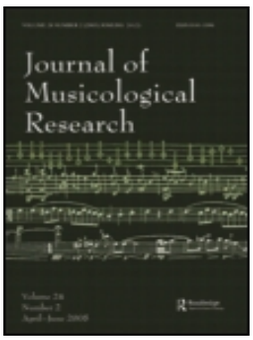

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Lawrence M. Zbikowski

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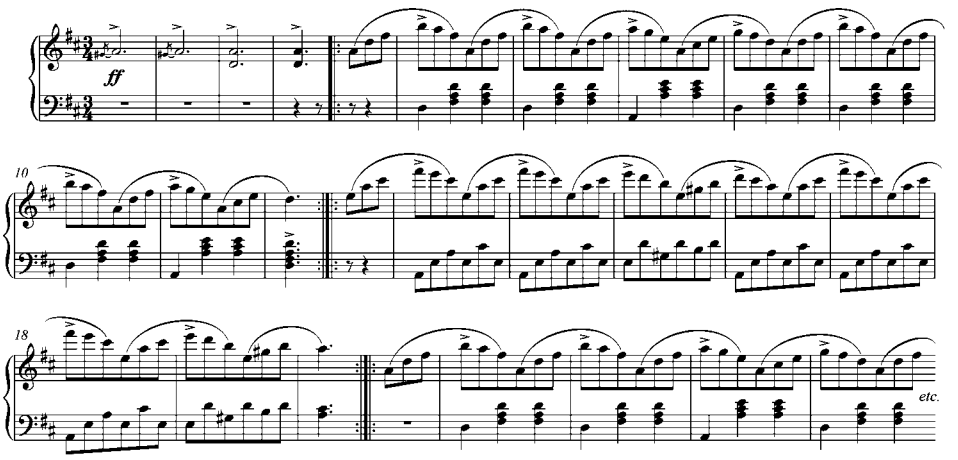
Music, Dance, and Meaning in the Early Nineteenth Century

LAWRENCE M. ZBIKOWSKI
University of Chicago

In early-nineteenth-century Europe, dance was an essential part of celebration and recreation in both city and country and of the rich social and cultural context within which music was performed. As has often been noted, however, the cultural practices of early-nineteenth-century Europe underwent a number of profound changes, and the practices surrounding music and dance were no exception. While in the years before 1800, a clear distinction existed between dance music for a privileged few and dance music for everyone else, circumstances began to change, and by the 1820s the line between dance for the few and dance for the many had blurred, or, in many cases—and the waltz certainly represented one of them—all but disappeared. As a consequence of this change, the meaning to which dance music gave rise in the early nineteenth century also changed: Dance music might be for a literal dance or it might be for a quasi-dramatic evocation of the dance, but its role as a way to structure musical discourse—that is, the resource it offered as a musical topic—became decidedly attenuated. Recent research in cognitive science can help explain why dance topics in the eighteenth century were so effective, but to discover why the meaning of dance music in general, and dance topics in particular, changed so significantly in the early nineteenth century, we must look elsewhere. In the musical universe consequent to this change, there was music to accompany the whirl and press of ballroom dance, music that called forth memories of the whirl and press of ballroom dance, and little else in between.

—Dedicated to the memory of Wendy Allanbrook

Among the hundreds—if not thousands—of waltzes written during the early nineteenth century, one of the most remarkable is the one inserted into the first act of Carl Maria von Weber's *Der Freischütz*, the score for which



EXAMPLE 1 Carl Maria von Weber, *Der Freischütz*, Walzer from Act 1, Scene 3, arranged for piano, mm. 1–24.

is given in Example 1. The waltz begins as does many of the period, with strong, on-beat strokes from the violins setting the basic temporal framework for the dance. This briefest of introductions is followed by the waltz proper, the melody of which is set out in repeating four-measure units, the harmonies for which involve only tonic and dominant. For the second section of the waltz, beginning in the second half of measure 12, Weber simply transposed the melody of the first section up a fifth, moving it and its harmonies into the key of the dominant. Then, in the second half of measure 20, the first section returns, and it is with this music that the waltz eventually concludes.

As a piece of music, Weber's waltz is remarkable not only for its evocation of a particular notion of *das deutsche Volk*,[1] but also for the way it captures the essential features of what became arguably the most prominent social dance of the nineteenth century. Its success in this regard led A. B. Marx to use the *Freischütz* waltz as the signature example of his section on composing dance music in the first edition of his *Die Lehre von der musikalischen Komposition*. Preparatory to his discussion of the example, Marx describes the basic steps of the dance:

> The waltz has two movements: First each pair of dancers turns itself in a circle around its own center; second the pair progresses with these continuous turns in a greater circumference until it reaches its starting

[1] Richard Taruskin, "A Suggestive Detail in Weber's *Freischütz*," *Current Musicology* 75 (Spring 2003), 165–68.

> place and the circle is closed. Each little circle is performed in two-times-three steps and is, as it were, the motive of the dance.[2]

With this image of swirling movement and musical accompaniment in place, Marx then introduces his example:

> This well-known waltz from Weber's *Freischütz* . . . shows us a genuine waltz motive. [In such pieces we see] auxiliary tones placed before the chord tones in the melody in order to set the first step in relief; every other melodic, harmonic, and rhythmic sharpening—the assistance of a *forzato*, an accented first note in the bass, and so forth—serves the same purpose. To this fundamental content is joined as simple an accompaniment as possible, which marks the beat.[3]

For Marx, Weber's composition embodied everything that was essential to the waltz. It did so, however, at a price: Beholden as it was to the demands of a dramatic work, Weber's waltz lacked the delicately balanced symmetry proper to the dance. Marx comments:

> Indeed, because this sort of thing can't be felt in the haste of the waltz from *Der Freischütz*, the piece appears more common, as was the composer's intent. For he wanted to portray an uncultivated group giving itself to pure pleasure in waltzing, recklessly; thus he had nothing sound out except the pure waltz figure. More various and more noble feelings of social, tender, or aroused desire can appear in the motion of the dance and bestow on the music manifold lovely melodies.[4]

In Marx's view, Weber's waltz was a caricature of the rustic form of the dance, one that revealed its basic impulse but that fell far short of its highest expression.

