

C H A P T E R 2 9

EMOTIONAL
RESPONSES TO
MUSIC: WHAT ARE
THEY? HOW DO
THEY WORK? AND
ARE THEY
RELEVANT TO
AESTHETIC
APPRECIATION?

JENEFER ROBINSON

29.1 THE PUZZLE OF MUSICAL EMOTIONS

It is widely agreed nowadays that emotions are set off by an *appraisal* of a situation. Many theorists think that each so-called basic emotion has its own type of appraisal corresponding to a particular “adaptational encounter” or “core relational theme”;

losses, offences, threats, and so on. A cognitive appraisal that a “demeaning offence” has been committed against me or one of “my own” is what sets off an angry emotional response.¹ Sadness is initiated by the apprehension of some kind of loss, fear by an appraisal that one is under threat, and so on. Alternatively, the appraisals that trigger emotions may be less specific to particular emotions and better analysed in terms of their various dimensions such as pleasantness or familiarity.² Whatever the details of their proposals, however, almost everyone agrees that these appraisals are, broadly speaking, *cognitive*, requiring some sort of interpretation of a situation in terms of its significance to the survival and/or well-being of me or mine. Emotional responses are evoked when the situation is cognitively appraised as one in which something is *at stake* for me or mine.³

There is another tradition in emotion theory, however, stemming from William James, which places more emphasis on the bodily components in emotion. In a famous passage from *The Principles of Psychology*, James (1981, p. 1065) claimed that when, for example, I face a threat or suffer a loss, “*bodily changes follow directly the perception of the exciting fact, and . . . our feeling of the same changes as they occur IS the emotion*”. James’s theory initiated over a century of work in psychology on the physiological and behavioural aspects of the emotions, including autonomic and hormonal activity, facial and vocal expressions, and action tendencies, which characterize episodes of sadness, anger, fear, and so on. What is sometimes ignored, however, is that James too seems to have thought that an “appraisal” of some sort is necessary to emotion. He linked the emotions to the instincts and argued that emotional responses are responses by “the bodily sounding board”, reacting instinctively to events in the environment that are significant to the organism.⁴ Following this suggestion, I have argued that emotions are information-processing systems that “register in the body” information that is important to the survival and/or well-being of the person or animal (Robinson 1995, 2005). Fear does not require a high-level cognitive appraisal but can be induced automatically by certain triggers such as a sudden loud sound, an object hurtling towards the eyes, or a large, threatening, hairy mammal with big teeth and claws. Even “high level” fears – of my boss’s bad temper or the state of the markets – require registration in the

¹ Richard Lazarus (1991) introduced the term “core relational themes”. He describes the core relational theme for anger as “a demeaning offense against me and mine” (1991, p. 122). LeDoux (1996) prefers the term “adaptational encounters”.

² See, for example, Russell (2003) and Feldman Barrett (2006).

³ Philosophers who defend some variety of cognitivism include Ben-Ze’ev (2000), Gordon (1987), Lyons (1980), Nussbaum (2001), and Solomon (1976, 1988). The cognitivists among psychologists include Ortony et al. (1988), Lazarus (1991), Phoebe Ellsworth, Ira Roseman, Klaus Scherer, and Craig Smith, all represented by articles in Scherer et al. (2001).

⁴ If this is true, then James was exaggerating when he said that emotions simply *are* feelings of bodily change. It is pretty clear that when James is being careful, he claims that feelings of bodily change are necessary for emotion rather than both necessary and sufficient. See Ellsworth (1994).

body if they are to count as genuine emotional states.⁵ Jesse Prinz (2004) has also defended a Jamesian hypothesis. He argues that emotions are “embodied appraisals”, designed to detect losses, threats, or offences *by means of* registering patterns of bodily change. Emotions represent core relational themes by virtue of the fact that they are *reliably caused* by them. For Prinz, emotions are “gut reactions” that “use our bodies to tell us how we are faring in the world” (2004, p. 69).⁶

It seems, then, that most theorists agree that emotions are triggered by appraisals, although there is disagreement about whether these appraisals are cognitive or embodied. But when we come to the question of music, *all* appraisal theories seem equally at a loss. There just doesn’t seem to be *any* kind of relevant appraisal being made when music makes me sad or happy, anxious or calm. For usually when music makes me sad, it’s not because I have suffered a loss. If it makes me anxious, it is not because I feel threatened by anything. If it makes me joyful, it’s not because anything especially good has happened to me. In listening to music there is nothing to be sad or happy about, nothing towards which my emotion is targeted. Nevertheless, it seems to be a commonplace that music does indeed arouse emotions. In this chapter I will attempt to solve this paradox.

Before beginning, two general points should be made. First, the paradox does not seem to affect music with accompanying words as much as it does “pure” or “absolute” instrumental music. If I listen to a song in which a woman laments her dead lover, I might be responding emotionally to the dramatic scenario, just as when I read a story or a poem about a woman lamenting her dead lover. Accordingly, my concern in this chapter will be primarily with “pure” music, where the problem seems to be most acute. Secondly, I want to emphasize that my subject is the *arousal* of emotion by music and not the *expression* of emotion by music, which is a very different thing. A piece that expresses joy can leave me cold. A piece that makes me feel joyful may be expressive of melancholy. As we shall see, there are important relationships between the expression and arousal of emotions by music, but the expression of emotion by music cannot simply be *identified* with the arousal of emotion by music. My focus in this essay will be on the question: does music arouse emotion and if so how?

I begin by pointing out some of the ways⁷ in which music arouses emotions that are in fact consistent with appraisal theory, before going on to discuss how music can also arouse affective states that do not involve appraisals in the usual way.

⁵ See James (1981) as well as Damasio (1994) for suggestions about how the same emotion mechanism is employed by simple, pre-programmed emotions, such as fear of the bear, and more complex learned emotions, such as fear of losing my retirement savings.

⁶ I am oversimplifying. Prinz thinks that emotions are embodied appraisals *plus valence*. Roughly speaking, valence is required in order to explain actions motivated by an emotion.

⁷ No doubt there are other ways too. Jeanette Bicknell (2007), for example, has stressed the idea that powerful musical experiences have their roots in the social functions of music, especially bonding. As will become apparent, my emphasis, by contrast, will be on those emotional responses that are most relevant to musical appreciation, understanding, and value.

29.2 FOUR WAYS IN WHICH MUSIC AROUSES EMOTIONS

There are at least four ways in which music can arouse emotions that are broadly consistent with appraisal theories of emotion. (1) Many people have emotional associations to music, both personal and cultural. Their response to the music is quite likely the result of emotional appraisals of those events or situations that they associate with the music. (2) Even formalists grant that we may have emotional responses to certain global attributes of the music itself, for example its beauty and craftsmanship. Such responses would seem to result from appraisals of the music as beautiful and well crafted. (3) Somewhat more controversially, it seems that emotional responses can also be elicited by appraisals of how the musical structure of a piece is unfolding. (4) Finally, listeners often respond emotionally to what is expressed by music, and, at least in some cases, this response may be to an appraisal of the emotional travails or successes of a character or persona in the music.

(1) The most obvious solution to the puzzle of musical emotions is that people respond emotionally to music because of the associations they have to it. Such associations can, of course, be wildly idiosyncratic and hence would seem to tell us little about the music itself. If I heard some spectacularly good news while listening to the Funeral March from Chopin's Piano Sonata in B-flat minor, I may for ever after associate this piece with ecstatic joy, and it may always move me to joy as a result, but this would be a very idiosyncratic response to the piece, and one that most people would find deeply inappropriate. Klaus Scherer notes that "music, like odours, seems to be a very powerful cue in bringing emotional experiences from memory back into awareness",⁸ but responding emotionally to music because of its personal associations is not responding to the music as such but only to the music as a vehicle for the associations.⁹

Music is not just a means for revisiting our personal emotional memories, however. It is also a cultural phenomenon. Different sorts of music have

⁸ Scherer and Zentner (2001, p. 169).

⁹ Juslin and Västfjäll (2008) have identified six different ways in which music can arouse emotions. One is "evaluative conditioning", i.e., "a process whereby an emotion is induced by a piece of music simply because this stimulus has been paired repeatedly with other positive or negative stimuli". Another way is identified as "visual imagery", i.e., the way that emotions can be aroused by visual imagery induced by music. A third way is called "episodic memory". These are emotions resulting when the music evokes a memory of some particular episode in the listener's past experience. All three of these modes of emotional arousal would count in my terms as types of personal association, since different listeners could presumably be conditioned to respond emotionally in different ways to the same music; different listeners could conjure up different imagery when listening to the same music; and of course different listeners will have different memories associated with the same music. Consequently none of these three modes of emotional arousal seems to me to be directly relevant to musical understanding or appreciation.

associations that are widespread in the culture and to which the composer can plausibly be supposed to be adverting. Leonard Ratner (1980) has identified musical *topoi*, such as melodies, rhythms, timbres, harmonic progressions, or combinations of these, that have cultural associations. Examples include dances in high, middle, or low styles, military and hunt music, the pastoral style, the sentimental style, and so on. In addition, there are marches, funeral music, music for various kinds of festivities such as weddings, church music, “peasant” or “aristocratic” music, and music associated with various cultures, often through dance forms characteristic of those cultures. Often the associations are complex. The “Turkish” March in the last movement of Beethoven’s Ninth Symphony is not only associated with a particular culture; it is also – incongruously – in “low style”. The effect is to reinforce the idea that the “Ode to Joy” has universal application (Hatten 2004, pp. 81–2).

