced by one and the same person. However, there is a continuum of cases that bear resemblance to the hambone with respect

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3 See also Sievers et al. (2012) for a way of empirically substantiating this idea.
to the relationship between music’s movement and visible movement. In the performance of a violin solo, the violinist may make a nod with his or her head at the closing of a phrase. Like the hambone artist’s hand movement, the nod can make the audience appreciate how the music’s movement comes to a halt, e.g. softly or insistently, depending on how the nod is made. Similar effects can occur also when someone other than the musician makes a movement to the music. A conductor may, much like the hambone artist, make circular hand movements, and an audience member watching this may thereby appreciate a circular movement in the music which had previously escaped their notice. When dancers move to music, essentially the same thing can happen. For instance, watching a dancer e.g. elongate their arm may make one appreciate the elegance in the development of a violinist’s tone. In general, the suggestion is that matches between music and dance follow on the continuum of cases just sketched. The dancer, as well as conductors and musicians if their movements are evaluated visually, can make a movement that also the music has.

The suggestion is still much in need of clarification. For instance, it is appropriate to wonder in what sense music can have the circular character I claimed to be matched by the conductor’s or the hambone artist’s hand. Surely not in the sense that the music, like the hand, is traversing a closed curve in physical space. Much in line with the current suggestion, Carroll and Moore (2011) think dancers can ‘mimic’, ‘translate’ or ‘incarnate’ feelings of movement in the music, feelings the audience can visually access due to a mirroring reflex. Jaques-Dalcroze (1921) similarly hold that dance can express in bodily movement what is heard in music—an idea which underlies the Dalcroze method for improving musical skills by moving to music. But what is it about the music’s movement can be ‘mimicked’ or expressed in dance? Surely not the way the movement sounds at least. What else is there to it? The general worry is that music’s and dance’s movement may differ so much that, in effect, the word ‘movement’ is simply used for two different things. If so, it is not clear that any common measure with respect to which music and dance match has been identified. Instead of an answer to our initial question, we would simply have a new way of asking it, i.e., ‘what it is about music’s and dance’s movements that match?’. If the fourth suggestion is to work, we thus need to find a way to parse the movement in music and dance such that they become comparable along a common axis.

I look for ways of doing this in the remainder of the paper. A presupposition of the discussion is that music moves. This is a fairly uncontroversial assumption. The controversy concerns what talk of music’s movements amounts to. Does it mean that the concept of movement plays a metaphorical role in our experience of music (Scruton 1997), that it applies literally (Davies 1994), or that the experience of movement is imaginative (Kania 2015)? Or can perhaps the concept of movement be eliminated from discourse about music (Budd 1985)? Not all of the descriptions of music’s movement discussed below are
necessarily compatible with all of these views. But the question as to whether they are is orthogonal to my concern. I look for descriptions of music’s and dance’s movement that identify a common measure explaining their match. Whether music’s movement, thus described, can be understood, e.g. literally does not alter the fact that the description figures in an explanation of the match.

III. DESCRIPTIONS OF MOVEMENT IN DANCE AND MUSIC

What descriptions can there be of the movement we hear when listening to music and see when watching dance? I will outline three possibilities (Sections III.1, III.2 and III.3), where only the final one puts music’s and dance’s movement on a par, such that matches can successfully be accounted for by means of a common measure. Nevertheless, it is worth considering the first two because they are quite natural descriptions and because they provide us with certain constraints on the description that, I will argue, works.

III.1. Sounds and human bodies

A first possibility is to not give music and dance any special treatment compared to other things we see and hear. Then one could seek to describe the movement in them in terms of the visual and audible stimuli that are typically before us when hearing music and watching dance, namely sounds and human bodies. In the case of music, different theories of sound will yield different answers to whether and how sounds move. For instance, if sounds are pressure waves in a medium, they move from location A to B. If sounds are events with a position in space (O’Callaghan 2009), they can move in space, as when we hear a distant train and the sound event moves with it. Thus, it would at least be possible to claim that music’s movement is just the movement of sound (whatever that is).

