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# *Explaining Strong Emotional Responses to Music*

## *Sociality and Intimacy*

> Why the keening sounds from Mississippi should strike notes of thrill and terror and wonder in hearts in the suburbs of London, I don't know. It can only be because it goes beyond color, blood — it goes to the bone.
>
> — *Keith Richards*

### The Problem: Why Does Music Evoke Strong Emotional Responses?

Among the music most of us hear everyday, willingly or otherwise, in public spaces and private, some is tolerable, some merely pleasant, and some exasperating. Yet once in a while, or often if we are fortunate, we can hear music which inspires awe, transfixes us, even stops us in our tracks. Listeners have recounted being overwhelmed or overpowered by music, being reduced to tears, and experiencing chills or shivers and other bodily sensations. These kinds of experiences will be the focus of this paper. I address the following questions: How can music, understood as an art of sound, prompt powerful physical and emotional responses in listeners? To what extent can we attribute such responses to the sonic qualities of music, to psychological and neurological factors, or to cultural factors? Can these responses tell us anything about music or about ourselves?

To anticipate my conclusions: Certain structural features of music seem to have direct physical effects on listeners. Quite general claims can be made about the type of music which provokes these responses,

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and even about the tendency of specific musical works to provoke them. However the source of music's power is not to be found in the nature of music as a physical causal agent on the brain or body. General claims can also be made about the listeners who report these responses. Powerful responses to music are related to individual psychology, but cannot be reduced to the psychological peculiarities of those who undergo such responses. Such responses are not merely socially or culturally conditioned, although social and cultural norms, musical traditions, even history and philosophy, are important. Finally, answers will not reside in music 'itself' or in its beauty or expressiveness. Music is *per hypothesis* indispensable to these responses, but no music is a sufficient cause of them. All of these factors — music as a physical causal agent, music as object of aesthetic contemplation, listeners as discrete individuals, and listeners as members of a specific musical culture — are important, but in different respects and to different degrees. Ultimately the question of why some music tends to arouse powerful emotional responses in some listeners cannot be separated from the question of why any music at all matters to anyone.

I have found ecological naturalism a fruitful framework in which to examine the phenomenon of strong emotional responses to music. Briefly, ecological naturalism is a non-functionalist and non-reductive approach to the mind. Special emphasis is placed on supra-individual biological processes. Mental processes are conceived as being realized through living communities of bodies and brains, rather than within isolated individuals. First-person responses, while manifested in discrete individuals, are shaped historically and co-defined within a community (Núñez, 1997). As will become clear shortly, I take music to be a fundamentally social phenomenon; however it so often associated with private contexts and personal memories that its use can be mistakenly seen as primarily an expression of self-hood. A framework of ecological naturalism allows us to integrate experimental results from neurology (studies of individual brains) with findings from the social sciences, all the while recognizing the social nature of music.

Part I provides a definition of strong responses and a defence for shifting the problem away from specific musical works and sonic features to the nature of music more generally. In Part II the characterization of musical experience as social is defended, partly through an exploration of music and social bonding. Part III examines the neurology of strong responses. In Part IV social bonding is taken further and

the notion of intimacy is invoked to help us understand the power of music and its capacity for provoking strong responses in listeners.

## Part I: What Are Strong Emotional Responses to Music, and How Might They Be Explained?

Music can arouse many different powerful emotional responses, and I will be interested in only a subset of them. One might be enraged by a poor performance, profoundly bored by an uninteresting work, or disgusted by what one takes to be a performer's unconscionable liberties. The emotional experiences I am interested in are (1) experienced by listeners rather than expressed in music; (2) believed by listeners to be caused by the music, specifically by qualities intrinsic to the music; (3) sufficiently intense so as to stand out from a listener's regular or usual experiences of music; and (4) have a physical component. Following the work of Alf Gabrielsson and his team at Uppsala University, I will use the term 'strong responses' to designate the type of experience I am interested in.[1] In these studies, voluntary participants were asked to describe, in their own words, 'the strongest, most intense experience of music that you have ever had' in as much detail as possible, and to complete a supplementary questionnaire. The SEM ('Strong Experiences of Music') Project has collected over one thousand such descriptions from nearly nine hundred people. Efforts were made to includes listeners of both genders, different ages, occupations, and musical preferences (Gabrielsson & Lindström Wik, 2003).