Many of these *topoi* carry emotional associations: military music is often associated with glory, honour, loyalty, and patriotism, and may induce these emotions in some listeners. Gregorian chant and hymns are associated with reverence and piety and can evoke the corresponding feelings. Wedding music is associated with joyful occasions and makes most of us feel good; funeral music is associated with death and is sobering. Some thinkers (Hatten 2004) have emphasized that these musical meanings often depend on so-called “binary oppositions”: that peasant dances are associated with carefree jollity and aristocratic dances with dignity and restraint is partly the result of the contrast between the *lumpen* peasant dance and the elegant aristocratic dance.

Some instrumental music is associated with specific words, and may induce the emotions appropriate to those words. Powerful examples are national anthems that can arouse strong emotions by virtue of their conventional role as expressions of patriotism. Similarly, the “Ode to Joy” theme in the last movement of Beethoven’s Ninth, even in its purely instrumental appearances, may induce joy in listeners simply because it is associated with Schiller’s words.

(2) For the formalist philosopher of music, Peter Kivy, there is only one aesthetically relevant way in which music can arouse emotions. Music, he claims, is incapable of *arousing* the “garden-variety emotions”, such as sadness, joy, and anxiety, that it is able to *express*. In his view it is never the case that sad music moves us to sadness or cheerful music to good cheer. This is because when we listen to music there is nothing to be sad, cheerful, or anxious *about*: there is no appropriate “cognitive object” for these emotions. Kivy assumes that emotions require a cognitive appraisal of the object of the emotion and so he needs to find a plausible intentional object for the emotions aroused by music. He acknowledges that of course music can arouse garden-variety emotions in some sense. I can be angry at all the wrong notes the trombone player is playing, joyful about the brilliant clarinet solo by my daughter, or resentful of the triumph of a composer whom I dislike, but these emotions are not aroused by the music *qua* music. The only

emotions that music arouses when it is being appreciated qua music are what we might call “emotions of appreciation” that have the music itself as their cognitive object. Thus we may be emotionally “moved” by the “incomparable beauty and craftsmanship” of a section of Josquin’s *Ave Maria* in which the composer writes a very beautiful canon at the fifth with the voices only one beat apart. In such examples we are responding emotionally to aspects of the music itself, its beauty, and its daring but graceful solution to a musical problem (Kivy 1990, pp. 159–60). We *cognitively evaluate* the music as beautiful and well crafted. More recently, Kivy (2006b, p. 280) has written that pure instrumental music – “absolute music” – can move us “to a kind of enthusiasm, or excitement, or ecstasy directed at the music as its intentional object”.

Kivy is quite right to point out that we are frequently moved by music in this way, but at best his explanation fits only this one class of emotional responses to music. Most music listeners believe that there is a wide range of emotions aroused by music, not just excitement or delight at beauty and craftsmanship but also some of the “garden-variety” emotions that Kivy thinks “pure” instrumental music is logically incapable of arousing.

(3) There is another way in which music can function as a “cognitive object” in Kivy’s phrase. In his influential book, *Emotion and Meaning in Music*, Leonard Meyer (1956) argued that one way of understanding musical structure is emotional. As we listen attentively to a complex piece of music such as a Schubert piano sonata, we may be *surprised* by the unorthodox way it begins, *satisfied* when the first theme begins to behave in a normal manner, *bewildered* by the development section in which the piano ranges into ever more distant keys, and *relieved* by the reappearance of the tonic. Throughout we may be *puzzled* and *unsettled* by the many harmonic and thematic ambiguities. All these emotions – surprise, satisfaction, bewilderment, relief, puzzlement, unsettledness, and so on – are emotions that are the result of appraising how the music is developing (and are directed towards the music as their “object”). Meyer’s idea is that how we appraise the development of the music depends on the expectations we have as we listen, and these expectations are in turn the result of familiarity with the stylistic norms assumed by the piece. For example, when we listen to the first movement of a Schubert piano sonata, we expect an example of sonata form. So I am *intrigued* and *puzzled* by the incongruous low trill on G flat that interrupts the cheerful ambulatory music that opens his Piano Sonata D 960 in B flat. I am increasingly *bewildered* as the development section heads off into harmonic terrain very distant from the tonic. Then I am *surprised* by the emergence of D minor and the recurrence of the low trill, this time on D, towards the end of the development section. Finally, I am *relieved* and *satisfied* as D minor finally segues into the tonic B flat and the trill motif begins its reintegration into the harmonic fabric.

Why should I get upset when the tonic remains absent for longer than expected? We can understand my getting upset when my husband stays late at the office night

after night. But the tonic isn't my feckless husband. Why should I care if it returns home late? Emotions are responses to events and situations that I have appraised as important to survival or well-being. But what's at stake for me in my encounter with the music? Nico Frijda's (1986) theory of emotion can help us here. He suggests that emotion is generated by appraisals of match or mismatch with the agent's goals or interests. The psychologists of music John Sloboda and Patrik Juslin (2001) have taken up his idea, arguing that the tonal system within which most of the composers of the Classic and Romantic periods worked, provides "a set of dimensions that establish psychological distance from a 'home' or 'stability' point".¹⁰ Moving closer to this "resting point" reduces tension and moving away from it in general increases tension. So we get emotionally worked up when things don't turn out as we expect and we are emotionally satisfied when they do. For example, when we have become accustomed to a melody going along in the major key and suddenly it shifts into the minor, we are briefly shaken up emotionally: things are not going the way we'd been led to expect, and what's more, given the cultural conventions of Western music, they seem to be moving into a darker realm. Although in musical cases of this sort, the match or mismatch with our "goals and interests" doesn't matter very much to our well-being, we have learned to respond in a similar way *whenever* our desires or expectations are thwarted. It is in general adaptive to be on the look-out when things are not going as expected or as desired, especially when the change seems to be for the worse. The reaction to unexpected events in music such as a sudden shift from major to minor is most likely a spin-off from a generally adaptive pattern of response.

(4) Listeners often respond emotionally to what is *expressed* by music. Some emotional responses are to vocal intonations. According to Patrik Juslin (2001, p. 321), music performers are able to communicate emotions to listeners "by using the same acoustic code as is used in the vocal expression of emotion". Just as there is very good evidence of pan-cultural *facial* expressions of certain basic emotions, so there is evidence of pan-cultural *vocal* expressions of basic emotions in the sense that people worldwide seem to employ the same intonation patterns in the expression of certain basic emotions. Thus music can mimic a baby's cry, expressive of distress, and can automatically elicit the same emotional reactions in listeners as does the baby's cry.¹¹ According to Juslin, there are simple, automatic, independent brain systems – or "modules" – that respond to cries of distress, and these brain systems cannot tell the difference "between vocal expression of emotion and other acoustic expression but will react in the same way as long as certain cues (e.g., high speed, loud dynamics, fast attack, many overtones) are present in the stimulus"

¹⁰ Sloboda and Juslin (2001, p. 92). Meyer's theory is designed to explain Classic and Romantic music, from roughly 1750 to 1900, not early music and certainly not serial music.

¹¹ Mithen (2005) argues that there was an early hominid communication system that was holistic, multi-modal, manipulative, and musical, out of which both language and music evolved.

(Juslin 2001, p. 329). Thus our emotional reaction to the plaint from Purcell's *The Fairy Queen* ("O, o let me weep") is partly influenced by the way the music imitates a human vocal expression of woe. Notice that Juslin is not suggesting that listeners cognitively appraise the cry as indicating distress. There certainly seems to be an "appraisal of significance" involved, but it is most likely automatic and "instinctive", an embodied appraisal.

The Purcell example is a special case of a more general phenomenon. When we listen to a song in which a protagonist is expressing emotion, we often respond emotionally to this expression. So in listening to the anguish and despair in "O, o let me weep", I may find myself responding with distress not only to the vocal intonation but to the content of the words as expressed by the music. In this case cognitive appraisal is involved as well as instinctive bodily appraisal: I understand the words of the song and understand that someone is expressing grief, and I respond emotionally to this verbal expression. But what about "pure" instrumental music? How can it arouse "garden-variety" emotions such as distress or sorrow in a listener? For formalists such as Kivy, the answer is that it can't. Some theorists (Cone 1974; Levinson 1996, 2006), however, have argued that at least sometimes it is appropriate to hear "pure" instrumental music as exemplifying a drama or narrative in which there are characters or a persona – sometimes, but not always, a persona of the composer – who express their emotions in the music. Romantic music is perhaps the most susceptible to such interpretations, because at least some Romantic composers have explicitly spoken of their music in this way as an expression of their own emotions or of the emotions of an imagined persona in the music. Thus Anthony Newcomb (1984*b*) has described both Schumann's Second Symphony and Beethoven's Fifth as exemplifying what he calls the "plot archetype" of "suffering leading to healing or redemption", and if we hear the Fifth in this way we may then in listening to it feel *uplifted* by the imagined victory over suffering. In such cases I am making an *appraisal* of the dramatic protagonist's emotional state and his or her general situation, and I respond emotionally in a similar way to the way I respond emotionally to an expressive novel such as *Le Rouge et le Noir* or *Anna Karenina*. Notice, however, that in these cases, the emotions aroused in me, the listener, are not necessarily the same as those expressed by the protagonist in the music. The protagonist of "O, o let me weep" expresses anguish and despair, but I may feel sorrow and compassion. The protagonist of Beethoven's Fifth perhaps expresses triumph, whereas I may respond by feeling uplifted.¹²

¹² In this case Beethoven seems to be expressing his own admiration for the hero which we are encouraged to share. Like us Beethoven seems to be feeling uplifted. But what Beethoven is expressing (admiration, uplift) is not what the hero is expressing (resolution, courage). For more on the nuances of the relationships between the expression and arousal of emotion by music, see Robinson (1994).