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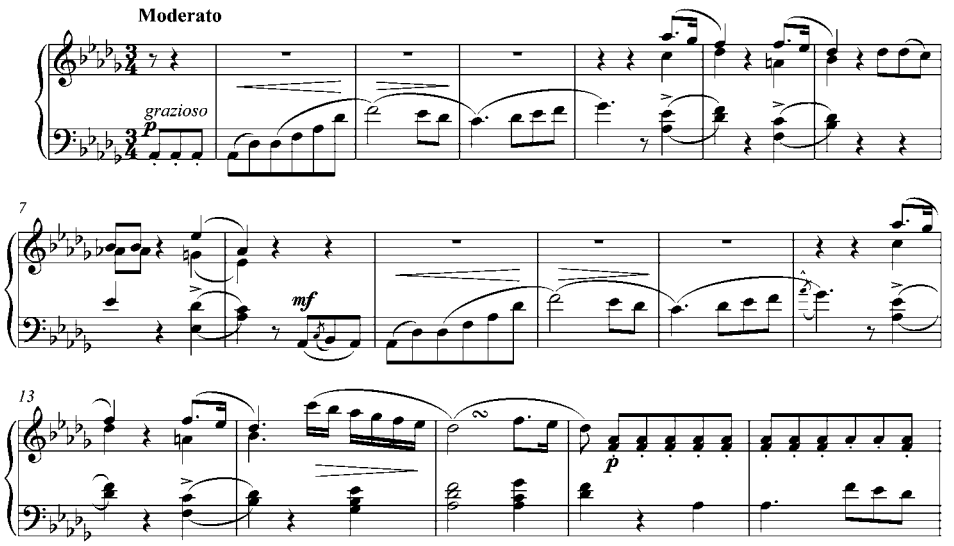
[2] Adolf Bernhard Marx, *Die Lehre von der musikalischen Komposition, praktisch theoretisch* (Leipzig: Breitkopf & Härtel, 1837–38), vol. 2, 55. "Der Walzer hat zweierlei Bewegungen: erstens dreht sich jedes Paar der Tanzenden im Kreise um seinen eignen Mittelpunkt; zweitens bewegt es sich mit solchen fortgesetzten Wendungen in einer grössern Kreislinie fort, bis es wieder an seinen Ort gelangt und der Kreis geschlossen ist. Jene kleiner Kreiswendung wird in zweimal drei Schritten ausgeführt und ist gleichsam das Motiv des Tanzes." Translations are mine unless otherwise indicated.

[3] Marx, *Die Lehre von der Musikalischen Komposition*, vol. 2, 56. "Jener allbekannte Walzer aus Webers Freischützen . . . zeigt uns ein solches ächtes Walzermotive. . . . [Abgesehen hiervon sehen wir in obigen Sätzen] Hülfstöne in der Melodie den blossen Akkordtönen vorgesetz, um den Antritt hervorzuheben; jede andre melodische, harmonische, rhythmische Schärfung, auch allenfalls die Aushülfe eines *forzato*, eines vorschlagenden Basses u.s.w. dient zu gleichem Zwecke."

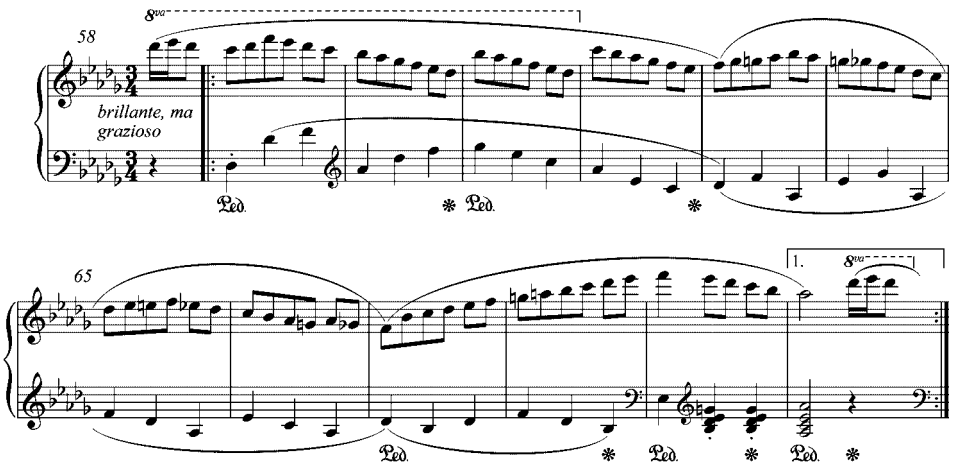
[4] Marx, *Die Lehre von der Musikalischen Komposition*, vol. 2, 56. "Eben, weil dergleichen in der Hast jenes Freischützwalzers nicht fühlbarer werden, erscheint er gemeiner, und zwar in richtiger Absicht des Komponisten, der hier eine ungebildete Menge sich der blossen Walzlust rücksichtlos hingeben, und daher nichts als die rohe Walzfigure erklingen lässt. Mannigfaltigere und edlere Empfindungen geselliger, zärtlicher oder aufgeregterer Lust können sich zu der Tanzbewegung einfinden under der Musik mannigfache, anmuthigere Kantilene verleihen."

Weber clearly knew how to write a waltz to which one could dance. But Weber also knew how to write a waltz that was *not* intended for dancing, as shown by his 1819 *Aufforderung zum Tanz*. Written around the same time that he was laying the compositional groundwork for *Der Freischütz*, the *Aufforderung zum Tanz* was conceived of as a musical evocation of a romantic encounter played out on a ballroom floor. Make no mistake, large sections of this composition, excerpted from the whole, make for perfectly serviceable dance music.[5] Nonetheless, the composition is marked as a work for listening rather than dancing. Take, for instance, the introduction, given in Example 2. In place of music that calls the dancers to order—either through a march or with the rhythmic skeletons of the waltz motive that marked the beginning of the *Freischütz* waltz—we have a tentative beginning made up of disparate fragments that only gradually coalesce into anything like Marx's waltz motive. Weber's intent here, as supported by the account of the opening he later gave to his wife, is to suggest through musical materials a social encounter that culminates in waltzing: A gentleman makes an approach to a lady on the dance floor (mm. 1–5) and is given a less than encouraging reply (mm. 5–9); he presses his claim further



EXAMPLE 2 Carl Maria von Weber, *Aufforderung zum Tanz*, Op. 65, mm. 1–17.

[5] Joseph Lanner took advantage of this potential by using the opening waltz of Weber's *Aufforderung zum Tanz* (mm. 35–58) and a contrasting section (mm. 95–126) as the basis for the first waltz and trio of his op. 7 set of waltzes, published in 1827. Joseph Lanner, *Sämtliche Werke für Klavier* (New York: Broude Bros., 1973), vol. 1, 2–3.



EXAMPLE 3 Weber, *Aufforderung zum Tanz*, mm. 58–70 (virtuoso passage).