In the case of dance, it is clearly an available position that the movement in dance is the movement of dancers’ bodies and that this movement is in physical space. Conceiving of dance this concretely and holding that dancers’ bodies are part of what we appreciate when watching dance is not unprecedented. For instance, this seemed to be an assumption of the panel on perceiving the athletic body held at American Society of Aesthetics Annual Conference in Toronto in 2018. The athletic body seemed to be considered part of what we aesthetically appreciate when watching dance. This concrete view of dance is also something McFee (1992), who was a participant in the panel, advocates in writing when he characterises dance as movement sequences that can be described and explained as actions.
However, such descriptions of music’s and dance’s movement are inadequate if our goal is to describe these movements such that we can identify what it is about music and dance that can match. The problem is not necessarily that we lack a common parameter for comparison. For the movement of both sound and dancers’ bodies can be measured with regard to spatial location; both sounds and a dancer’s body can move from location A to B, e.g. from the cellist to an audience member (although at considerably different speeds). But even if the movements should happen to correspond this way in a match, that is clearly not what we appreciate about it. Indeed, the correspondence in displacement would probably go unnoticed.

In order to account for matches, we thus need the description of music’s and dance’s movement to coincide with what we appreciate about the match. This, one might think, does not prevent explaining matches in terms of space, albeit not physical space. For, arguably, there is something spatial about both music and dance that we appreciate. Scruton (1997) argues that we, in music, appreciate movement in a virtual space, extended by tonal dimensions. Langer (1953: 169–207) thinks that, in dance, we appreciate virtual powers that are apparent in a non-actual and immaterialistic space. The problem is that it is unclear how these spaces in music and dance relate (if they do), and hence unclear how they can match.

Thus, we are again led back to the question: how to describe the movements in music and dance such that it becomes clear what matches about them? Once the question is answered, it may well be that this description can be translated into the terminology of a theory of sound or of human action. Indeed, it is an interesting question whether there can be a structural analogy of music’s movement rendered in the terminology of a theory of sound.4 In the next section, I investigate whether a description that focuses on the way the music and dance is produced, rather than just how they sound and look in abstraction from production, is a better starting point for an explanation of matches.

III.2. Musicians’ and dancers’ movements

In Section II, I mentioned a circular movement as an example of a movement that can both be heard in the music and made by a hambone artist, a conductor or a dancer. Generalising from this example, one might think that a common measure to music and dance is to be found in the movements made by dancers and musicians when producing them as perceptible phenomena. The idea would be that the movements the musicians and dancers make become perceptible to audiences. This idea has a sibling in discussions of speech.

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4 In so far as music’s movement is a sonic phenomenon that theory of sound should be able to account for, one might think that the possibility of providing this translation constitutes a desideratum on such a theory.
perception. According to the motor theory of speech perception, perceiving speech is perceiving vocal tract gestures, and the motor system is recruited for this. Thus, the commonality with the present proposal is that perceiving a given phenomenon—i.e., speech, music or dance—is perceiving what that humans do to produce it—i.e., their movements or gestures.

Carroll and Moore (2011) put forward a view like this about dance. They claim that audiences through vision access certain feelings of movement that dancers have when dancing. Much like the motor theory of speech perception has it that the motor system, which is used in speech production, is recruited also for perception of speech, they hold that dance activates mirror reflexes in audiences ‘that correlate to the movements observed in the pertinent dance’ (2011: 334). They further claim that the relevant feelings are feelings of movement in the music. In particular, dancers ‘feel prompted in their musculature to mimic aspects of the perceived musical movement’ (2011: 338). Thus, they hold that the movement of the music is made visible through dance. What remains obscure in Carroll and Moore’s view, I think, is what justifies calling the dancer’s muscle contractions etc. a ‘mimicking’ of the music’s movement.

Interestingly, the obscurity would vanish if they held a view of music’s movement analogous to their view of dance. Then they could say that the movement we hear in music is, e.g. the blowing or the striking of the instrument. Here is Davies’ nice example: ‘An aggressive bow-down at the heel of the bow wrenches the string of a violin into motion and the resulting note sounds as if it is beaten rather than caressed into existence’ (Davies 1994: 233). Combining these ideas about music and dance, one could claim that a dancer makes visible an aggressive beat by, simply, making as if aggressively beating something. Indeed, the most obvious way of matching the music with dance would then be to imitate, e.g. the violinist or the guitar player in response to their solos.

This is just what some people do when asked to improvise dance to music. Personally, I am not sure such mimicking of the musician should rightly be called dance and not simply imitation; at least, I find it very unimaginative. Nevertheless, it could be that imitation of the musician also underlies more imaginative matches, where the two matching things seem to lack a common measure.