When we respond emotionally to the structure of a piece of music, in the way described by Leonard Meyer, we are very often simultaneously responding to what is being expressed by the music. Beethoven's Fifth does not simply have a "purely formal" harmonic and melodic structure; it also has a dramatic or expressive structure. It exemplifies a wider pattern of human experience: suffering leading to redemption. Similarly, Newcomb (1997) has analysed the second movement of Mahler's Ninth Symphony as exemplifying a conflict between a desire for pastoral innocence and the attractions of urban worldliness and sophistication. Gregory Karl and I (1995) have interpreted Shostakovich's Tenth as exemplifying hope followed by the dashing of hope; and Robert Hatten (2004) has described the movement from tragic to transcendent in the slow movement of Beethoven's *Hammerklavier* Sonata. Once we interpret music in dramatic human terms, we are likely to respond to it not only as a harmonious and well-crafted sequence of beautiful tones but also as the expression of human conflicts and aspirations.¹³

There are many techniques whereby music can exemplify patterns of human experience. In Mahler's Ninth there is a contrast between *different topoi*, the *ländler* and the waltz which, according to Newcomb, exemplify the conflict in the hero between his desire for an innocent pastoral life and his attraction to urban "glitz". Listeners are encouraged to feel the attractions of both. In Shostakovich's Tenth, dramatic development is enacted partly through *melodic transformation*: the brief glimpse of hope amidst the prevailing feeling of gloomy foreboding is exemplified by a short idyllic theme in the third movement that transforms into the lively main theme of the finale. When this cheerful theme then transforms gradually into a manic theme reminiscent of the sinister second movement, we hear hope morphing into the defeat of hope, and are likely to feel correspondingly discouraged.

Very often emotional development is enacted partly by *harmonic shifts*. Harmonic tension – where it is not clear where we are tonally or where the music is headed – is particularly effective both in exemplifying patterns of human experience and in arousing corresponding emotions in listeners. Key changes are not just formal devices. When used subtly and appropriately, they can have the emotional effect on listeners of a transformation from one emotional landscape to another. Charles Fisk (2001) has described the first movement of Schubert's B flat Piano Sonata D. 960 as suggesting a psychological narrative of an outcast or wanderer in search of some kind of reintegration into society. He draws particular attention to the powerful emotional effect of the D minor passage towards the end of the development section, which "arrives as the culmination of the most agitated, thickly textured, tonally complex, and sustained buildup in the movement" (p. 248). For Fisk, the passage conveys a sense of "hushed expectancy" and exemplifies

¹³ And if the thesis defended in Robinson (2007a) is right, it is perfectly appropriate to hear certain pieces under the general rubric of a particular structural metaphor. Some musical pieces do and should encourage the imagining of certain sorts of scenarios.

the “stillness that awaits an epiphany” (p. 253). But it is not only the protagonist in the music who feels the imminence of an emotional revelation. The listener too experiences this new and magical emotional realm.

29.3 THE MUSICAL EVOCATION OF MOODS

So far I have discussed a number of ways in which music arouses emotions, which are all (arguably) consistent with the idea that emotions require an appraisal. The difficult cases, however, are those where music with a particular expressive character – happy or sad, agitated or calm – seems to arouse a corresponding emotion of happiness or sadness, agitation or calm, yet there is nothing in the music for the listener to be happy or sad, agitated or calm *about*. Nor is there any reason in these cases to postulate a persona in the music to whom listeners might be responding emotionally. The final movement, “Réjouissance”, of Bach’s *Orchestral Suite No. 4* is joyful music that typically arouses joy in “appropriately backgrounded”¹⁴ listeners, but it does not seem to express any particular person’s or persona’s joy, nor is the joy we feel in listening a response to joy in some person or persona.¹⁵ In a very different style, the opening movement of Stravinsky’s *Symphony in Three Movements* is nervous, agitated music, and it can make listeners feel nervous and agitated. But there is nothing for listeners to be nervous *about*. And the music doesn’t make us nervous because we are reacting to a nervous persona in the music.

There are two standard ways of responding to this apparent paradox. As we saw earlier, Peter Kivy simply denies that it is possible for music to arouse the emotions, such as happiness or agitation, that it expresses. But this is a desperate move, given, as we will see shortly, the enormous amount of empirical evidence that music can indeed reliably arouse such states. An alternative has been proposed by Noël Carroll (2003), who argues that music arouses not emotions proper but only moods. The received wisdom is that moods do not have specific intentional objects: they are not directed *at* or *about* anything in particular. Like emotions, moods can sometimes be set off by an appraisal, as when I get into a gloomy mood after learning that my lover has deserted me, and that I have suffered a loss. But

¹⁴ The phrase is from Jerrold Levinson (1996, p. 107). Obviously, for music to arouse affective states in an audience that result from genuine engagement with the music, the audience must have some familiarity with the type of music in question.

¹⁵ Here I part company with Levinson (1996, 2006) who thinks that expressiveness in music is *always* to be analysed as hearability as an expression of emotion by a persona in the music. For a recent discussion of expression and expressiveness in music and the other arts, including Levinson’s view, see Robinson (2007b).

moods do not require a specific appraisal to set them off. Notoriously I can get into a sad or happy mood by imbibing an appropriate chemical compound, by lack of sleep, or because of general facts about the environment such as the time of day or the season of the year. If that's right, then there's nothing in principle to rule out the possibility that music too can induce moods.

So what are moods, and how do they differ from emotions proper? Emotions and moods share many important features. According to Carroll's wide notion of "the affective domain", as "the entire realm of feeling-charged mental states" (p. 524), both moods and emotions are varieties of "affect". Both exhibit characteristic physiological changes,¹⁶ behaviour, bodily expressions – such as facial and vocal expressions, posture, and gesture – and corresponding feelings. Moods, like emotions, have a characteristic phenomenology: sadness, whether emotion or mood, *feels* unpleasant.¹⁷

But moods differ from emotions in that they are not directed at anything in particular but pervade experience as a whole. Whereas an *emotion* of joy rivets attention on a particular event such as the birth of one's child, a joyful *mood* permeates one's whole life. As Carroll (2003, p. 528) nicely puts the point, "When in the throes of an 'Oh-what-a-beautiful-morning' mood or 'The-hills-are-alive-with-the-sound-of music' mood, almost anything can seem radiant and virtually anything one lights upon does." As he says, moods are "global rather than focal". Moreover, whereas it is the birth of the child that *causes* my emotion of joy, that the morning appears beautiful and the hills alive with music is typically the *result* of my joyful mood, not its cause.

This difference has led the neuro-psychologist Richard J. Davidson (1994) to propose that it is a defining feature of moods that they "bias cognition" in various ways: "Mood serves as a primary mechanism for altering information-processing priorities and for shifting modes of information processing. Mood will accentuate the accessibility of some and attenuate the accessibility of other cognitive contents and semantic networks" (Davidson 1994, p. 52). Several psychologists (e.g. Ekman 1994; Frijda 1993) have emphasized that moods predispose towards certain emotions: in a choleric mood I am apt to get angry very easily; in a joyful mood the whole world looks welcoming. But Davidson notes that moods also influence a variety of cognitive capacities such as appraisal, memory, perception, decision-making, problem-solving, and shifts in attention. "For example, individuals in a

¹⁶ There is a great deal of controversy about the degree of physiological differentiation that exists for emotions/moods. But differences in heart rate and skin conductance have been found to distinguish several "basic" emotions, including happiness and sadness. See Levenson (1994); Cacioppo et al. (2000).

¹⁷ Carroll notes that moods are also "self-promoting feedback systems": for example, one's cheerful thoughts and memories reinforce one's cheerfulness, and one's depressed thoughts and memories reinforce one's depression. This would seem to be true, regardless of whether the cheerfulness in question is an emotion or a mood.

depressed mood have increased accessibility to sad memories and decreased accessibility to happy memories”, and “positive moods facilitate cognitive flexibility”, resulting in “more creative responses, more remote associations, and an increase in the perception of relatedness among cognitions” (Davidson 1994, p. 52). If Davidson is right, then one of the most common ways of distinguishing moods from emotions is off the mark: moods do not necessarily last longer than emotions, as is often claimed (Ekman 1994), insofar as there can be transient moods of gloom or joy as well as long-lasting emotions of jealousy and resentment.

Following and expanding on Davidson’s suggestion, Laura Sizer (2000) has argued that moods are essentially processes *governing* “the creation and manipulation of representational states” (p. 763) rather than being themselves specific sorts of representational states, as (she thinks) emotions are.¹⁸ There may well be something to this distinction, but it is worth pointing out that emotions, as well as being themselves representational states, seem to have the same kinds of cognitive effects that Davidson and Sizer attribute to moods. Whether I am in a sad emotional state or a sad mood, I will have readier access to sad memories, and my “judgments and categorization [will] proceed more cautiously and draw more heavily on the evidence at hand”, leading to slower information processing (Sizer 2000, p. 764). Similarly, my joyful mood might make it appear to me that the hills are alive with the sound of music, but so too might my joyful emotion induced by the birth of my child.

Carroll endorses Sizer’s suggestion that the “direction of impact” of a mood, unlike an emotion, is “from the self to the world” (Carroll 2003, p. 529). In his words, moods are dependent on the “overall state of the organism, its level of energy, the level of resources at its disposal for coping with environmental challenges, and the degree of tension it finds itself in as a result of the ratio of its resources to its challenges” (p. 529). Thus a depressed mood is one in which one is conscious of a depletion of resources and energy. Sizer (2000, p. 762) argues that moods are “part of a non-cognitive self-regulatory or self-monitoring system” that enables us “to monitor our own resources in relation to external demands” (p. 761). Here the philosophers are echoing the psychologist Robert E. Thayer (1989, p. 128) who has emphasized that “moods are naturally occurring signal systems of underlying bodily processes” which “indicate readiness for activity, or the need for rest and recuperation”.¹⁹

¹⁸ Sizer (2000) agrees with Davidson that moods bias cognition. Indeed she goes further than he does by arguing that “we can (in principle) identify particular moods with specific modulations and biases” in the functioning of processes such as “memory, attention allocation and concept formation and application” (p. 764).