(mm. 9–13), and the lady accepts his proposal (mm. 13–16), and so on.[6] There are, however, other signs that Weber's composition is meant to refer to, rather than to accompany, the dance: His tempo indication for the waltzes that follow the introduction is allegro vivace, rather quick for the time, and at the start of the second main section—which would correspond to the second dance in a chain of waltzes, and which is shown in Example 3—he thoroughly obscures the waltz motive with sweeping virtuosic figures.[7] Through both the treatment and organization of his musical materials, Weber makes clear that he wants not to set the scene for waltzing but to enable a remembrance and imagining of waltzing as a crucial aspect of a signal social encounter.[8]

Both of these compositions bear witness to the lively dance culture of early-nineteenth-century Europe, one that in many respects was a continuation of that of the seventeenth and eighteenth centuries. During this period, dance was an essential part of celebration and recreation in both city and country, and of the rich social and cultural context within which music was performed. As has often been noted, however, the cultural practices of

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6 Frederick Niecks, *Programme Music in the Last Four Centuries: A Contribution to the History of Musical Expression* (London: Novello and Company, 1907), 138.

7 Indeed, it is just this section that Lanner leaves out in his adaptation of Weber's music for the waltz and trio of his op. 7 waltzes.

8 In his biography of his father, Weber's son described the *Aufforderung zum Tanz* as a "Singspiel ohne Worte auf dem Clavier" ("Musical play without words for the piano") (Max Maria von Weber, *Carl Maria von Weber: Ein Lebensbild* [Leipzig: E. Keil, 1864–66], vol. 2, 204). For an exploration of this idea and a consideration of the place of the *Aufforderung* in Weber's oeuvre, see Matthias S. Viertel, *Die Instrumentalmusik Carl Maria von Webers: Ästhetische Voraussetzungen und struktureller Befund*, Europäische Hochschulschriften, Reihe XXXVI, Bd. 20 (Frankfurt am Main: Peter Lang, 1986), 428–57.

early-nineteenth-century Europe underwent a number of profound changes, some surprisingly rapid, and the practices surrounding music and dance were no exception. In the years before 1800 there was more often than not a clear distinction between dance music that was for a privileged few and dance music that was for everyone else: The former was typified by complex dances that required careful instruction, took a significant amount of time to learn, and were often set to specially composed music; the latter was based on a few simple steps that correlated to equally simple music.[9] Beginning in the late eighteenth century, however, circumstances began to change, and by the time of Weber's compositions, the line between dance for the few and dance for the many had blurred or, in many cases—and the waltz certainly represented one of them—all but disappeared.

As a consequence of this change, the meaning to which dance music gave rise in the early nineteenth century also changed: Dance music might be for a literal dance (as in the case of the *Freischütz* waltz) or it might be for a quasi-dramatic evocation of the dance (as in the case of the *Aufforderung zum Tanz*), but its role as a way to structure musical discourse—that is, the resource it offered as a musical topic—became decidedly attenuated.[10]

In what follows, I explore this change in more detail, beginning with dance topics of the eighteenth century and then offering an account, based on recent research in cognitive science, for why such topics were as effective as they proved to be. I then return to the early nineteenth century to consider why the meaning of dance music in general, and dance topics in particular, changed so significantly. In the musical universe consequent to this change, there was music to accompany the whirl and press of ballroom dance, music that called forth memories of the whirl and press of ballroom dance, and little else in between.

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[9] One prominent exception was the contredanse, which, rather than being based around couples, was performed with paired lines of dancers in the round, or in square formations, and which involved relatively simple steps. See Patri J. Pugliese, "Country Dance," in *The International Encyclopedia of Dance: A Project of Dance Perspectives Foundation, Inc.*, ed. Selma Jeanne Cohen (New York: Oxford University Press, 1998), vol. 2, 254–58. As Richard Leppert has noted, however, the contredanse of the seventeenth and eighteenth centuries did little to break down class distinctions, since those who performed the dance were invariably all of the same status; see Richard Leppert, *Music and Image: Domesticity, Ideology and Socio-Cultural Formation in Eighteenth-Century England* (Cambridge: Cambridge University Press, 1988), 97.

[10] The distinction I draw here could also be conceived of in terms of public venue: Literal dances were typically found in ballroom settings of the sort described by Alice M. Hanson, where the audience was seated so that they could attend to the dance floor; see *Musical Life in Biedermeier Vienna* (London: Cambridge University Press, 1985), 150–68; as well as Eric McKee, *Decorum of the Minuet, Delirium of the Waltz: A Study of Dance-Music Relations in 3/4 Time* (Bloomington: Indiana University Press, 2012), 95–106. Quasi-dramatic evocations of the dance were typically found in the concert hall, in which the audience was seated so that they could attend to the musicians; see Isabel Maathes, "Der Raum des Paradieses: Gesellige Erfahrung und musikalsiche Wahrheit im 18. und 19. Jahrhundert," in *Le concert et son public: mutations de la vie musicale en Europe de 1780 à 1914 (France, Allemagne, Angleterre)*, ed. Hans Erich Bödeker, Patrice Veit, and Michael Werner (Paris: Éditions de la Maison des sciences de l'homme, 2002), 289–99.

EMBODYING DANCE

It was, of course, Leonard Ratner who first proposed that composers of the late eighteenth century made use of a body of widely shared and relatively specific musical figures to shape their compositional discourse—that is, musical topics.[11] Ratner's proposal was persuasive to a number of scholars, not least because it provided a way to draw together the diverse influences evident in the music of Haydn, Mozart, and their contemporaries—influences that ranged across national styles as well as the various uses to which music had been put—and to explain how a uniquely pellucid species of musical meaning was engendered.[12] As topic theorists have come to understand, the vocabulary of topics was shared by both composers and listeners and formed a basis for musical communication beyond the ordering principles of tonality and meter. The specificity of the figures was not limited to the configurations of pitches and rhythms that distinguished one topic from another, but extended to the network of cultural associations activated by each topic.

Among the most important contributions to topic theory was that of Wye Jamison (Wendy) Allanbrook, who explored the resources that various dance topics provided for shaping musical rhythm (with rhythm here conceived as comprising aspects of meter and tonal organization).[13] As Allanbrook saw it, dance topics not only summoned the social and cultural circumstances proper to each dance but also activated knowledge about the movements specific to the dance and the affectual states correlated with such movements. Employing a bourrée topic, as Mozart does with Figaro's music in the opening duet of *Le nozze di Figaro* (which is shown in Example 4a), activates knowledge about the physical movements characteristic of the dance.[14] These include steps whose central feature is a lift onto the first beat of the measure.[15] Employing a gavotte topic, as Mozart does with Susanna's music in this same duet (shown in Example 4b), activates knowledge about a contrasting set of physical movements that begin on the third beat of the measure and then pass through the first beat to conclude on the second.