Although I think this idea is on the right track, it fails in its current form. I have been characterising the movement of dancers and musicians in ordinary action terms like ‘beating’ and ‘striking’. But, in many cases, matches are hard to make sense of in this vocabulary. One would be cases where the music’s movement continues at times where the musician does not move. A fascinating

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5 See Galantucci et al. (2006) for a psychology review and Mole (2009) for philosophical scrutiny of the theory.

6 This is not to deny that imitation of the musician can be informative of how listeners interpret and perceive the music, as is studied by Godøy, Haga and Jensenius (2006).
example is Chopin’s *Piano Concerto No. 1 in E minor*, second movement. In the first variation of the main solo theme for the piano there is a *fermata*, a pause where no key is struck and only the few previous tones sound because of the use of the sustain pedal. Nevertheless, there is an incredibly free upwards movement, which is ‘caught’ and continues when the next key is struck. Another example would be syncopated rhythms, where no movement is made by the musician on, say, the first beat of the pulse of every bar and yet we feel that beat clearly. In such cases, a dancer cannot be matching the movements a musician makes in order to produce sound on their instrument, since the musicians are not making any movements at all.7

Another case is when the music’s movement seems to differ significantly from the movements that musicians make. For instance, a pianist’s hand and finger movements may have the same character when playing an agitated and restless piece as when playing a cheerful and bright piece. But a dancer would make different movements to match each of these. Similarly, we may hear the movement of an orchestral piece climbing to a climax. Ballet choreographers might match this by letting the dancer perform a big jump, e.g. a *grand jetée*, at the moment of the peak. But no visible movement of the musicians, either taken individually or as a group, reveals to us that a climax is being built up to or that we have reached it. They are just making, say, repetitive arm movements. So, it would seem that the *grand jetée* is not mimicking any of the movements that the musicians are making.

Some of these cases can be dealt with if we do not constrain our focus to movements that play a direct role in the musicians’ production of sound. In a study of clarinettists’ ancillary gestures, Wanderly *et al.* (2005) found that ‘the performers’ gestures and postures continued into the silence (2005: 111) at transitions between musical phrases. If a similar tendency exists for pianists, the movement in the *fermata* in the Chopin example above could be related, not to the striking of any piano key, but to the pianist’s continued hand movement after the strike of the key. Similarly, the example concerning syncopated rhythms could be explained by the musician’s ancillary foot or hand movement indicating the pulse.

However, in so far as the fermata and the pulse are heard even when we do not watch the performance of music, it would seem that no visible gestures, whether sound-producing or ancillary, can explain the music’s match with a dancer’s movements in such settings.8 But an account of match in terms of the movements used to produce music and dance need not be constrained to visible movements. For some movements are audible. This is especially clear

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7 Neither can this kind of movement through pauses be traced back to the sound signal, as per the suggestion in Section III.1. Thus, the mentioned examples can also be used to argue against the view that the movement of music is the movement of sound.

8 However, the visible movements could be so ingrained in our experience of music that they accompany even our experience of a recording.
if we do not constrain ourselves to ordinary action vocabulary and instead include specialist music vocabulary to describe them. For instance, terms like ‘fermata’ and ‘sostenuto’ can be used to designate what a musician does when there is a pause (as well as the pause itself). This takes care of at least part of the problem of music’s movement when the musician makes no visible movement or is not seen at all. The problem of unifying the musicians’ movements in orchestral music could be taken care of by claiming that terms like ‘crescendo’ describe their collective audible movement up to a climax. We could then characterise matches as cases where, say, the end of the crescendo aligns with the grand jetée. This helps to split up the musicians’ and dancers’ movements into chunks aligning temporally. But it also reintroduces a mystery we are familiar with by now: What is it about, e.g. the end of the audible crescendo that matches the visible grand jetée?

This question is not asking for any necessary connection. Take the movements in the first 20 seconds of the Adagio from Giselle described in standard ballet vocabulary: développé a la seconde, tendu derrière en plié, tour de promenade en attitude derrière, relevé. Other standardised movements could match the same music equally well, e.g. a grand ronde de jambe en l’air replacing the développé a la seconde. And other pieces of music could probably match the same sequence of movements equally well. What is essential in order to preserve a match through such replacements is that the manner of execution is preserved. This observation suggests that ‘manner of execution’ may be the very feature in virtue of which a match obtains. This allows us to acknowledge this section’s proposal as being on the right track, in so far as we maintain that the movements made when producing music and dance as perceptible phenomena are key to explaining matches. But we avoid claiming that imitation of the musicians’ visible movements is key. Instead, the quality in execution of a movement is. In the next section, I suggest that such qualities can be both heard in music and seen in dance.