¹⁹ Thayer seems to be suggesting that moods are not just *dependent* on the overall state of the organism, as Carroll claims, but signify or *represent* this state. If this is true, then in a sense moods do have intentional objects after all, namely the overall state of the organism. I do not have space here to

There is clearly much more to be said about emotions and moods, their differences and their commonalities, but for my purposes here the most important features of moods are (1) the fact that moods do not have to be caused by an appraisal of the world, although they typically result in such appraisals; (2) the fact that, like emotions, moods exhibit characteristic physiological and other bodily changes accompanied by corresponding feelings of those changes; (3) the fact that moods bias cognitive capacities in various ways; and (4) the fact that moods indicate “the overall state of the organism”, its level of energy and its ability – or lack thereof – to cope with challenges. Given this general picture of what moods are, we are now in a better position to address the question whether music arouses moods in listeners, and if so how.

There is plenty of anecdotal evidence that music can affect people’s moods. David Huron (2001), the music psychologist, talks of people “self-medicating” with music in order either to reinforce or to change mood. And some composers oblige by writing “mood music”, music to get you going in the morning, music for while you iron or type, music for socializing to, music for love-making, and music to put you to sleep again. Movie music frequently sets a mood of anxiety or calm, gloom or happiness. In general, in discussions of music and mood, there are four mood states that come up over and over again: sadness (or gloom or melancholy) and happiness (or joy or cheerfulness or contentment), nervousness (or anxiety or agitation) and calm or peacefulness. So the question becomes: *how* can music evoke moods of sadness or happiness, anxiety or calm when there is nothing to be sad or happy about, no intentional object meriting anxiety or calm?

The answer in brief is that music directly induces bodily changes characteristic of particular moods, including autonomic changes, facial expressions, movements, gestures, and action tendencies. These bodily changes are experienced subjectively – and reported by listeners – as feelings of sadness, happiness, ebullience, anxiety, peacefulness, irritation, nervousness, etc. Crucially, the effect of the music is also to change energy and tension levels and in particular to produce the sorts of cognitive bias characteristic of particular moods.²⁰ Because musical movement in particular induces an urge to move as well as action tendencies in listeners, I have elsewhere (Robinson 2005) christened this effect the “Jazzercise effect”.

To show that music can arouse moods, we need first to demonstrate that music can regularly induce in listeners physiological changes, action tendencies, and bodily expressions characteristic of moods. But this is not enough to show that

discuss the many interesting ramifications of this idea, or its bearing on the question of whether music can arouse moods. I discuss these questions further in “Music and Misattribution” (in progress).

²⁰ Exactly how the felt bodily changes are connected to the cognitive and other changes characteristic of mood is not yet known, although there are theories out there. For example, James Laird (2007) thinks that we make unconscious inferences of the form: “I am *feeling* sad; therefore I must be sad.” Presumably the cognitive biases etc. are supposed to follow as a result of my interpretation of my state.

music induces moods themselves. We also need to establish that music induces biases in various cognitive processes, affects energy and tension levels, and results in self-reports of mood change. I begin with some of the evidence that music induces bodily and behavioural changes characteristic of moods.

There is a large body of empirical evidence that music can indeed produce systematic physiological reactions characteristic of distinctive moods. “Arousing” music, such as the Toreador song from *Carmen*, increases heart or pulse rate as well as decreasing resistance in skin conductance, whereas “sedative” music decreases heart rate and increases skin conductivity resistance.²¹ Effects on respiration rate, blood pressure, muscular tension and motor activity, finger temperature, and stomach contractions have all been documented as well. Cardio-respiratory activity varies systematically in listeners to music that is found independently to be happy, sad, calm, or agitated (Nyklicek et al. 1997). Similarly differentiated effects have been reported not only on heart rate and skin conductance but also on facial expressions: apparently happy music induces subliminal smiles and sad music subliminal frowns (Scherer and Zentner 2001). Moreover, in an elaborate experiment, Carol Krumhansl (1997) measured subjects’ heart rate, blood pressure, skin conductance, finger temperature, etc. as they listened to music which she antecedently classified as happy, sad, and fearful, and found that there were indeed distinct physiological changes associated with listening to the different types of excerpt.²² To give some idea of the differences found, the sad excerpts produced the largest differences in heart rate, blood pressure, skin conductance, and finger temperature, and the happy excerpts produced the largest differences in respiration.²³ Music also seems to effect *hormonal* changes. Peretz (2001, p. 126) notes that there is data suggesting that music is “effective in eliciting [neurochemical] responses, as suggested by the action of the antagonists of endorphins . . . and cortisol measures”. For example, when infants listened to their mothers singing, the cortisol in their saliva showed significant modulation of arousal (Trehub 2003).

²¹ Bartlett (1996, p. 355); Zimny and Weidenfeller (1963).

²² Peter Kivy (2006a) has criticized this experiment on a number of grounds, most notably that Krumhansl does not know what kind of listening her subjects were engaging in. It is unfortunate that Krumhansl chose programmatic pieces for her experiment, so that indeed, as Kivy (p. 307) says, we cannot be sure “*what was going on in the subjects’ conscious experience*” as they were listening to the music. Maybe they weren’t listening carefully to the music itself, but simply letting their minds wander. But it is instructive that intersubject consistency was very strong for both the “dynamic emotion ratings” and the physiological measures for the different musical excerpts, suggesting that whatever the emotional effects of the music, they were widely shared among listeners and not the result of idiosyncratic associations.

²³ Krumhansl acknowledges that, although she found systematic differences in the autonomic effects of the different pieces, not all the differences reflect those found in non-musical studies of autonomic activity in different emotions by Ekman, Levenson, and others. It may be that some of the differences reflect differences in arousal levels only. Nevertheless, her findings of differentiated autonomic responses to music with different expressive character are highly suggestive.

There is also lots of evidence that music with a specifically sad or happy character affects movement and action tendencies. Much music, including marches, dirges, and lullabies, is specifically designed to facilitate certain activities. One empirical study showed that adults who were listening to a lullaby had decreased heart rate and their breathing rhythm “became synchronized with the rhythm of the music” (Scherer and Zentner 2001, p. 378). Bharucha et al. (2006, p. 158) have suggested that “tiny organs in the inner ear”, which are parts of the vestibulum, “a proprioceptive organ that detects changes in the spatial state of the organism’s body”, are also sensitive to auditory stimuli. They note that these organs in the inner ear are sensitive to forces of acceleration and “help animals discern translations in spatial position”. And they point out that “nerves from [these organs] project through intermediaries to spinal motoneurons, establishing a pathway by which acoustic stimuli could influence the spine and thus create a compulsion to move to music in addition producing a sense of inner motion”. In addition, the neuroscientist Daniel Levitin (2006) has noted that there are neural connections from the ear that bypass the auditory cortex and “send masses of fibres to the cerebellum” (p. 180), a structure deep in the so-called reptilian brain, which is a centre of motor control linked to our sense of timing, and which also contains “massive connections to emotional centres of the brain” (p. 171), such as the amygdala and the frontal lobe.²⁴

I have mentioned only a small part of the large literature on the effects of music on bodily changes of various sorts. It seems pretty clear that music does indeed have the power to calm people down and cheer them up, make them excited or sadden them, as measured by physiological changes and action tendencies characteristic of these moods as well as by self-report. People claim that music really does cheer them up, calm them down, and so on. But in order to show decisively that listeners have been put into a different *mood*, rather than merely undergoing various bodily changes, we also need to establish whether these listeners exhibit the various cognitive and other changes that define moods.

There is good evidence that listening to music with a happy or sad, restless or calm character does in fact have the kinds of cognitive effects that typify moods. We know this because playing music with a particular character (usually positive or negative, i.e., happy or sad) is frequently used as a “mood-induction procedure” in the lab, being both easier to control and less ethically problematic than putting people into sad-making or nervous-making situations. Experimenters assume that music puts people into various mood states and then study the cognitive effects of being in a particular mood. The results are instructive.

²⁴ For an interesting and elaborate theory of “the musical representation”, which emphasizes the connections among music, movement, and emotion, see Nussbaum (2007).

(1) There are effects on *perception*. Bouhuys et al. (1995) found that after listening to sad music, subjects “perceived more rejection/sadness in faces with ambiguous emotional expressions and less invitation/happiness in faces with clear, unambiguous expressions”.²⁵

(2) There are effects on *memory*. Gordon Bower (1981) has shown that events that one has memorized under the effect of a certain mood are recalled more easily when that mood or a similar one is evoked. This effect has been observed when the mood in question is evoked by playing music with the appropriate emotional quality, happy or sad.²⁶

(3) There are various other cognitive effects, including effects on recognition, decision-making, and appraisal. Niedenthal et al. (1997) found that after listening to happy or sad music, people were quicker to recognize words like “happy” or “sad”. An experiment by Kenealy (1988) found that “a music mood-induction procedure yielded significant effects on behavioural measures, such as decision-time, distance approximation, and writing speed”.²⁷ In another study, after music was played to induce “positive, negative, or neutral affect”, listeners were asked to appraise their own specific qualities and character. (How smart are you? How kind are you?)²⁸ Subjects rated themselves more favourably after listening to happy music than after sad music.