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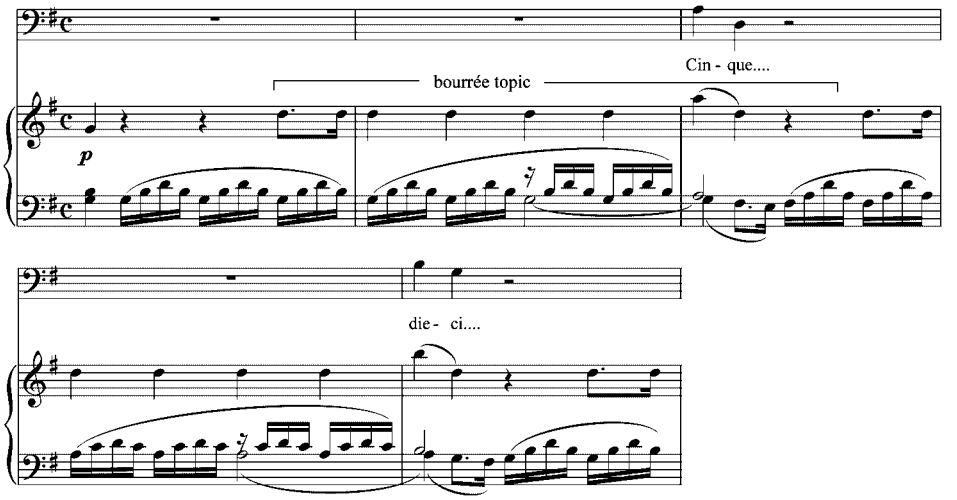
[11] Leonard G. Ratner, *Classic Music: Expression, Form, and Style* (New York: Schirmer Books, 1980).

[12] Victor Kofi Agawu, *Playing with Signs: A Semiotic Interpretation of Classical Music* (Princeton, NJ: Princeton University Press, 1991); Victor Kofi Agawu, *Music as Discourse: Semiotic Aventures in Romantic Music* (New York: Oxford University Press, 2009); Robert S. Hatten, *Musical Meaning in Beethoven: Markedness, Correlation, and Interpretation* (Bloomington: Indiana University Press, 1994); Robert S. Hatten, *Interpreting Musical Gestures, Topics, and Tropes: Mozart, Beethoven, Schubert* (Bloomington: Indiana University Press, 2004); Raymond Monelle, *The Sense of Music: Semiotic Essays* (Princeton, NJ: Princeton University Press, 2000); Raymond Monelle, *The Musical Topic: Hunt, Military and Pastoral* (Bloomington: Indiana University Press, 2006).

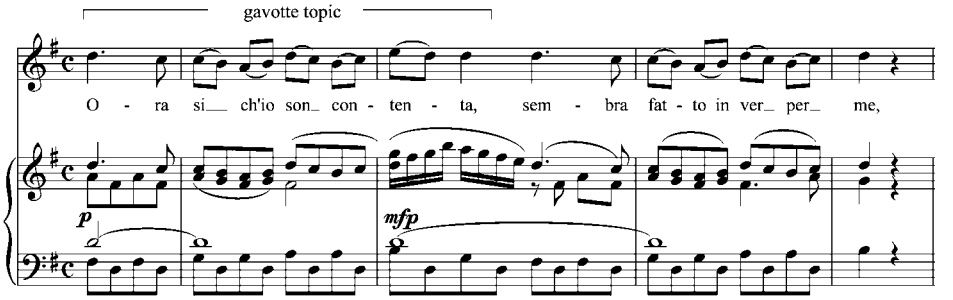
[13] Wye Jamison Allanbrook, *Rhythmic Gesture in Mozart:* Le Nozze Di Figaro *and* Don Giovanni (Chicago: University of Chicago Press, 1983).

[14] Allanbrook, *Rhythmic Gesture in Mozart*, 75–76.

[15] Meredith Little and Natalie Jenne, *Dance and the Music of J. S. Bach*, rev. ed. (Bloomington: Indiana University Press, 2001), 37.



EXAMPLE 4a Wolfgang Amadeus Mozart, *Le nozze di Figaro*, Act 1, Scene 1; Figaro's entrance.



EXAMPLE 4b Wolfgang Amadeus Mozart, *Le nozze di Figaro*, Act 1, Scene 1; Susanna's entrance.

As is quite apparent, neither of these examples is a dance proper, but each gains meaning from the dances to which they make reference.

This last point bears a bit of emphasis, as it shall become important when we consider why dance topics all but disappeared during the nineteenth century. Allanbrook made use of the notion of dance topics to describe aspects of the organization of instrumental and dramatic works; the topics with which she was concerned were typically of limited extent, and gained significance through their juxtaposition with other topics, or the overall progress of musical and dramatic events. There is thus a distinction between writing a gavotte and using the characteristic rhythmic and melodic features of a gavotte—that is, a gavotte topic—to shape musical discourse.

Given what we know of musical life in the late eighteenth century, a life that included a richly embodied knowledge about many different forms of

dance, Allanbrook's account of musical topics is persuasive. It remains to be explained, however, *why* music should be so effective in this regard—why it is, for instance, that hearing a particular dance form should not only activate a network of conceptual knowledge about the dance but also *move* us in a particular way. Although many writers have remarked on the kinesthetic character of music—Allanbrook notes that such observations go back at least as far as Aristotle[16]—accounts of the basis for this character have rarely risen above the level of anecdote. However, recent advances in our understanding of the motor system of primates—and, in particular, on what have come to be called mirror neurons—can help us understand how even *observing* movement can shape our thought processes. In what follows, I review recent research on mirror neurons and, by putting this together with research on analogy and my own work on musical grammar, offer an explanation for why dance topics are as effective as they are and, somewhat paradoxically, why they fell out of use during the course of the nineteenth century.

Research on Mirror Neurons

For much of the twentieth century, the neurological structures through which motor movements are controlled, collectively called the motor system, were assumed to be relatively passive: Commands that originated elsewhere in the brain told the motor system what to do, and it did it. Beginning in the late 1980s, however, it became evident that the design of the motor system was not quite as simple as once thought. As Giacomo Rizzolatti and Corrado Sinigaglia have noted, research done during that time showed that the motor system is made up of a complex web of cortical areas that are anatomically and functionally different, and in which clear distinctions between perceptual information and motor action are blurred.[17] Three striking discoveries contributed to this view, all of which came out of research on macaque monkeys and which focused on an area within the monkey brain called F5, long known to be associated with motor actions. First, neurons within the motor system are associated with specific motor tasks: The neurons involved in grasping, for instance, are different from those involved in tearing.[18]

Second, a portion of the neurons in F5 respond to the *visual* presentation of an object, and these are again differentiated: Those that fire when the monkey views a ring are, in most cases, different from those that fire when the monkey views a sphere.[19] Researchers came to call these neurons

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16 Allanbrook, *Rhythmic Gesture in Mozart*, 4.