**III.3. Quality in execution**

Dancers and musicians share a similar sensitivity to how a movement is executed. Sensitivity to a staccato movement is on the coarse-grained end of the spectrum. More fine-grained nuances in execution may for a musician concern how a tone is started, how it can ‘grow’ and how it is ended. One may practice ending a tone as if it is fading away, cut short, put softly aside, etc. Similarly, dancers may practice how to land from a jump softly, how to lift one’s arm as if it was a feather, or how to end a leg movement with accent, as if one was a robot or through affecting a roll in the body. Part of the pedagogical challenge is to find concepts and exercises that make the student both perceive the fine-grained differences in movement and understand how to make them; hence my struggle to describe them here! Moreover, sensitivity to such things
as how a tone or a jump is ended may in some cases require an ability to perceive differences over a very short period of time, an extreme version of which would be the temporal resolution of a fly’s vision. Such temporal acuity also enables one to perceive and control timing nuances, such as what creates swing in jazz music.

My suggestion is that this sensitivity to execution which both musicians and dancers have helps us identify a common core to the movement in each art form. There are some aspects of, e.g. what makes the landing of a jump soft that musicians are clueless about, for instance how one uses one’s toes and feet to control the landing. What a musician needs to do in order to produce a soft end to a tone is something quite different and will vary with the instrument played. But I think the quality one strives to produce in these various ways is the same and can be recognized across its instantiation on various instruments, including a dancer’s ‘instrument’, i.e., the body. For the quality is primary in the sense that it is the goal that guides what a musician or dancer has to do in order to produce it, and in the sense that it is what musicians and dancers strive to make visible or audible. For instance, it is because one wants to make the landing of a jump look soft that the particular technique of rolling through one’s feet is used. Similarly, musicians do not aim to make the technique visible for its own sake—except possibly in special cases like a music competition. The technique is a means to make audible, e.g. softness, swing or bounce. In general, I think that while one movement is visually or auditorily displayed, another movement of a quite different kind is perceived in addition. This does not mean that the technique is merely instrumental to making, e.g. the landing of a jump soft. Rather, the idea is that there is a two-foldness to what we perceive. Something analogous occurs in Gunnar Johansson’s experiments in the early 1970s. In these, a human’s movement is perceived by perceiving displays of points in movement. Similarly, I think the soft quality of a jump is perceived by perceiving a certain toe action technique.

That the qualities in execution are instantiated and perceived in various techniques in music and dance is important for two reasons. One is that it clarifies how the qualities in question are not just features of the manner of production of the dance or the music, but also perceived in the dance and the music itself. This means that we can account for how music and dance can match, as opposed to just musicians’ and dancers’ activities.

Another and related reason is that it lets us account for a wider range of matches than what does the suggestion in the previous section, according to

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9 See Johnson & Shiffrar (2012) for a comprehensive volume on the topic and https://www.youtube.com/watch?v=1Fj1CPqSYLU for Maas and Johansson’s original videos.

10 This clarifies why I think Carroll & Moore (2011) are wrong when they claim that spectators’ motor responses to the dancers’ muscle contractions explain matches with music. What dancers aim to make visible is not the muscle contractions or the ordinary actions, but rather the quality these muscle contractions instantiate.
which the musicians’ and dancers’ movements themselves, and not the qualities thereof, match. In particular, I think we can accommodate some matches that, on the face of it, seem to be due to the nature of the thing that moves. For instance: Why does a small dancer match a musical piece played by a small flute? On the current account, this can be explained in terms of the quality of movement that a small dancer and a small flute instantiate. The small flute has a particular timbre, which means that, say, the flutist’s diaphragm and cheek movements made to create an attack at the beginning of a tone will acquire a particular quality, differing significantly from the quality those movements would acquire if made on a tuba (provided they produce any sound at all). This quality is not impossible for a big and heavy human body to instantiate, but it is more difficult—and may also look unnatural and comical. Conversely, there are qualities special to big dancers, such as the west coast swing dancer John Lindo, whose swing qualities a smaller dancer would struggle to copy. In general, the audible or visible nature in which a movement is instantiated often influences the quality that movement has. This is the underlying mechanism for many matches on the present account.