(4) There are apparently even effects on *altruism*. Fried and Berkowitz (1979) found that when four groups of people were played examples of soothing, stimulating, or “aversive” music (or – for the control group – no music), “those who heard the soothing music were most apt to show altruistic behaviour immediately afterwards”.²⁹ The “altruistic behaviour” consisted in volunteering for another study!

In short, it seems that music with a happy, sad, calm, or excited character has distinct measurable effects on motor activity, action tendencies, autonomic changes, and so on, resulting in distinct feelings of bodily change. These feelings of bodily change are reported as feelings of *moods* such as happiness, sadness, serenity, excitement, etc., and there is good reason to think that the bodily changes are indeed indications of mood changes, because they are accompanied by changes in one’s capacity to engage in various cognitive and other tasks, to assess oneself positively or negatively, to attend to and to remember certain kinds of events, and so on. Indeed, it seems reasonable to assume that these feelings are indeed signals (to use Thayer’s term) of one’s overall state, including the level of tension or arousal

²⁵ Cf. Scherer and Zentner (2001, p. 374). See also Niedenthal (2001).

²⁶ Bower (1981, p. 141).

²⁷ Sloboda and Juslin (2001, p. 84).

²⁸ Reported by Scherer and Zentner (2001, p. 380).

²⁹ Scherer and Zentner (2001, p. 378).

one is experiencing, the level of energy one has available relative to the challenges to be faced, and one's capacity for problem-solving and other cognitive tasks.³⁰

For example, the Funeral March from Beethoven's Third Symphony (the *Eroica*) has the slow, heavy, plodding gait characteristic of a gloomy mood. In most "suitably backgrounded" listeners it will produce (typically without overt awareness) bodily changes including autonomic changes, action tendencies, and motor activity, notably an urge to move in a slow, deliberate, heavy-footed way. The resultant body state is *felt* as gloomy and as an indication of a gloomy mood. Similarly with respect to music that makes us skip and dance. The skipping and dancing induce feelings signifying excess energy, confidence, optimism. In short, they are feelings of light-heartedness and joy.³¹ As William James (1981, p. 1072) long ago observed:

Smooth the brow, brighten the eye, contract the dorsal rather than the ventral aspect of the frame, and speak in a major key, pass the genial compliment, and your heart must be frigid indeed if it do not gradually thaw!

In short, "Fake it till you Make It!" is good advice if you want to change your mood.³²

Why call these feeling states mood states rather than emotions? The main reason is that they do not seem to be caused by an *appraisal* of the music (or of anything else for that matter), and they are not *about* any particular "adaptational encounter", such as a loss or a boon. Moreover, even though it's the sad music that makes me feel sad, I'm not sad *about the music*. The music does not (normally) signify a loss. It might be objected that nevertheless my sadness is directed towards the music as its object because that's what I am attending to as I am being saddened. Even this is not quite right, however. I may be paying attention to the melody when it is the rhythm that is having the main physiological effect on me. Or I may be listening to the words while it is the melody that chiefly affects my mood. In general, the arousal of moods by music seems to occur largely outside awareness. The music is functioning as a "stimulus object", in Kivy's (1990) phrase, rather than as a cognitive object, the object of an appraisal. One might be aware *that one is feeling sad* after listening to a sad piece, but one is typically not aware of why or how one came to be sad. In this respect music operates on mood much as recreational drugs do.

³⁰ Again, much more needs to be said here. I explore these issues in greater detail in "Music and Misattribution".

³¹ This raises the question whether the gloom or joy felt is genuine gloom or joy or, as Prinz (2004, p. 235) claims, a kind of perceptual illusion. I discuss this issue at greater length in Robinson (2005) and in "Music and Misattribution".

³² For a wealth of examples supporting James's hypothesis see Laird (2007). However, Laird does not distinguish between emotions and moods in his discussion.

The phenomenon I have been discussing is sometimes referred to as a form of “emotional contagion”, which has been defined by the authors of an eponymous book as the way in which “people tend to ‘catch’ others’ emotions” (Hatfield et al. 1994, p. 11) by means of mimicking their facial expressions, vocal expressions, posture, movements, and other behaviour. Subjective emotional experiences “are affected . . . by the activation and/or feedback from such mimicry” (p. 10). It might be thought that these researchers have found evidence that music can indeed arouse *emotions* rather than moods by means of such mimicry. However, Hatfield et al. (1994) use the terms “emotion” and “mood” more or less indiscriminately, and it is unclear whether they think that emotional contagion is contagion of genuine emotions, or merely (as might seem more likely) of moods. At any rate, the phenomenon of so-called “emotional contagion” has marked analogies to the Jazzercise effect: we are induced by music expressive of some mood such as sadness or happiness to look and sound and, in particular, to *move* in a way characteristic of the mood being expressed. We then begin to experience feelings characteristic of that mood.³³ As in emotional contagion between people, music affects listeners’ moods by means of mechanisms that function below the level of conscious awareness. The mood itself may be conscious – indeed some theorists (e.g., Thayer 1989) think that moods by definition are always conscious – but how the mood is arrived at is typically not. People are notoriously bad at identifying the source of their moods.³⁴

29.4 ARE LISTENERS’ EMOTIONAL RESPONSES RELEVANT TO AESTHETIC APPRECIATION?

.....

29.4.1 Emotions of Appreciation

As we saw earlier, although Peter Kivy thinks that music never arouses the “garden-variety emotions” that it expresses, he acknowledges that when music is being

³³ See Robinson (2005) and Davies (forthcoming). Note that “emotional contagion” by music isn’t exactly the same thing as emotional contagion by a person. When we sit listening to a gloomy person and begin to take on the tone of voice, posture, and facial expression of that person, we are induced to feel with that person and to share his or her emotional state. When we listen to gloomy music, it is the music that puts us into a bodily and behavioural state characteristic of some emotion; there is no one with whom we are feeling, unless we are imagining a persona in the music whose emotions we are sharing. But even if we do this, it is the *result* of the music’s putting us in a certain bodily state, not the cause. As Davies notes: “Unlike other types of contagion, the germs of emotion transmitted by music seem to require no social interaction – musical emotions are airborne contagions” (p. 156). I made the same point in Robinson (2005), although not so wittily.

³⁴ For example, “most people . . . believe that they are much happier on sunny days than on cloudy, rainy days”, but the data demonstrate “that this is simply not the case” (Watson 2000, pp. 100–1).

appreciated qua music, it can arouse “emotions of appreciation”, such as excitement or ecstasy, which are evoked by the music and have the music as its intentional object. For example, we listen carefully to Josquin’s *Ave Maria*; we recognize its beauty; we notice that it is a canon at the fifth with the entrances only one beat apart; and we are moved, thrilled, and awed by the beauty and craftsmanship we have detected.³⁵ For Kivy, musical understanding entails being able to *describe* the music (as, for example, a “canon at the fifth”),³⁶ and emotional responses to music are a result of such understanding. I appraise the music as being a beautiful canon, for example, and this appraisal causes an emotional response of awe and excitement.

Being moved by a piece can be a sign of appreciation. Theoretically, of course, it might be possible to appreciate a piece in a purely cognitive way, noticing the canon and recognizing the beauty and estimating both as having high aesthetic value, yet without being *moved* by it. But normally when we say that we appreciate a piece it seems we are not just recognizing intellectually that the piece has high aesthetic value but also responding to it with positive emotion. It is odd to say that I much appreciated a work of art that, as we say, “left me cold”.

Jesse Prinz (2007, p. 2) has gone further. He argues that “when we appreciate a work [of art], the appreciation *consists in* an emotional response” (my emphasis) that he tentatively identifies with the emotion of *wonder*. Prinz cites a great deal of empirical evidence designed to show that “emotions arise during aesthetic appreciation, influence aesthetic preference, and may even be necessary for appreciating art” (p. 6). However, although this evidence may show that emotion is *necessary* for appreciation, that is very different from Prinz’s claim that “appreciation is an emotional state” (p. 7).³⁷ After all, even if a positive emotional response to a piece is necessary for appreciation, it is not sufficient. I might be delighted by a piece of music for all the

³⁵ The music psychologist Vladimir Konečni (2008) argues that there is an “aesthetic trinity” of emotional or quasi-emotional states that can be aroused by music, *aesthetic awe*, *being moved*, and *thrills*, but unlike Kivy, he stresses the role of listeners’ associations to the music and the environment where the music is heard in helping to arouse these states.

³⁶ But a relatively inarticulate music listener, such as E. M. Forster’s Mrs. Munt from *Howard’s End*, can still exhibit understanding of a piece of music by giving a crude description. For Kivy (1990) musical understanding means understanding of musical structure, which for him includes expressive qualities.

³⁷ Prinz builds an evaluative element into the emotional response he thinks constitutes appreciation, saying that “aesthetic appreciation is a form of wonder”, and that wonder can also be described as “a feeling of reverence”. Wonder captures the “features of pleasure, admiration, and interest” central to appreciation. So there’s positive evaluation built into the emotion: we delight in, look up to, and revere objects of wonder. What’s missing, however, is any account of what makes some art works *appropriate objects* of wonder. Appreciation is identified with a positive appraisal and the relevant positive appraisal is identified with wonder, but unfortunately one can make a positive appraisal of something without appreciating it, as when I claim that a work is really great, but in fact I don’t actually understand it, although I might think I do, and one can wonder at something that is not worth wondering at or which it’s inappropriate to wonder at, such as a trite velvet Elvis painting.

wrong reasons. Appreciation entails not merely delight but delight based on a proper understanding of a piece. Thus I might be delighted by an unimaginative and sentimental piece that isn't an appropriate candidate for appreciation. Or I might be delighted by a well-constructed and beautiful piece without noticing its beauty or its marvellous construction. It would seem, therefore, that appreciation cannot be *identified* with a positive emotional response such as wonder or delight. Appreciation requires understanding as well. Indeed we might say that the delight or wonder in question is precisely the delight or wonder of understanding something that is worthy of being understood. Wonder, awe, excitement, and admiration are emotions of appreciation only when they are based on understanding.