While strong responses to music, by definition, are thought by listeners to be more intense or significant than their 'everyday' responses, we can nonetheless arrange such responses along a continuum. They range from momentary chills or thrills to longer-duration, transcendent or 'out-of-body' experiences. These experiences can be both intensely personal and private or boisterously social and communal. Sometimes music is the dominant factor contributing to the experience (a single person in a darkened room listening to a recording) and sometimes music is one factor among several (many people participating in a ritual during which music is played).

It will be helpful to examine a few brief examples of strong emotional responses to music. Although responses reflect the personality, background and musical taste of the individual listener, there is more

[1] Philosophically minded readers may have noticed similarities between the kinds of response under discussion and the responses aroused by the aesthetically sublime. I explore such connections in a longer version of this paper. A different approach to these issues is offered by Konecni (2005).

commonality among the descriptions than might be suspected. The first example occurred when the respondent was seventeen years old. He was a fan of Sibelius' *Finlandia* but suspected he would not be able to sit through the entire second symphony, broadcast over the radio:

> I remember how the music penetrated my consciousness entirely. How I gradually lost contact with the ground and experienced an *ecstasy of all my senses.* Yes, it wasn't only my hearing that received its share!
>
> When the tremendous intensification of the finale started, I cried. I remember that my face was all wet, and I experienced a happiness that, as I realized later, only could be compared with an intense love of another person.
>
> I was so totally moved and happy that I just had to sit down and write a letter to this fellow-being Jean Sibelius, thanking him for giving me and many others this incredible music, that seemed to purify oneself … both physically and mentally (Gabrielsson & Lindström Wik, 2003). [Emphasis in the original.]

The second example comes from a *New Yorker* article by John Seabrook. He describes the emotional climax ('the money note') in a performance by up and coming pop singer Cherie:

> Cherie hit the money note with full force — 'When I cry I'm weak/I'm learning to *fly.*' As her voice went up on 'fly,' an electric guitar came floating up with it, and the tone was so pure that a chill spread over my shoulders, prickling the skin (Seabrook, 2003). [Emphasis in the original.]

Finally, the short-story writer Robin Parks describes this experience in a letter to the art critic James Elkins:

> I cried (so hard I had to leave) at a little concert where a young man played solo cello Bach suites. It was a weird little Methodist church and there were only about fifteen of us in the audience, the cellist alone on the stage. It was midday. I cried because (I guess) I was overcome with love. It was impossible for me to shake the sensation (mental, physical) that J.S. Bach was in the room with me, and I loved him (Elkins, 2001).

Similarities among these three accounts include the presence of physical reactions ('ecstasy', weeping, chills); social feelings and connections (the comparison with interpersonal love in the first, and the feelings of connection with the composer in the first and third); and positive feelings (renewal, rejuvenation, love). In other accounts we also find negative feelings (anxiety, depletion) or a combination of negative and positive feelings. Listeners also commonly report feelings of total absorption in the music, as was evident in the first

account.[2] When accounts of strong emotional responses to music differ substantially, this tends to be because individual listeners have placed different cognitive and affective meaning and signification on their feelings, depending on their culture, background, education, and level of music sophistication.