A similar mechanism explains matches due to music’s harmonic character. On the face of it, harmony may seem like a feature of music that is not reflected in a musician’s movement. But much like the timbre of an instrument, I think harmonies influence the quality that we hear a musician’s movement to have. Suppose that a piece played in a major key sounds cheerful and is matched by a dancer’s energetic movements. The same piece played in the same way in a minor key may sound cunning or devilish and be matched by more convoluted movements. On the present account, this contrast can be explained as a match between qualities of the musician’s and the dancer’s movement. Although the musician is making exactly the same muscle contractions in both cases, they are instantiated in different audible natures, i.e., a major versus a minor key. This makes the musician’s movement have different audible qualities in each case.

Many of the examples of qualities in execution mentioned so far are very fine-grained both qualitatively and temporally, and it requires training to perceive them. But matches between music and dance are widely recognized (e.g. Sievers et al. 2012), so the account should also accommodate qualities recognized by the untrained eye and ear. And it does. Although the qualities in execution common to music and dance are very fine-grained, they together add up to larger movements. Untrained members of an audience can recognize these larger movements. For instance, one can recognize a larger movement as ‘elegant’ or as having ‘swing’ without hearing or seeing the micro-movements dancers and musicians execute in order to give them this overall quality.11

11 Jaques-Dalcroze (1921: 293–4) makes a point to the same effect, when remarking that an ‘untutored spectator’ only notices that an arm gesture is graceful, but not ‘the parallel attitudes of the head, the other arm, legs and torso’ etc. that makes it so.
Similarly, one can appreciate the characteristic quality of a complex of movements of a whole orchestra resulting from Stravinsky’s particular instrumentation, without being able to analyse how the instruments and their relationship contribute to this quality. Thus, the basis for the matches between music and dance that also an untrained audience can recognize are the fine-grained execution qualities that dancers and musicians make perceptible, although the audience may not be able to tell.

The idea that characteristics of larger movements have their basis in fine-grained execution details expands the kinds of matches that my suggestion can account for even further. The focus thus far has mainly been very local matches, e.g. how the end of an individual tone may match the end of a single standardised move. Together many such local matches can add up to a system, which we call ‘style’. Thus, we may also be able to explain overall stylistic matches, such as the crispiness characteristic of disco music and dance, or the floating, light and effortless quality of music and dance in the classical ballet tradition.

My account faces some challenges, however. The key idea is to explain matches in terms of qualities that can be the same for music and dance, although the physical and perceptible movements in which they are instantiated seem incongruent. This presupposes that music is produced by physical movements having the qualities that we hear in it. Not all music is in fact produced that way. The electronic music to which many dance today is typically produced by pressing buttons, turning knobs and using samples of recorded sounds. Often the quality in the musician’s execution of a movement, e.g. the way the button is pressed, has no effect on the quality of the music’s movement. In so far as my account cannot accommodate dance’s matches with electronic music, one might think that an account which avoids relying on this presupposition would be favourable. Several general accounts of crossmodal correspondence that could be applied to matches between music and dance would fit this bill. For instance, applying Green’s (2007) account, one could claim that both music and dance can be characterised as intense/mild, pleasant/unpleasant and dynamic/static, and explain matches between them as cases where the music and the dance place similarly along these dimensions. However, I think there is reason to favour my account.

First, it is not clear that the case of electronic music is detrimental to my account. Even music that is not produced by means of physical movements having the qualities we hear in it may be listened to as such. My sense is that this is the case for electronic music as we listen to it today (perhaps in the future we will no longer hear music this way, if we have listened to much computer generated music). Although the attack at the start of the tone I hear is produced by adjusting the amplitudes of a waveform on a computer screen, Ilisten to it as if it was produced by an attack movement of some kind, for instance a
forceful contraction in a singer’s diaphragm. If this is right, dance’s matches with electronically produced music can be accommodated by my account, not by reference to the movements actually made when making it, but by reference to the movements that one in virtue of one’s listening takes it to be produced by.