If this is right, however, it means that emotions of appreciation can occur only *after* understanding (at least to some extent) has been achieved. They are the *result* of experiencing and understanding a work. But there are other emotions that are induced in the very process of understanding a work. Indeed these emotions themselves constitute a mode of understanding. In section 29.4.2 I want to focus on affective states that are not a *result of* understanding but a *means towards* understanding.

29.4.2 Emotions, moods, and feelings as modes of understanding music

If we review the various other ways I have discussed in which music can arouse emotions or moods, we find that all of them are capable, to a greater or lesser degree, of helping us to understand what we are listening to by alerting us to important aspects of the music. First, there are the various ways in which emotions are aroused by appraisals.

(a) Sometimes when listening to music we may discover ourselves becoming gloomy or reverential or cheerful without knowing why. There may be many different reasons for this, but one common reason is that we have unconscious associations to the music. If the associations are idiosyncratic (as when I feel joyful when I hear the Chopin Funeral March), they are not likely to enhance my understanding of the piece. But if the associations are cultural – the result of *topoi* in the music – then they may alert me to the presence of those *topoi*. I'm feeling cheerful because the music is in jig form, gloomy because it's a funeral march, or reverential because it is hymn-like. In such cases, the emotional effects of these *topoi* in the music may help us to identify the *topoi* themselves and the emotions that they express.³⁸

³⁸ At times, of course, I may be perfectly aware that I am listening to a jig or a hymn, and my emotional response merely confirms what I already know. But very often associations to music of whatever kind work below the level of awareness.

(b) Sometimes music acts as a “cognitive object” of emotions. There are the emotions of appreciation which I have just discussed. But there are also the emotions that Leonard Meyer tells us can be a mode of understanding the structure of a musical work. If I am appropriately surprised, bewildered, relieved, and so on by the unfolding musical structure, this *constitutes* musical understanding. Note that Meyer is chiefly interested in the understanding of structure, not expression.³⁹ Feeling the right emotions in the right places is a mode of structural understanding, however inarticulate it might be.

(c) Emotional responses to emotional expression in music can also help listeners understand what a piece of music is *expressing*. Thus if I am responding to music that shares an acoustic code with human vocal expressions of woe in the way described by Juslin, then, although I am probably not consciously aware of the mechanism underlying my response, the distress I feel may well make me notice that the music expresses woe.⁴⁰ Furthermore, if the expressive power of a piece of music is partly derived from the “plot archetype” that it exemplifies, then the emotional changes I experience in response to what is happening in the music should alert me to the corresponding expressive changes in the music.⁴¹ Meyer explained how harmonic changes, for example, can in turn surprise, unsettle, disappoint and, finally, satisfy me. Sometimes such emotional changes in the listener reflect not only structural but expressive developments in the music, as when Schubert’s outcast wanderer finds himself in unfamiliar, bewildering, hostile terrain before undergoing an epiphany and returning home a changed person with a new-found serenity. The story I have just sketched is, of course, banal, but the emotional experience of this story as “told” by Schubert is very far from banal. The emotions aroused by the unfolding psychological drama are not only what give it its emotional power; they also alert the sensitively responding listener to exactly what is going on expressively in the unfolding drama. Indeed, unless we respond emotionally, we are unlikely to grasp the psychological drama exemplified by the music or the emotions that the music is expressing.⁴² Thus responding emotionally to the psychological journey of the protagonist of Schubert’s *Winterreise* or to the psychological drama enacted by the imagined wanderer of the B-flat piano sonata is a mode of understanding the expressive structure of these pieces.

³⁹ It is only in the final chapter of Meyer (1956), “Note on Image Processes, Connotations, Moods”, that he turns to the arousal of affective states as a result of associations, connotations, and so on.

⁴⁰ If the piece in question is Purcell’s *plaint*, then my woe is probably not undiluted. I am also likely to respond emotionally to the beauty of the music. I will say more about mixed emotional responses in the final section.

⁴¹ In Karl and Robinson (1995) we suggest in a series of footnotes how the sequence of emotions aroused by the music alerts the listener to the emotional development in the piece itself.

⁴² I make the corresponding case for some great works of realistic literature in chapters 4 and 5 of Robinson (2005).

Now, Peter Kivy (2006*b*) argues that if you imagine a wanderer in such instrumental music, it is really your own mind that is doing the wandering. You have become distracted from “the music itself” and given in to extraneous imaginings. But this is unfair. There is evidence that the theme of the outsider or wanderer was dear to Schubert’s heart, so it is not inconsistent with what we know of Schubert’s intentions that he might have had in mind some such psychological interpretation of his work. And if we are responding to the psychological “resonances”⁴³ of the music, this partly explains why the music seems to us so profound. If all we are listening to is a beautifully built structure of tones, this would be mysterious, as Kivy (1990) himself acknowledges. More importantly, perhaps, the charge that in listening to Schubert’s music as a beautiful structure of tones that exemplifies a compelling psychological drama our minds are wandering away from the music itself can be answered decisively by pointing out that when we pay attention to the unfolding music, we are paying attention simultaneously both to musical structure and to what this structure exemplifies in the wider human realm. As Noël Carroll and Margaret Moore (2007) put the point in their response to Kivy, if in listening we are imagining a persona in the music whose psychological story we are engaged with, then the relevant imagining “is strictly tied to properties of the music”, (p. 320) and not “wool-gathering”, as Kivy (2007*b*) would have it.

(d) So far I have been talking about the various ways in which music can arouse emotions proper. But what about moods? Does the arousal of mood states have any bearing on our understanding of the music itself? As we saw earlier, there is good evidence – contra Kivy – that music does arouse some “garden-variety” moods such as joy and sadness, but it also seems to be true that mood arousal mechanisms operate wholly or largely below the level of consciousness. How then can they affect conscious appreciation of a musical work?

I suggest that such mood effects are indeed aesthetically relevant insofar as they function as “background” affective states,⁴⁴ which have a subliminal priming effect. They put us into a mood in which we are more likely to notice and to pay attention to certain expressive qualities in the music. If subliminally I am put into a depressed mood by being induced to move and behave in a depressed way, then it seems reasonable to assume that one indication that I am indeed in such a mood is that I more readily notice and attend to expressions of gloom or anxiety in the music. Such effects are, then, indirectly relevant to appreciation in that they help to focus attention on what is being *expressed* by the music. Thus it seems likely that the languorous mood induced in listeners by “L’après-midi d’un faune” plays an

⁴³ The word is Newcomb’s. See Newcomb (1984*a*).

⁴⁴ Cf Antonio Damasio (1994, 1999) on “background feelings”.

important role in what we hear the music as expressing. The melancholy mood aroused by “The Death of Åse” from Grieg’s *Peer Gynt* suite may prime listeners to detect the melancholy quality of the music.⁴⁵

On the other hand, Kivy is no doubt correct in thinking that mood arousal mechanisms are not usually very important to the understanding and appreciation of great art music in the Western “classical” tradition. Such music is precisely *not* – or not merely – “mood music”, music to iron to or to make love to. With wonderful exceptions such as those I have just mentioned, what we call “mood music” does not usually repay careful attention to its style and form.⁴⁶ Whereas priming effects take place below the level of conscious awareness, the kind of complex art music that is of most interest to Kivy requires careful conscious attention to the musical structure. It doesn’t merely work on us subliminally while we’re paying attention to something else. To treat the Funeral March in Beethoven’s Third merely as a mood-induction procedure is not to listen to it in an aesthetically appropriate way. Indeed, arguably it is not to *listen* to it at all, since listening involves paying attention and following the development of the music, whereas to have one’s moods affected by music requires only that one hears it going on in the background. Marches and work tunes do not demand that one focus on details of the harmonic and melodic development; all you need to do in order to be affected appropriately is to march or work to the rhythm of the music (or to engage in imaginative motor mimicry).

But Kivy is wrong to argue (1) that proper listening to great music in the Western tradition never involves being moved to a feeling or mood or emotion state that is the same as the state being expressed by the music; (2) that the moods or feelings induced subconsciously play no role in one’s aesthetic experience and appreciation of the music; (3) that if one imagines a “program” as one listens to music, one is necessarily engaging in wool-gathering or mind-wandering, and (4) that such “programs” should never be part of one’s aesthetic experience of (a great piece of Western) music. Finally (5) I have argued that at least *some* of the music Kivy is interested in is indeed “intended” to be heard as satisfying a “program” and has “a better payoff when heard as it was intended” (Kivy 2007b, p. 328).

⁴⁵ Kivy (2007b, p. 326) argues that it is implausible that the arousal of emotions can alert us subliminally to the presence of qualities in the music. He thinks that we first notice qualities and then react emotionally to them. But typically priming effects are obtained only when subjects are unaware of the prime to which they are subjected. A very brief exposure to a prime – too fast for conscious awareness – is enough to secure the effect.

⁴⁶ Much film music is mainly concerned to induce moods subliminally.