Explanations of strong emotional responses to music tend to adopt more or less sophisticated versions of two basic strategies. First, features of the music (whether understood as sonic qualities, musico-structural qualities, expressive or aesthetic qualities) are thought to be responsible for listeners' responses. Second, psychological characteristics of affected listeners are invoked. At the current state of empirical research neither of these approaches can offer a plausible explanatory account. There is too little commonality among the various different musical works known to prompt strong emotional responses. There is evidence that certain structural features of musical works and works with certain expressive characters arouse powerful feelings in listeners more reliably than do works with different structural features and expressive characters. These features include appogiaturas, dramatic crescendos, unprepared harmonies, melodic and harmonic sequences, and piercing tones emerging from a minimal background (Panksepp, 1995; Sloboda, 1991). Yet there is too little stability and regularity here to construct a satisfactory explanation.

Strong emotional responses to music have also been explained in virtue of the artistic value of the works that prompt such responses. It is tempting to conclude that only the finest musical works ('works of genius') are capable of arousing powerful emotional responses in listeners. However the empirical evidence does not bear this out, even when we allow a generous account of artistic value and recognize that works in different musical genres call for different evaluative criteria. While considerations of value may have a role to play, their explanatory power is limited. Attention to the types of listeners who experience strong responses to music is no more fruitful, as such listeners would seem to have little in common with one another. They do not share age, gender, cultural or professional background. Only vague general things can be said about them; for instance that they enjoy music (of whatever kind) and find it a valuable part of their lives. It is not clear whether the value they place on music in a cause of their propensity to experience strong responses or an effect of it (see for example Lowis, 1998).

[2] Further details and greater systemization can be found in Gabrielsson & Lindström Wik (2003).

I propose to shift the discussion. Rather than ask why certain musical works or certain structural features of musical works can arouse strong experiences, I submit that we need to step back and consider some more basic questions. A change in focus from particular works, performances, and types of listeners to the nature of music more generally is required. The question of why certain musical works in certain contexts arouse strong experiences in some listeners cannot be separated from the more fundamental question of why any music in any context brings about such experiences in any listener. This is not to exaggerate the heterogeneity of music that has been said to evoke powerful responses in listeners. Certain musical works are cited again and again as capable of doing this. This fact is not a red herring; that is, there are likely reasons why it is the case. An investigation of these works is best carried out within an examination of the power of music more broadly construed.

## Part II: Music and Social Bonding

One of the key platforms in my account is the idea that music and the experience of music are fundamentally social, rather than strictly personal or individual. Ludwig Wittgenstein is well-known for his 'private language argument', undercutting the idea that the meanings of the terms in a language might be known only to a single user (Wittgenstein, 1958). In a similar vein (yet without actually applying his argument to music) I hope to show that there could be no strictly private musical experience.

Music's 'social character' can been seen in many ways. Music is created (composed, improvised, performed) by human beings, usually for the benefit of other human beings.[3] The transmission of music from one generation to the next begins very early in life; the practice of singing children to sleep is universal, and every culture has a special musical repertory for children (Nettle, 2000). Furthermore, musical culture relies on human transmission. If a group were to disappear and leave behind no comprehensible record of its music making, we would have no idea what its musical culture was like. Even musicians who are self-taught must rely on other human beings (or recordings of them) to grasp how their instruments are supposed to sound, not to mention how to make sounds into a musical work.

[3] I have to set aside cultures in which unmediated natural sound can be considered music. However there are not very many of these, so I do not think it is a big limitation. In any case the grouping of natural sound with song or instrumental music wherever it occurs is a social convention.