17 Giacomo Rizzolatti and Corrado Sinigaglia, *Mirrors in the Brain: How Our Minds Share Actions and Emotions*, trans. Frances Anderson (Oxford: Oxford University Press, 2008), 20.

18 Luciano Fadiga et al., "Visuomotor Neurons: Ambiguity of the Discharge or 'Motor' Perception," *International Journal of Psychophysiology* 35 (2000), 171.

19 Fadiga et al., "Visuomotor Neurons," 172.

"canonical neurons" to distinguish them from the neurons involved in specific motor actions. Francesca Garbarini and Mauro Adenzato, in a review of this research, observed,

> The most interesting aspect of canonical neurons is that the same neuron fires not only in response to the same object, but also in response to a group of objects that have the same characteristics, in terms of the type of interaction they allow. At this level of description, an object can be codified "on relational terms," i.e., it can be identified and represented in relation to the type of action that it *affords* an interacting subject. This means that the type of interaction that is established with an object is a constitutive part of the representation of the object itself.[20]

The third, and perhaps most remarkable, discovery was of a further set of neurons that became active both when the monkey executed a motor act and when it observed an experimenter doing the same motor act; these have come to be called mirror neurons. Rizzolatti and Sinigaglia characterize the unique properties of mirror neurons in this way:

> The *motor properties* of the mirror neurons are identical to those of other F5 neurons in that they discharge selectively during specific motor tasks, but their *visual properties* differ significantly. Unlike the canonical neurons, mirror neurons do not discharge at the sight of food or other three-dimensional objects, nor does their behaviour appear to be influenced by the size of the visual stimuli. In fact, their activation depends on the observation of specific motor acts in which a body part (such as a hand or the mouth) interacts with an object.[21]

Further research has demonstrated that a portion of F5 mirror neurons respond to hand actions even when the final part of the action—for instance, the grasping of an object—is hidden from the monkey.[22]

It should be noted that most of the research on canonical and mirror neurons has been conducted on monkeys, using invasive techniques of a sort not suitable for human subjects. That said, there is evidence both from brain-imaging studies and from single-neuron studies that similar structures are a feature of the human brain.[23] These include a recent

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[20] Francesca Garbarini and Mauro Adenzato, "At the Root of Embodied Cognition: Cognitive Science Meets Neurophysiology," *Brain and Cognition* 56/1 (October 2004), 102.

[21] Rizzolatti and Sinigaglia, *Mirrors in the Brain*, 80; translation adapted.

[22] Maria Alessandra Umiltà et al., "I Know What You Are Doing: A Neurophysiological Study," *Neuron* 32/1 (July 2001), 160.

[23] Marc Bangert et al., "Shared Networks for Auditory and Motor Processing in Professional Pianists: Evidence from FMRI Conjunction," *NeuroImage* 30 (2006), 917–26; Roy Mukamel et al., "Single-Neuron Responses in Humans During Execution and Observation of Actions," *Current Biology* 20/8 (April 2010), 750–56.

fMRI study by Valeria Gazzola and her associates that showed similar patterns of brain activation when subjects performed a motor action (such as tearing a sheet of paper) and when they heard a recording of the motor action being performed.[24] Taken together with other work on brain imaging that demonstrates a strong correlation between hearing musical sounds and performing motor actions,[25] a good case can be made that our understanding of musical sound is, in neurological terms, a thoroughly embodied one.

The notion that simply listening to music activates portions of the motor cortex is quite suggestive, but research on the mirror neuron system is still at a relatively early stage and the application of this research to human behavior remains a matter of considerable debate.[26] This is all the more so with complex cultural practices such as those associated with music and dance. For instance, Beatriz Calvo-Merino and her colleagues recently showed that when expert dancers observed dance actions that were in their personal motor repertoire, the motor areas in their brains showed more activity than when they observed kinematically comparable dance actions that were not in their repertoire.[27] One inference from this study is that hearing the music of a well-known dance would result in more activity in the listener's motor cortex than hearing the music of a completely novel dance. It should also be noted that, while research on the activation of mirror neurons through sound is certainly tantalizing for a musician, most of the evidence only connects the sound of specific physical movements (such as that made by tearing a sheet of paper) with the discharge of motor neurons involved in making those movements. The best evidence that we have for a connection between sound sequences that are *not* tied to specific physical movements and neuronal activity comes from a set of brain-imaging studies by Steven Brown and his associates, which show a correlation between listening to periodic rhythms and the activation of portions of the motor cortex associated with dance movements.[28]

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[24] Valeria Gazzola, Lisa Aziz-Zadeh, and Christian Keysers, "Empathy and the Somatotopic Auditory Mirror System in Humans," *Current Biology* 16 (September 2006), 1824–29.

[25] Bernhard Haslinger et al., "Transmodal Sensorimotor Networks During Action Observation in Professional Pianists," *Journal of Cognitive Neuroscience* 17/2 (2005), 282–93; Bangert et al., "Shared Networks for Auditory and Motor Processing in Professional Pianists." For a review and discussion, see Katie Overy and Istvan Molnar-Szakacs, "Being Together in Time: Musical Experience and the Mirror Neuron System," *Music Perception* 26/5 (2009), 489–504.

[26] Vittorio Gallese and Corrado Sinigaglia, "What Is So Special about Embodied Simulation?" *Trends in Cognitive Sciences* 15/11 (November 2011), 512–19.

[27] Beatriz Calvo-Merino et al., "Action Observation and Acquired Motor Skills: An fMRI Study with Expert Dancers," *Cerebral Cortex* 15 (August 2005), 1243–44.

[28] Steven Brown, Michael J. Martinez, and Lawrence M. Parsons, "The Neural Basis of Human Dance," *Cerebral Cortex* 16 (August 2006), 1157–67.