29.5 THE EMOTIONAL RICHNESS OF OUR MUSICAL EXPERIENCE

For formalist theorists such as Kivy, the only emotional effects of music that are relevant to aesthetic appreciation are responses of being awed, thrilled, excited, etc. by the “purely musical” structure of a piece. By contrast, Carroll seems to think that the only affective states that music can arouse are moods.⁴⁷ As I have tried to show, both these positions are seriously mistaken. Music can arouse emotions, including “garden-variety” emotions as well as emotions of appreciation. It can also arouse moods. What’s more, it can arouse all these affective states simultaneously. Moreover, the affective states aroused by different mechanisms may either reinforce or clash with one another.⁴⁸

Let us review the various ways in which music can arouse affective states. First, we may respond emotionally to the cultural associations of a type of music or *topos*, feeling proud and uplifted as we listen to military music, reverent as we listen to religious music, or nostalgic as we listen to a childhood lullaby. At the same time, we may be moved, awed, and full of wonder at the beauty and craftsmanship we appraise as belonging to the music. Thirdly, we may respond with surprise, bewilderment, and relief as we follow the unfolding musical structure, bearing in mind the structural norms of the style of the piece and the expectations they set off in knowledgeable listeners. Fourthly, we may respond emotionally to what is being expressed by the music. Sometimes this will be an automatic “instinctive” response to music that shares the same intonation patterns as human vocal expressions of grief or joy. Sometimes this will involve more cognitive activity, as when we respond emotionally to the psychological predicaments of an imagined persona in the music, such as Schubert’s wanderer or Schumann’s alter egos, Florestan and Eusebius. Finally, music may evoke moods by manipulating our bodily stance, movement, emotional expressions, and behaviour.

What has not been widely noticed is that music can arouse emotions in these various different ways *at the same time*. Furthermore, the different mechanisms may be simultaneously arousing different emotions or mood states. I have noted that if music produces an urge to move as the music moves, then the urge to move briskly to music can put you in a cheerful mood and the urge to move slowly can

⁴⁷ In his most recent statement Carroll suggests that only “feelings” are aroused “rather than full-fledged moods” (Carroll and Moore 2007, pp. 321–2). But, as Kivy (2007b, p. 326) notes, although the experience of listening to “pure” music certainly arouses “feelings” in listeners, the claim is vacuous because so “does every other experience [he] can think of”.

⁴⁸ See Robinson (2005). Juslin and Västfjäll (2008) also discuss some of the many different mechanisms responsible for the arousal of affective states by music. They agree that these mechanisms may work simultaneously in order to induce rich emotion blends.

put you in a gloomy mood. In criticizing Laura Sizer (2007) and Carroll and Moore (2007) on this point, Kivy (2007a, p. 315) notes that the opening measure of Beethoven's Fifth is in a brisk tempo but is "dominated by gloom and doom", whereas the slow movement of his *Pathétique* piano sonata is slow but "diffused with a sublime mood of tranquil sunshine and well-being". Even if we allow that such music "has a tendency" to put us in a particular mood, the tendency may not get realized, and in any case "there is so much else, of far more importance, going on", when "I am listening and concentrating in the formalist manner to Western art music in its proper settings" (p. 315). In another place (2006b, p. 277) Kivy argues that, according to Meyer's view, it would follow that all suspenseful or frustrating music would induce the *same* moods of suspense and frustration, whereas because different suspenseful passages have quite different expressive qualities, it is highly unlikely that they would all arouse the very same moods. There is a big difference, he points out, between a suspenseful joyous passage and a suspenseful gloomy passage.

Both these arguments fail for the same reason. The arousal of a cheerful or gloomy mood by the induction of corresponding movement is but one of the mechanisms for the arousal of emotion that may be at work in a piece. The opening theme of Beethoven's Fifth, for example, is part of a psychological drama to which we respond emotionally. Its brisk rhythm may in the abstract be liable to produce good cheer but given the other qualities in the music – its darkness, inexorability, and power – the briskness gives rise rather to a feeling of resoluteness or something of this sort. Here two modes of affective arousal combine or blend to arouse a new and more subtle affective state. Similarly, of course not all suspenseful or frustrating music produces the very same affective states in listeners because suspense and frustration are not the only affective states being aroused. Meyer has described one mechanism for the arousal of affect by music but there are several others, as I have noted. Thus the suspense aroused by *Bolero* has an erotic tinge, while the suspense induced by the wanderings in the opening movement of Schubert's last sonata can induce feelings of loneliness or abandonment. Again the emotional response is not only to the unfolding formal structure but also to the expressive structure of the music.

In general, then, different mechanisms for the arousal of emotion, mood, or feelings by music can all be operating simultaneously and inducing different affects at the same time. This is perhaps why music is often described as producing *ineffable* feelings. The emotions and moods that music induces may be *blends* that the listener has not hitherto encountered. They may be highly *ambiguous* and *nuanced*. At the same time, some pieces arouse powerful affective responses because several different mechanisms of emotional arousal work together to produce a powerful unified effect.

Towards the end of the development section of the first movement of Schubert's B flat Piano Sonata, when the theme has moved through a wide range of different

keys, taking us further and further away from the “home” key, we find ourselves unexpectedly in D minor. As I mentioned earlier, Charles Fisk (2001, p. 253) describes this moment as “a stillness that awaits an epiphany”. Fisk’s interpretation relies on the idea that the piece is appropriately heard as a human drama, which enacts the psychological journey of a “wanderer” or “outcast”, a figure familiar to us from Schubert’s songs,⁴⁹ and that we hear this particular passage as the wanderer himself arriving at a strange, mysterious, and wondrous place. As far as the *mood* of this passage is concerned, it is a still, calm passage in the midst of questing and wandering. It is a moment of stasis and this no doubt has a subliminal *calming* and *quieting* effect on the listener. In terms of the harmonic structure of the passage, as Meyer might note, after being *intrigued* and *bewildered* by the constant modulations that precede it, we are *surprised* by the unexpected arrival of D minor. But simultaneously we are responding to the sense of mystery and impending revelation that is expressed by the passage. For me – and I think for Fisk – what we are encouraged to feel is not just surprise but a blend of *wonder* and *bliss* at being in this strange and beautiful new territory, an oasis of calm and quiet in the midst of wandering and striving. We grasp the new emotional feeling in the music because we share it, responding emotionally to the situation of the protagonist and to the psychological story that Schubert is unfolding.⁵⁰ Finally, the passage is also very beautiful and shows off Schubert’s harmonic wizardry, and so we are likely to respond with emotions of *awe* and *wonder* to the beauty and craftsmanship in the music, as Kivy would have us do.

Does everyone respond emotionally in the way I have described? Surely not. Nevertheless, I have described an emotional state – a blend of awe, wonder, quietude, surprise, and bliss – that I would urge is not only appropriate to this music but which also can help the listener to appreciate the music more fully.

REFERENCES

- BARTLETT, DALE (1996), “Physiological Responses to Music and Sound Stimuli”, in *Handbook of Music Psychology* 2nd edition, edited by Donald A. Hodges (San Antonio, TX: Institute for Music Research).
- BEN-ZE’EV, AARON (2000), *The Subtlety of Emotions* (Cambridge, MA: MIT Press).
- BHARUCHA, JAMSHEED J. et al. (2006), “Varieties of Musical Experience”, *Cognition* 100: 131–72.

⁴⁹ And also present in, for example, the *Moment Musical* No. 6 as analysed by Edward T. Cone (1982).

⁵⁰ I have described the listener’s reaction as mirroring the protagonist’s, but listeners may also react emotionally to the protagonist’s sense of wonder. We may be *glad* for him, for example, or *relieved* that his psychological quest has reached this magical turning point.

- BICKNELL, JEANETTE (2007), "Explaining Strong Emotional Responses to Music: Sociality and Intimacy," *Journal of Consciousness Studies* 14: 5–23.
- BOUHUYS, A. L., G. M. BLOEM, and T. G. GROOTHUIS (1995), "Induction of Depressed and Elated Mood by Music Influences the Perception of Facial Emotional Expressions in Healthy Subjects," *Journal of Affective Disorders* 33: 215–26.
- BOWER, GORDON (1981), "Mood and Memory," *American Psychologist* 36: 129–48.
- CACIOPPO, JOHN T. et al. (2000), "The Psychophysiology of Emotion," in *Handbook of Emotions* 2nd edition, edited by M. Lewis and J. M. Haviland-Jones (New York: Guilford Press), 173–91.
- CARROLL, NOËL (2003), "Art and Mood: Preliminary Notes and Conjectures," *Monist* 86: 521–55.
- and Margaret Moore (2007) "Not Reconciled: Comments for Peter Kivy," *Journal of Aesthetics and Art Criticism* 65: 318–22.
- CONE, EDWARD T. (1974), *The Composer's Voice* (Berkeley: University of California Press).
- (1982), "Schubert's Promissory Note: An Exercise in Musical Hermeneutics," *Nineteenth-Century Music* 5: 239.
- DAMASIO, ANTONIO R. (1994), *Descartes' Error: Emotion, Reason, and the Human Brain*. (New York: G. P. Putnam).
- (1999), *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (San Diego, CA: Harcourt).
- DAVIDSON, RICHARD J. (1994), "On Emotion, Mood, and Related Affective Constructs," in *The Nature of Emotion*, edited by Paul Ekman and Richard J. Davidson (New York: Oxford University Press).
- DAVIES, STEPHEN (forthcoming), "Infectious Music: Music-Listener Emotional Contagion".
- ELLSWORTH, PHOEBE (1994), "William James and Emotion: Is a century of Fame Worth a Century of Misunderstanding?" *Psychological Review* 101: 222–29.
- EKMAN, PAUL (1994), "Moods, Emotions, and Traits," in *The Nature of Emotion*, edited by Paul Ekman and Richard J. Davidson (New York: Oxford University Press), 56–8.
- FELDMAN BARRETT, LISA (2006), "Are Emotions Natural Kinds?" *Perspectives on Psychological Science* 1, 28–56.
- FISK, CHARLES (2001), *Returning Cycles: Contexts for the Interpretation of Schubert's Impromptus and Last Sonatas* (Berkeley: University of California Press).
- FRIED, R. and L. BERKOWITZ (1979), "Music That Charms . . . And Can Influence Helpfulness," *Journal of Applied Social Psychology* 9: 199–208.
- FRIJDA, NICO (1986), *The Emotions* (Cambridge: Cambridge University Press).
- (1993), "Moods, Emotion Episodes, and Emotions," in *Handbook of Emotions*, edited by M. Lewis and J. M. Haviland (New York: Guilford Press), 381–403.
- GORDON, ROBERT M. (1987), *The Structure of Emotions* (New York: Cambridge University Press).
- HATELD, ELAINE, JOHN T. CACIOPPO, and RICHARD L. RAPSON (1994), *Emotional Contagion, Studies in Emotion and Social Interaction* (Cambridge and Paris: Cambridge University Press).
- HATTEN, ROBERT S. (2004), *Musical Meaning in Beethoven: Markedness, Correlation, and Interpretation* (Bloomington: Indiana University Press).
- HURON, DAVID (2001), "How Music Evokes Emotion". Paper delivered to University of Cincinnati College-Conservatory of Music.