More crucially, systems of musical meaning are conventional in a number of ways. What counts as music in each society rests on cultural agreement. Random sounds are not music.[4] Human beings all over the world make music only in particular ways. All societies place limits on music making, such that certain sounds are accepted as musical while others are excluded. The range of variety present in the world's musical cultures is considerably narrower than the scope of imaginable sound patterns. Similarly, the underlying patterns which give music meaning are also conventional. One cannot make music out of nothing. Musical resources — many musical instruments and some of their performance practices, the capacities of the human voice, rhythmic and tonal patterns — pre-exist individual musicians and composers.[5] Different musical cultures are based upon different patterns of tonal and rhythmic organization. These patterns of musical structure and meaning are social constructions which evolved though human musical practice. Even composers who challenge the limits of musical conventions must presuppose and engage with those conventions in order for their music to sound novel. Furthermore, by the time an individual's sound productions are considered music (even inferior music) rather than noise or mere sound, he will already have begun to assimilate the patterns of musical organization specific to his culture. A child's random banging on pots and pans is usually considered noise rather than music. However if he sings a recognizable but out-of-tune melody this has at least some claim to the status of music-making. (It should be noted here that because a practice is conventional does not entail that it is necessarily arbitrary. The claim that systems of music meaning are conventional does not entail the very different claim that they are wholly arbitrary. Indeed they are probably not. The fact that we can come to understand the music of different cultures probably indicates that such systems have a natural basis.)[6]

The fundamentally social character of music can also be seen in the connections between music and social bonding. Three types of social bonds are of particular interest here: (1) mutual bonds between caregivers and infants; (2) pair bonds between adults; and (3) bonds linking members of social groups and sub-groups.

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[4] I ignore avant-garde music. It does not pose great complications for my views, as human design or intention must enter at some stage.

[5] A similar point is made by Cox (1985). I have formulated the sentence in the text cautiously to allow for the fact that some composers do invent new musical instruments and challenge the capacities of the human voice.

[6] This is suggested by a great deal of research in psychology and ethnomusicology.

There is a good deal of evidence from a variety of sources that musical activity facilitates and reinforces attachment between human infants and their caregivers. There is no evidence of any culture, past or present, in which caregivers have not sung to infants on a regular basis; and the style of infant-directed singing tends to be one of heightened emotional expressiveness (Trehub & Nakata, 2001–2). Parents the world over speak in a characteristic musical manner to infants — more slowly, rhythmically and repetitively, with elevated pitch, simplified pitch contours, and an expanded pitch range. This way of speaking (variously called 'motherese', 'parentese', and 'infant-directed speech') has been documented in numerous languages and cultures, among mothers, fathers, children, and even those with no childcare experience (Trehub *et al*., 1997; see also the references within). For their part, infants show more positive affect in response to infant-directed rather than adult directed speech and singing (Trehub, 2000). When infants are presented with audio-visual versions of their mothers' speech and singing, they exhibit more sustained interest in the singing than in the speech. Furthermore, live maternal singing has more enduring effects on infant arousal than does live maternal speech (Trehub & Nakata, 2001–2). These findings indicate that mothers singing to children may have been one of the earliest human forms of musical interaction. It is reasonable to suppose that such behaviour persists the world over because it contributed to infant-caregiver bonding and thus to infant survival (see also Dissanayake, 2000).

Just as music may contribute to bonding between infants and their caregivers, it is likely that music can contribute to pair bonds between adults. Music is used to facilitate romantic interaction the world over. Darwin believed that music prompted strong emotional responses in listeners because of its use in courtship (Darwin, 1882). But it is just as likely that the reverse is true, and music is used in courtship because of its capacity to prompt strong emotional responses. Additional evidence for music's efficacy in promoting pair bonds comes from research with gibbons. Gibbons have a monogamous social structure and produce 'loud and long' song bouts, usually in the early morning.[7] Ten of the twelve currently recognized gibbon species duet, usually in mated pairs. There is some evidence from research with siamangs, one of the duetting species, that duetting strengthens the pair bond.

[7] Many would disagree whether the vocalizations made by various non-human animals, from whales to birds to gibbons, fulfills the relevant criteria to count as music. I cannot say more here. On this interesting philosophical question see Arom (2000). Sceptical readers are free to substitute 'songs' for songs.