Research on Analogy

On reflection, it seems doubtful that the activation of mirror neurons can, by itself, explain the effectiveness of dance topics: this sort of activation appears to be widely shared among primates and is most likely in evidence across the animal kingdom. But humans appear to be the only species to make connections between patterned nonlinguistic sound and patterned movement—that is, between music and dance. One way to account for such connections is through the capacity to make analogies. Analogies begin with similarities between two phenomena—for instance, between a physical gesture and a succession of musical pitches—but then expand to embrace structural features as a means to build knowledge.[29]

As an example, consider the analogy I just drew between gesture and music. For the sake of illustration, let's say that the gesture is a movement of the arm and the music is a passage from an electronic composition.[30] For the analogy to be productive, correlations (such as those shown in Figure 1) need to be made between the initiation, trajectory, and end point of the physical gesture and the onset, continuation, and conclusion of the musical passage; further, a correlation needs to be made between the continuous energy that unites the elements of the physical gesture and the continuous energy (reckoned as average amplitude) that connects the elements of the musical passage. Once an analogy like this is in place, it can be used to reason about situations beyond those encompassed by the original correlation: Novel successions of pitches can be conceived in terms of new—perhaps even impossible—gestures, and the dynamic process of all sorts of events can be correlated with various musical materials (as happened in the golden age of cartoon animation).[31]

Analogies such as the one between gesture and music seem effortless; indeed, research has shown that children as young as ten months are able to solve problems by analogy,[32] and that by the age of three years analogical

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[29] Dedre Gentner, "Structure-Mapping: A Theoretical Framework for Analogy," *Cognitive Science* 7 (1983), 155–70; Dedre Gentner and Kenneth J. Kurtz, "Relations, Objects, and the Composition of Analogies," *Cognitive Science* 30 (2006), 609–42; Keith J. Holyoak and Paul Thagard, *Mental Leaps: Analogy in Creative Thought* (Cambridge, MA: MIT Press, 1995), chap. 1; Keith J. Holyoak, "Analogy," in *The Cambridge Handbook of Thinking and Reasoning*, ed. Keith Holyoak and Robert G. Morrison (Cambridge: Cambridge University Press, 2005), 117–42.

[30] For a discussion of the complex relationships between physical gestures and music, see Alexander Refsum Jensenius et al., "Musical Gestures: Concepts and Methods in Research," in *Musical Gestures: Sound, Movement, and Meaning*, ed. Rolf Inge Godøy and Marc Leman (New York: Routledge, 2010), 12–35.

[31] Scott Curtis, "The Sound of Early Warner Bros. Cartoons," in *Sound Theory/Sound Practice*, ed. Rick Altman (New York: Routledge, 1992), 191–203; Daniel Goldmark, *Tunes for 'Toons: Music and the Hollywood Cartoon* (Berkeley: University of California Press, 2005).

[32] Zhe Chen, Rebecca Polley Sanchez, and Tammy Campbell, "From Beyond to Within Their Grasp: The Rudiments of Analogical Problem Solving in 10- and 13-Month-Olds," *Developmental Psychology* 33/5 (September 1997), 790–801.

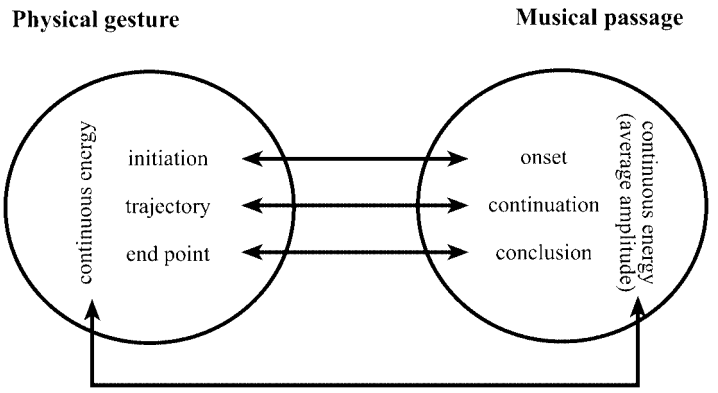

FIGURE 1 Analogical mappings between an arm gesture and a musical passage from an electronic composition.

abilities are quite robust.[33] This ability to make connections between disparate domains also lies at the heart of correlations between the movements of a dance and sequences of musical events of the sort drawn by Marx in his description of a musical waltz motive. Again, making a connection between a pattern of relatively soundless movement and a pattern of sonic events seems a simple thing, but current evidence suggests that it is beyond the cognitive capacities of other species.[34]

Sonic Analogs for Dynamic Processes

The final part of my explanation for why dance topics are as effective as they are is somewhat more speculative and comes out of my recent work on a cognitive grammar for music.[35] This work is guided by the idea that the grammar of music is rather different from the grammar of language. Language, for its part, is quite good at picking out objects and relations, but it is not very good at representing dynamic processes through its grammatical organization. Music, by contrast, is not very good at picking out objects and relations but is unparalleled in its ability to represent dynamic processes.

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[33] Usha Goswami, *Analogical Reasoning in Children* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1992); Usha Goswami, "Analogical Reasoning in Children," in *The Analogical Mind: Perspectives from Cognitive Science*, ed. Dedre Gentner, Keith J. Holyoak, and Boicho N. Kokinov (Cambridge, MA: MIT Press, 2001), 437–70; Dedre Gentner, "Why We're So Smart," in *Language in Mind: Advances in the Study of Language and Thought*, ed. Dedre Gentner and Susan Goldin-Meadow (Cambridge, MA: MIT Press, 2003), 195–235.

[34] Josep Call and Michael Tomasello, "Reasoning and Thinking in Nonhuman Primates," in *The Cambridge Handbook on Thinking and Reasoning*, ed. Keith Holyoak and Robert G. Morrison (Cambridge: Cambridge University Press, 2005), 607–32.

[35] Lawrence M. Zbikowski, "Dance Topoi, Sonic Analogues, and Musical Grammar: Communicating with Music in the Eighteenth Century," in *Communication in Eighteenth Century Music*, ed. V. Kofi Agawu and Danuta Mirka (New York: Cambridge University Press, 2008), 283–309.

The dynamic processes music can represent are quite varied, and include the movements of physical bodies through space, the sequences of physiological and psychological events associated with emotions, and the steps of dance. The way music represents such dynamic processes is not through abstract symbols (of the sort that are basic to language), but through sonic analogs—that is, through musical materials the central features of which are analogous to the central features of the dynamic process at hand. As but one example, the musical materials of Marx's waltz motive are a sonic analog for the dynamic process associated with the steps and movement of the dance.

On this view, a dance topic provides a sonic analog for dynamic processes associated with a particular dance, processes that encompass not only the steps of the dance but also the affectual milieu of which they are a part. In her discussion of the opening duet from *Le nozze di Figaro*, Allanbrook notes that the bourrée and gavotte topics used by Mozart satisfy our expectations about the comic roles of Susanna and Figaro: "the swaggering, cocksure bridegroom and his pert bride-to-be celebrate their coming marriage right in character."[36] I would argue that the characters of Figaro and Susanna—which we should envision not as static essences but as emerging properties expressed through sequences of movement, facial gestures, and general comportment—have their source in the specific features of the dance topics used by Mozart, which provide sonic analogs for each.[37]

Summary

Let me now put these three components together and review the explanation they can provide for the effectiveness of dance topics, working my way backward from the perspective on musical grammar I have just introduced. From that perspective, the musical materials for a dance serve as sonic analogs for the movements and attitudes specific to the dance. Composers of the eighteenth century could draw on these materials to activate knowledge about the movements and attitudes associated with a dance, which then contributed to the species of meaning they created through their musical discourse.[38] As I proposed, creating meaning in this fashion is possible because humans have the capacity to make analogical connections between patterned nonlinguistic sound and patterned movement. Perhaps most crucially, research on mirror neurons provides evidence that both the sight and sound of movements made by others activate a portion of the neurons in the

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[36] Allanbrook, *Rhythmic Gesture in Mozart*, 76.