- JAMES, WILLIAM (1981), *The Works of William James*, edited by Frederick H. Burkhardt. 3 vols. Vols. 1, 2, and 3 (Cambridge, MA: Harvard University Press).
- JUSLIN, PATRIK N. (2001), "Communicating Emotion in Music Performance: A Review and Theoretical Framework", in *Music and Emotion: Theory and Research*, edited by Patrik N. Juslin and J. A. Sloboda (Oxford: Oxford University Press), 309–37.
- and DANIEL VÄSTFJÄLL (2008), "Emotional Responses to Music: The Need to Consider Underlying Mechanisms", *Behavioral and Brain Sciences* 31: 559–75.
- KARL, GREGORY and JENEFER ROBINSON (1995), "Shostakovich's Tenth Symphony and the Musical Expression of Cognitively Complex Emotions", *Journal of Aesthetics and Art Criticism* 53: 401–15.
- KENEALY, P. (1988), "Validation of a Mood Induction Procedure: Some Preliminary Findings", *Cognition and Emotion* 2: 41–8.
- KIVY, PETER (1990), *Music Alone: Philosophical Reflections on the Purely Musical Experience* (Ithaca, NY: Cornell University Press).
- (2006a) "Critical Study: Deeper than Emotion", *British Journal of Aesthetics* 46: 287–311.
- (2006b), "Mood and Music: Some Reflections for Noël Carroll", *Journal of Aesthetics and Art Criticism* 64: 271–81.
- (2007a), "Moodology: A Response to Laura Sizer", *Journal of Aesthetics and Art Criticism* 64: 312–18.
- (2007b), "Moodophilia: A Response to Noël Carroll and Margaret Moore", *Journal of Aesthetics and Art Criticism* 65: 323–9.
- KONEČNÍ, VLADIMÍR (2008), "Does Music Induce Emotion: A Theoretical and Methodological Analysis", *Psychology of Aesthetics, Creativity, and the Arts* 2: 115–29.
- KRUMHANSL, CAROL L. (1997), "An Exploratory Study of Musical Emotions and Psychophysiology", *Canadian Journal of Experimental Psychology* 51: 336–52.
- LAIRD, JAMES D. (2007), *Feelings: The Perception of Self* (New York: Oxford University Press).
- LAZARUS, RICHARD (1991), *Emotion and Adaptation* (New York: Oxford University Press).
- LEDOUX, JOSEPH E. (1996), *The Emotional Brain: The Mysterious Underpinnings of Emotional Life* (New York: Simon & Schuster).
- LEVENSON, ROBERT (1994), "The Search for Autonomic Specificity", in *The Nature of Emotion: Fundamental Questions*, edited by Paul Ekman and Richard J. Davidson (New York: Oxford University Press), 252–7.
- LEVINSON, JERROLD (1996), "Musical Expressiveness", in his *The Pleasures of Aesthetics: Philosophical Essays* (Ithaca, NY: Cornell University Press), 90–125.
- (2006), "Musical Expressiveness as Hearability-as-Expression", in *Contemporary Debates in Aesthetics and the Philosophy of Art*, edited by Matthew Kieran (Oxford: Blackwell), 192–204.
- LEVITIN, DANIEL J. (2006), *This is Your Brain on Music: The Science of a Human Obsession* (New York: Dutton).
- LYONS, WILLIAM, E. (1980), *Emotion* (Cambridge: Cambridge University Press).
- MEYER, LEONARD B. (1956), *Emotion and Meaning in Music* (Chicago: University of Chicago Press).
- MITHEN, STEPHEN (2005), *The Singing Neanderthals: The Origin of Music, Language, Mind and Body* (London: Weidenfeld & Nicholson).

- NEWCOMB, ANTHONY (1997), "Action and Agency in Mahler's Ninth Symphony, Second Movement", *Music and Meaning*, edited by Jenefer Robinson (Ithaca, NY: Cornell University Press), 131–53.
- (1984a), "Sound and Feeling", *Critical Inquiry* 10 (1984): 614–43.
- (1984b), "Once More 'between Absolute and Program Music': Schumann's Second Symphony", *19th Century Music* 7: 233–50.
- NIEDENTHAL, PAULA M. (2001), "When Did Her Smile Drop: Facial Mimicry and the Influences of Emotional State on the Detection of Change in Emotional Expression", *Cognition and Emotion* 15: 853–64.
- et al. (1997), "Being Happy and Seeing 'Happy': Emotional State Mediates Visual Word Recognition", *Cognition and Emotion* 11: 403–32.
- NUSSBAUM, CHARLES (2007), *The Musical Representation: Meaning, Ontology, and Emotion* (Cambridge MA: MIT Press).
- NUSSBAUM, MARTHA (2001), *Upheavals of Thought: The Intelligence of Emotions* (Cambridge: Cambridge University Press).
- NYKLICEK, I. et al. (1997), "Cardiorespiratory Differentiation of Musically-Induced Emotions", *Journal of Psychophysiology* 11: 304–21.
- ORTONY, ANDREW et al. (1988), *The Cognitive Structure of Emotions* (Cambridge: Cambridge University Press).
- PERETZ, ISABELLE (2001), "Listen to the Brain: A Biological Perspective on Music and Emotion", in *Music and Emotion: Theory and Research*, edited by Patrik N. Juslin and J. A. Sloboda (Oxford: Oxford University Press), 105–34.
- PRINZ, JESSE (2004), *Gut Reactions: A Perceptual Theory of Emotion* (New York: Oxford University Press).
- (2007), "Emotion and Aesthetic Value". Paper presented to the *American Philosophical Association Pacific Division conference*.
- RATNER, LEONARD (1980), *Classic Music: Expression, Form, and Style* (New York: Schirmer Books [Macmillan]).
- ROBINSON, JENEFER (1994), "The Expression and Arousal of Emotion in Music", *Journal of Aesthetics and Art Criticism* 52: 13–22.
- (1995) "Startle", *Journal of Philosophy* 92: 53–74.
- (2005), *Deeper than Reason: Emotion and its Role in Literature, Music, and Art* (Oxford: Oxford University Press).
- (2007a), "Can Music Function as a Metaphor of Emotional Life?", in *Philosophers on Music: Experience, Meaning, and Work*, edited by Kathleen Stock (Oxford: Oxford University Press), 149–77.
- (2007b), "Expression and Expressiveness in Art", *Postgraduate Journal of Aesthetics (online)*, 4: 19–41.
- (in progress), "Music and Misattribution".
- RUSSELL, JAMES A. (2003), "Core Affect and the Psychological Construction of Emotion", *Psychological Review* 110, 145–72.
- SCHERER, Klaus R. et al. (2001), *Appraisal Processes in Emotion* (New York: Oxford University Press).
- and MARCEL R. ZENTNER (2001), "Emotional Effects of Music: Production Rules", *Music and Emotion: Theory and Research*, edited by Patrik N. Juslin and John Sloboda (Oxford: Oxford University Press), 361–92.

- SIZER, LAURA (2000), "Towards a Computational Theory of Mood", *British Journal for the Philosophy of Science* 51: 743–69.
- (2007), "Moods in the Music and the Man: A Response to Kivy and Carroll", *Journal of Aesthetics and Art Criticism* 64: 307–12.
- SLOBODA, JOHN A. and PATRIK N. JUSLIN (2001), "Psychological Perspectives on Music and Emotion", in *Music and Emotion: Theory and Research*, edited by Patrik N. Juslin and John A. Sloboda (Oxford: Oxford University Press), 71–104.
- SOLOMON, ROBERT C. (1976), *The Passions* (Garden City, NY: Anchor Press/Doubleday).
- (1988), "On Emotions as Judgments", *American Philosophical Quarterly* 25: 183–91.
- THAYER, ROBERT E. (1989), *The Biopsychology of Mood and Arousal* (New York: Oxford University Press).
- TREHUB, SANDRA (2003), "Musical Predispositions in Infancy: An Update", in *The Cognitive Neuroscience of Music*, edited by R. J. Zatorre and Isabelle Peretz (Oxford: Oxford University Press).
- WATSON, DAVID (2000), *Mood and Temperament* (New York: Guilford).
- ZIMNY, G. H. and E. W. WEIDENFELLER (1963), "Effects of Music Upon GSR and Heart Rate", *American Journal of Psychology* 76: 311–14.