Singing together seems to be positively co-related with grooming activity and behavioural synchronization, and negatively co-related with inter-individual distance between mates (Geissmann, 2000). It is interesting to note that among all singing primates both the female and male sing, and in most species duetting also occurs. All primates known to sing also have a monogamous social structure, and among birds duetting occurs mainly in monogamous species. This suggests that the evolution of singing in primates and duet singing more generally is somehow related to the evolution of monogamy. Since the four groups of primates that sing (and duet) are not closely related it is considered possible that singing (and duetting) evolved four times among primates.

Music is also effective to co-ordinate and promote the solidarity of groups in more abstract ways (see Higgins, 1991, especially chapter five). Sociologists confirm (as parents have probably already suspected) that teenagers use music to signal group allegiance (North *et al*., 2000). National anthems are also relevant here. Singing or listening together to a national anthem (or any song strongly symbolic of a particular group identity) can make individuals identify with larger social entities. Surely such identification is part of what is going on when burly men at sporting events weep when they hear, say, the Welsh National Anthem.

It would seem uncontroversial, then, that music can facilitate the formation of bonds between infants and caregivers, adult pairs, and larger social groups. There are good reasons to suspect that the connections between music and social bonding are not accidental. In particular, attention to the neurobiological foundations of attachment is interesting here. In addition to the evidence that music effects the brain directly, there is evidence that music may activate the neurobiology of attachment, specifically through stimulating release of the neurotransmitter oxytocin. This evidence and the implications we can draw from it are the topic of the next section.

## Part III: The Neurobiology of Social Bonding

Before proceeding, I want to address concerns that a move to examine the brain chemistry of emotion can only be crudely reductive. Human affiliative behaviour — whether love for offspring, partners, God or country — is clearly a complex, multi-faceted phenomenon. Analysis of brain chemistry alone is not likely to provide anything like a satisfactory account. It is only a single piece of a much larger puzzle, but nonetheless a piece we would be unwise to disregard.

Emotions would seem to involve the body, its brain, and the mind; that is, emotions (at least some) are felt in the body, recognized by or known in the mind, and mediated by various brain systems.[8] Our current understanding is that emotional circuits are widely distributed, forming a tree-like structure in the brain. The roots and trunk-lines are in deeper subcortical areas, with branches intersecting to form 'wide canopies' in the evolutionarily more recent cerebral cortex (also called the neocortex). It is likely that music penetrates these emotional systems at many levels, from the auditory cortex (where basic auditory processing of all types is carried out) through to evolutionarily more basic areas in the subcortex (Panksepp & Bernatzky, 2002). This helps us to understand how it is that the emotional power of music can be at once cognitive (relating to patterns of musical expectation and recognition of extra-musical associations) and non-cognitive, acting on deeper brain regions. As Keith Richards puts it in the epigraph to this paper, music goes 'to the bone'.

Most researchers interested in music, emotion, and the brain acknowledge the paucity of evidence ('a few peppercorns', as Panksepp puts it) and recognize that work has barely begun. Although we do not know precisely how it works, there is little doubt that music can have the power to arouse and influence different emotional states.[9] Some researchers believe that music's ability to affect our mood — the emotional charge it can deliver — is derived from the dynamic aspects of brain systems that normally control the emotions of our 'extra-musical' lives (Panksepp & Bernatzky, 2002; Krumhansl, 1997; Freeman, 1995; 1999; 2000). This is an idea that I take up.

There is evidence from a number of different sources for music's ability to affect the brain directly. Music brings about a variety of measurable physical responses in listeners, including heightened awareness, alertness, and excitement. The neurologist Oliver Sacks has written movingly about his patients with neurological disorders who are given a respite from their condition through music (Sacks &

[8] The cautious wording of this sentence is meant to side-step debates on the role of cognition in emotion, and the extent to which emotions are or are not 'rational'. Outlining a 'theory of emotion' would take us too far away from the issues at hand. Similarly, I avoid the question of whether the emotions felt in response to music are 'genuine' emotions or a special sub-class of 'aesthetic emotions' or something else. I stress the similarities between 'musical' and 'extra-musical' emotions rather than the differences. It sometimes seems that much of the philosophical literature on these questions is preoccupied with verbal disagreements.