[37] For a view of relationships between music and gesture in opera largely consonant with the perspective I take here, see Mary Ann Smart, *Mimomania: Music and Gesture in Nineteenth-Century Opera* (Berkeley: University of California Press, 2004).

[38] I describe this process of meaning construction in some detail in my analysis of the Finale of Franz Joseph Haydn's String Quartet Op. 76, No. 4 in "Dance Topoi, Sonic Analogues, and Musical Grammar," 299–305.

motor system that would be active were we ourselves to make those movements. As a consequence, hearing the music for a dance with whose steps we are familiar can lead to part of the brain doing the dance: The knowledge activated by dance topics is, in a very real way, embodied knowledge.[39]

DANCE TOPICS AND THE DANCING BODY IN THE EARLY NINETEENTH CENTURY

Allanbrook's ideas about the rhythmic and gestural aspects of musical topics were not, of course, limited to dance topics—indeed, in her introductory analysis of the topics Mozart employed in the first movement of his piano sonata in F major, K. 332, hardly any dance topics are mentioned[40]—but I argue that it is in dance topics that rhythmic and gestural features are most immediate. Given the efficacy of dance topics for musical communication, why did they disappear during the nineteenth century? Part of the answer has to do with the waning of court life during the second half of the eighteenth century. As Allanbrook noted, most of the dances on which Mozart's vocabulary of rhythmic gestures was based were already old fashioned in his own time.[41] But the reduction in the number of dance types drawn from court life can hardly be the whole answer, for newer dance forms proliferated during the nineteenth century, including the galop, waltz, polka, schottische, mazurka, and polonaise. And as the century progressed, some of these dances split into any number of subtypes: During the first quarter of the nineteenth century, for instance, Thomas Wilson described four basic forms of the waltz; writing from the perspective of the century's last quarter, Friedrich Albert Zorn described no fewer than ten.[42] While the cultural practices of eighteenth-century courtly life may have all but vanished in the nineteenth century, the number and type of dances in circulation continued to expand.

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[39] For more on this perspective on embodiment, see Raymond W. Gibbs Jr., *Embodiment and Cognitive Science* (Cambridge: Cambridge University Press, 2006).

[40] Allanbrook, *Rhythmic Gesture in Mozart*, 6–8.

[41] Allanbrook, *Rhythmic Gesture in Mozart*, 31.

[42] Thomas Wilson, *A Description of the Correct Method of Waltzing, the Truly Fashionable Species of Dancing* (London: Printed for the author, published by Sherwood, Neely, and Jones, 1816); Friedrich Albert Zorn, *Grammar of the Art of Dancing Theoretical and Practical: Lessons in the Arts of Dancing and Dance Writing (Choregraphy) with Drawings, Musical Examples, Choregraphic Symbols, and Special Musical Scores* [1905], ed. Alfonson Josephs Sheafe, trans. Benjamin P. Coates, (Brooklyn, New York: Dance Horizons, 1976). Wilson distinguishes among the slow waltz, the sauteuse waltz, the quick sauteuse waltz, and the German waltz. Zorn lists the galop waltz, the waltz (*La Valse*), the two-beat waltz (*La Valse à Deux Temps*), the three- or six-step waltz (*La Valse à Trois ou à Six Temps*), the reverse waltz (*La Valse à l'Envers*), the hop waltz (*Valse Sautillée*), the balance waltz (*Valse Balancée*), the $\frac{5}{4}$ waltz (*Valse en Cinq Temps*), the mazurka waltz (*Valse de Mazourka*), and the Hungarian waltz (*Valse Hongroise*).

Perhaps more important than the number or variety of dance forms, however, was dance practice itself. Much of eighteenth-century dance practice focused on a single pair of dancers, but with the emergence of the contredanse, the dance hall rather than private chambers became the preferred site for dancing. Nineteenth-century dances were, with few exceptions, social dances for relatively heterogeneous populations, and the dance hall was a site where individuals could meet—as did Weber's imaginary couple—for a publicly sanctioned form of physical intercourse.[43] The fundamentally social nature of nineteenth-century dance and its wide circulation may have also reduced the value of waltzes, polkas, and the like as topics: The rhythmic gestures specific to these dances were not part of a shared vocabulary of musical figures but were instead indices for a shared cultural practice. Indeed, a case could be made that the immediacy and omnipresence of social dances told against their utility as musical topics.

Another factor in the disappearance of dance topics was a change, beginning in the late eighteenth century, in the conception of music and the cultural work it performed, one that has been described by Lydia Goehr among others.[44] I will not rehearse her arguments here, but I would like to point out that two things specific to social dance of the nineteenth century—its associations with the bourgeoisie and its manifest physicality—placed it outside the pantheon of musical works deemed worthy of sustained attention. For instance, Robert Schumann, in an essay on dance music from 1836, ridicules the unimaginative harmonic language typical of dance forms but spares Franz Schubert's *Deutsche Tänze* op. 33 by transforming them into prompts for an imaginary carnival played out for the elite of the Davidsbündler and narrated by Florestan.[45] What began life as an ornament to bourgeois life is thus appropriated and adapted for the consumption of the intelligentsia. Some twenty years later, Eduard Hanslick saw fit to dismiss dance music entirely. After rejecting the notion that a physical response to music can give us any insights into its true power, he equated the effect of dance music with that of drinking wine.

> Music loosens the feet or the heart as wine the tongue. Such conquests tell us only about the vulnerability of the vanquished. To undergo unmotivated, aimless, and casual emotional disturbances through a power that

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[43] Hanson, *Musical Life in Biedermeier Vienna*, 150–68; McKee, *Decorum of the Minuet, Delirium of the Waltz*, chap. 3; Derek B. Scott, *Sounds of the Metropolis: The Nineteenth-Century Popular Music Revolution in London, New York, Paris, and Vienna* (New York: Oxford University Press, 2008), chap. 5.

[44] Lydia Goehr, *The Imaginary Museum of Musical Works: An Essay in the Philosophy of Music* (Oxford: Clarendon Press, 1992).

[45] Robert Schumann, *Gesammelte Schriften über Musik und Musiker*, 2 vols., ed. Martin Kreisig (Farnborough, Hampshire, UK: Gregg International Publishers, 1969), vol. 1, 201–3. It is worth noting that Florestan breaks off his narration in the middle of dance no. 10, which (as Otto Kinkeldey noted) makes use of a quite striking, and even histrionic, juxtaposition of E-major and B♭-major harmonies. See Otto Kinkeldey, "Schubert: Dance-Composer," *The Musical Quarterly* 14/4 (October 1928), 615.