Secondly, my account need not conflict with general accounts of crossmodal correspondence like that offered by Green (2007). But with regard to explaining matches between music and dance, I think it goes further. Both an application of Green’s account and my account explain matches in terms of audible and visible features that music and dance share. But what is it about the music and the dance that is, as Green might say, intense or dynamic? This is the kind of question I have sought to answer in this third section of the paper. A claim that music and dance share a common feature—movement or intensity, say—is subject to the kind of worry outlined at the end of Section II, i.e., that a term like ‘movement’ is used about different things in music and dance. In response to this, I have explained that movement, or, more specifically, quality in execution of a movement, is instantiated in different ways in dance and music, but that it is nevertheless the same feature that gets instantiated visually and audibly. When musicians practice how to make a tone ‘grow’ and dancers practice how to let an extension of an arm ‘grow’, there is a quality of the audible or visible production of this that is common and that is made perceivable. Perhaps this ‘kind’ of answer could be provided without presupposing that dance and music is heard as produced by means of physical movements. But given the explanatory payoff that my account has, I think this presupposition is justified. It is also an advantage of my account that it avoids any commitment to the idea, which seems to be doing some work in accounts like Green’s (2007), that all matches must be explained by appeal to the same set of qualitative dimensions.

IV. CONCLUSION

Does the outlined account of match between music and dance capture everything there is to the phenomenon? It would be extraordinary if it did.

12 This view contrasts with Scruton’s (1997) view that we have an ‘acousmatic’ experience of sound when hearing it as music, where we detach it from the circumstances of its production.

13 By claiming that one ‘takes’ music to be produced by certain movements, I mean that one has a crossmodal expectation, similarly to how hearing a car crash brings with it an expectation as to how the crash sound was physically realised. See Aasen (2016: 671–3) for discussion.

14 Green works with three features, but he notes that his account does not depend on these being the right or only ones (Green 2007: 179 note 6).
Even the discarded accounts of music’s and dance’s movement mentioned in Section III, as well as the discarded descriptions of movement in section two, probably play a role in certain cases. Some matches may revolve around merely rhythmic match. And imitation of the musician’s action described in ordinary action vocabulary seems key sometimes. Moreover, there are other ways to match than the ones I have mentioned and thought of. On an overall level, structural match between an A-B-A-B structure (e.g. verse and refrain) in the music and an analogous structure in the dance can be prevalent. One reason for not focussing on this kind of match is that it is quite straightforward to account for, in so far as we need only observe the repetition of the same two passages. We need not describe how the A-passage in the music matches the A-passage in the dance. If we try to do that, I think the account I have sketched here is a contender for being an all-inclusive account that cuts to the heart of a difficult issue, namely the issue of what is the common measure in terms of which we can explain matches between music and dance.

It is worth observing, however, that the phenomenon of match between music and dance can be approached in a way that differs from mine. For some styles, such as African drumming or salsa, one may find it unnatural to divorce the music and the dance (Fitch 2016). It has also been argued that visible elements of a music performance can be part of the music’s aesthetic content, if there is a reasonable interpretation according to which they are (Kivy 1995: 99–107). Visual elements of the dance may be so too, for the same reason—perhaps especially if created together, as in Balanchine and Stravinsky’s collaborations. Thus, one may approach explanation of match between music and dance, not as an investigation of a relation between the two, but rather as a matter of them constituting a unity that is incomplete if either is missing. Then our question would be how music and dance are mutually dependent on one another in cases where they match. The question in this paper, by contrast, has been how music and dance can match with respect to a common measure for both.

The common measure is movement, I have argued, in particular the quality of the movement dancers and musicians make when producing music and dance as perceptible manifestations. These are qualities that guide dancers and musicians in their practice and that they aim to make visible or audible to the audience. While there is a difference between how these qualities are produced in dance and music (as well as in various dance techniques and for various musical instruments), we can appreciate that it is nevertheless the same qualities that are instantiated once we abstract from the medium in which it is instantiated. In addition to explaining what it is about dance and music that can match, this explains why there is a puzzle to be accounted for to begin with: There is an apparent lack of a common measure because of the
different ways that the execution qualities can be instantiated in music and dance, respectively.15

REFERENCES


15 I am grateful for the comments and questions about the material for this paper from the audiences at the Oxford Aesthetics Seminar in February 2020, the American Society of Aesthetics Annual Conference in 2018, the NTNU Science Colloquium in 2018, and the Nordic Society of Aesthetics Annual Conference in 2017. This work has also improved greatly due to discussions with students and colleagues at the University of Oslo, both in philosophy and musicology. Special thanks to Jenny Judge, Keith Wilson, Nick Wiltsher, and two anonymous referees for this journal for insightful comments on earlier drafts. I would also like to acknowledge financial support from the Norwegian Research Council, project number 275456.


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