[9] This is not to say, of course, that all listeners must be so affected by music, or that expression in music amounts to no more than its power to infect listeners. There is a substantial philosophical literature on these questions.

Tomaino, 1991). That music may act directly on the brain to harmful effect is indicated by the rare phenomenon of musicogenic epilepsy — seizures induced by hearing or (in very rare cases) imagining music (Scott, 1977).

Further evidence for music's effect on the brain comes from tests using positron emission tomography (PET) to examine patterns of cerebral blood flow during affective responses to music. Researchers in Montreal scanned ten volunteers as they listened to a novel musical passage that contained different degrees of dissonance. They found patterns of brain activation in several distinct brain areas already known to be involved in the processing of emotion. The fact that dissonance in the music was associated with certain positive or negative emotional ratings suggests that the regions affected were involved specifically in response to these emotions (Blood *et al*., 1999). Later research by members of the same team used PET scans to examine brain activation in response to music that elicited chills. They found blood flow increases and decreases in brain regions thought to be involved in reward and motivation, emotion, and arousal, including certain subcortical areas. Interestingly, the same brain regions are known to be active in response to other 'euphoria-inducing' stimuli, such as food, sex, and drugs of abuse (Blood & Zatorre, 2001).

Emotional responses in the brain also involve different kinds of chemical release. One of the most important hormones involved in both mother–child attachment and adult pair bonding is oxytocin. Oxytocin is released by both men and women during sexual stimulation and orgasm, and by women during childbirth and lactation. It also is involved in a host of social and affiliative behaviour (Damasio, 1994). Researchers have found that injecting animals with oxytocin induces behaviour associated with social bond formation, including grooming and mothering behaviour. For example, in sheep and rats (two animals which avoid their offspring outside of the postpartum period), oxytocin produces contact with the young and species-typical caretaking behaviour. Further evidence comes from the study of voles (meadow mice). Prairie voles and Montane moles are closely related, but have very different patterns of social organization. Prairie voles form long-term monogamous pairs and show high levels of parental care. Montane moles are polygamous, males and females do not share nests or a home range, and little time is invested in parental care. While oxytocin levels are similar in both species, and oxytocin receptors are found in the brains of both, the precise distribution of the receptors is very different. In Prairie voles (but not in Montane moles) the receptors are found in the 'reward regions' of the brain, where

addictive drugs act (Insel, 1992; 1997; Vacek, 2002; Carter, 1998). As one of the researchers put it, 'When a monogamous vole mates, it is as if it got a hit of cocaine. The vole becomes addicted to whomever he was mating with' (Vacek, 2002).

An earlier study on human subjects had already indicated the importance of the opioid system for emotional responses to music. It was found that blocking opioid receptors caused a reduction in the emotional intensity of music among some listeners (Goldstein, 1980). Panksepp predicts on the basis of animal research that brain oxytocin and the opioid systems may turn out to be of crucial importance in the production and control of chills (Panksepp, 1995). Since these hypotheses would be prohibitively difficult or unethical to test directly on humans, research with animals can provide important insight. Working with domestic baby chicks, whose vocal activities are well within human range, Panksepp and his colleagues have seen some dramatic and consistent results of the effects of music on these animals. (It is worth noting that none of these results have been duplicated using white noise or human voices, although Panksepp is careful to say that he does not believe the chicks 'appreciate' the music in anything like a human sense!) When chicks are briefly isolated, music effectively reduces their separation cries. Since separation distress is alleviated by infusions of oxytocin and by molecules that activate certain receptors of the opioid system, Panksepp anticipates that music may activate these brain systems. This hypothesis cannot be tested directly because of the difficulties in examining the synaptic release of these neurotransmitters in such small animals. However Panksepp notes that music can also produce some simple fixed-action patterns in chicks — exactly the same types of fixed-action patterns evoked by infusions of oxytocin into the chick brain (Panksepp and Bernatzky, 2002).