> is not *en rapport* with our willing and thinking is unworthy of the human spirit. When people surrender themselves so completely to the elemental in an art that they are not in control of themselves, then it seems to us that this is not to the credit of that art and is still less to the credit of those people.[46]

Thus the very basis for the effectiveness of dance music—the thoroughly embodied knowledge with which dance is associated—dooms it to a subhuman status.

It is worth noting that Hanslick's battle against the corporeal was in part a battle against Richard Wagner, who argued for a kind of participation of the body in the apprehension of art.[47] This body was, however, an idealized body, one suffused with spirit rather than one involved with the mechanics and actualities of daily life. I would argue that it is this disembodied and transcendent body, a body divorced from the puerile realities of middle-class life, that is the subject of Weber's *Afforderung zum Tanz*, and that survives as a ghost in Chopin's dance music. But whether embodied knowledge was dismissed outright, as it was by Hanslick, or absorbed into a free-floating ideal, as it was by Weber, Wagner, and other transcendentalists, the result was the same: Knowledge of the body and the ways it shaped musical practice was expunged from the appreciation of music. The very thing that made dance topics vital—their activation of embodied knowledge—excluded them from most nineteenth-century constructions of musical knowledge.

CONCLUSION

In the 1661 decree through which Louis XIV established the Académie Royale de Danse, he wrote:

> In that the Art of Dance has always been recognized as one of the most honorable and necessary methods to train the body, and furthermore as the primary and most natural basis for all sorts of Exercises, including that of bearing arms, consequently it is one of the most advantageous and useful to our Nobility, as well as to others who have the honor of

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[46] Eduard Hanslick, *On the Musically Beautiful: A Contribution Towards the Revision of the Aesthetics of Music*, trans. Geoffrey Payzant (Indianapolis, IN: Hackett Publishing Company, 1986), 57. Note that Marx distinguished between "common" waltzes and those that could prompt "more various and more noble feelings of social, tender, or aroused desire," something that does not seem to be countenanced by Hanslick's critique.

[47] Lydia Goehr, *The Quest for Voice: Music, Politics, and the Limits of Philosophy* (Berkeley: University of California Press, 1998), chap. 3.

> approaching Us, not only in time of War for our Armies, but even in Peacetime while we enjoy the diversion of our court Ballets.[48]

Louis's decree points to one of the important functions of dance within seventeenth- and eighteenth-century Europe: to provide training for the nobility to refine their physical disposition, through which they distinguished themselves from those whom they ruled. As Georgia Cowart noted, during the ancien régime dance also provided an opportunity for the nobility to give corporeal presence to the aesthetic of *galanterie*.[49] Although *galanterie* changed its meaning over the course of the seventeenth and eighteenth centuries, to the extent that it was construed as a desirable attribute, it was also an intensely social one, the essence of which was to gain distinction by bringing pleasure to others.[50] Dancing well and effortlessly among one's peers—who, by definition, were equally familiar with the steps and challenges of the dance—was one way to gain this distinction.

One consequence of the changes in society and culture that occurred as the eighteenth century gave way to the nineteenth was the erosion of this means of distinguishing oneself: The nobility were just as likely to be found dancing the waltz as were the bourgeoisie. While all of the elements of the empirically grounded account of the effectiveness of dance topics that I have offered here would remain unaltered, the cultural context that shaped the reception of musical representations of the dance had changed: The body that one imagined on hearing a strain of a waltz might be that of a social equal, but it might also be of someone of no distinction whatever. The corporeality summoned by dance topics became suspect rather than celebrated, as the distinguishing mark of proper physical comportment became lost amid the blurred swirl of the ballroom floor.

As demonstrated by Weber's *Aufforderung zum Tanz* and its countless imitators and successors, instrumental evocations of the waltz hardly disappeared during the nineteenth century. The success of these evocations rested, however, on the consistency with which they employed Marx's "motive of the waltz." In consequence, composers did not tend to juxtapose the waltz topic with other dance topics or bring it into dialogue with the overall progress of musical or dramatic events.[51] The same appears to

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[48] Maureen Needham, "Louis XIV and the Académie Royale de Danse, 1661: A Commentary and Translation," *Dance Chronicle* 20/2 (1997), 180, translation adapted. For a similar perspective on the importance of dance for distinguishing nobility, see Pierre Rameau, *The Dancing Master* [1725], trans. Cyril W. Beaumont (New York: Dance Horizons, 1970), xii.

[49] Georgia J. Cowart, *The Triumph of Pleasure: Louis XIV & the Politics of Spectacle* (Chicago: University of Chicago Press, 2008), 14.

[50] Alain Viala, "*Les Signes Galantes*: A Historical Reevaluation of *Galanterie*," trans. Daryl Lee, *Yale French Studies* 92, Exploring the Conversible World: Text and Sociability from the Classical Age to the Englightenment (1997), 11–29.

[51] In offering this analysis I differ from Janice Dickensheets and Kofi Agawu, each of whom regards the waltz as a topic within nineteenth-century musical practice. The examples that Dickensheets provides,

be true for other forms of dance during the early nineteenth century: As dance came to serve as an index of a cultural practice that was broadly shared across social strata, dance topics lost their value as part of a common vocabulary of musical figures through which musical discourse was shaped. Moreover, there was at the same time a growing sense that music's proper domain was not amid the social whirl of the dance floor, but in an elysian realm devoid of corporeal realities.

Although critics like Schumann and Hanslick were all too eager to dismiss any hint of the body from their conceptions of music, research in cognitive science suggests that the activation of the motor system and our familiarity with a range of dynamic processes, including those that involve our bodies, are part and parcel of the experience of music. To be sure, these come to the fore in music for dance and certain dramatic forms, but there is growing evidence that they are an essential part of musical knowledge. And so, while in one sense the meaning of dance music changed significantly in the early nineteenth century, in another sense—in the sense that music is an expression of the cultural practices of humans possessed of very real bodies living in a very real world—the meaning of dance music has changed hardly at all.

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however, are of complete works that are either proper waltzes (as in the case of Weber's *Freischütz* waltz) or impressions of waltzes (as in the case of the second movement of Hector Berlioz's *Symphonie fantastique*); she does not cite examples comparable to those offered by Allanbrook. See Janice Dickensheets, "Ninteenth-Century Topical Analysis: A Lexicon of Romantic Topoi," *The Pendragon Review* 2/1 (2003), 5–19; and Agawu, *Music as Discourse*, 41–50.