So far we have seen evidence that bonding between parents and infants, and between adult sexual partners, is mediated by oxytocin. What of social bonding on a larger scale, among members of a social group, such as those who join in with national anthems or operatic arias at sporting events? The neurologist Walter Freeman suspects that the same neuro-chemical mechanisms which support sexual reproduction and parent-child attachment may also form the neural basis for wider social cooperation. Freeman, again largely on the basis of animal studies, argues that human brains are literally solipsistic — in mutual isolation. Freeman and his students examined the path of neural activity in the rabbit brain accompanying and following an odour stimulus. By the time the signal had been transmitted to the

cerebral cortex, Freeman found that stimulus-dependant activity had vanished and was replaced by a new pattern of cortical activity. He found similar results in visual, auditory, and somatic areas of the cortex. Freeman's hypothesis is that the individualized patterns of activity, created by the chaotic dynamics of the cortices, reflect the experiences, contexts, and significance of the stimuli for each individual. The 'solipsism' of brains is not metaphysical (such that all that exists is a projection of one's own mind), but epistemological (such that knowledge is created in the brains of individuals) (Freeman, 1995; 1999; 2000).

Yet this will not do, as Freeman recognizes, since brains do not evolve as isolated units, but in social groups. Knowledge does not remain in individual brains but is shared, discussed, and tested by larger groups. How is this possible? As Freeman puts it, 'This problem lies not in translating or mapping knowledge from one brain to another but rather in establishing mutual understanding and trust through shared actions during which brains create the channels, codes, agreements, and protocols that precede that reciprocal mappings of information in dialogues' (Freeman, 2000). Freeman's hypothesis (briefly) is that certain neurotransmitters, including oxytocin and endorphins 'dissolve' the solipsistic border and make possible the trust required for mutual action. He sees concrete examples of such dissolution in the trance states brought about by religious rituals in preliterate societies, and in the psychological dislocation prized by attendees at large rave concerts in the developed west. In both cases music and dance serve as the 'biotechnology' of group formation.

## Part IV: Important Social Bonding — Intimacy

To sum up the previous two sections: Music affects the body, brain, and mind in ways which connect listeners in groups, and take solitary listeners out of themselves, however briefly. This social bonding function probably accounts for (or at least contributes to) music's origin and its persistence in all known human societies. It is likely that the neurobiological substrate of music developed in the same brain circuits and neurochemical agents as those of social attachment. Understanding music as a fundamentally social phenomenon brings us part of the way to comprehending its power to provoke strong emotional responses. A further notion, that of intimacy, becomes important here. Intimacy is the 'missing link' which can bring together the neurological, cognitive, and inter-personal aspects of

musical experience. We undergo some of the strongest and most significant emotional experiences of our lives within intimate social relations. Because music is a social phenomenon it can be capable of engendering intimacy.

When we think of 'intimacy' probably what comes most readily to mind are intimate relationships, but experiences and events can also be intimate. 'Intimate' is often used simply as a synonym for 'sexual', but such usage is misleading. Sexual acts may of course be intimate, but this is not necessarily the case. (Think of rape or of commercial sex.) Non-sexual relationships may also be intimate. The closeness of intimacy can be psychic as well as physical, or rather than physical. Generally, other things being equal, the more intimate a relationship, the greater its capacity to influence the emotional lives of the participants.

The concept of intimacy has a role to play in our aesthetic lives and in the philosophy of art. When we are moved by music and want to share the music and the feeling with others, this can be the foundation of a deeper relationship (see Higgins, 1991; Gracyk, 2001). Yet listening to music can be an intimate experience even if the listener does not share his responses with others. I propose three ways in which experiencing music can be an intimate experience: (1) as the basis of 'emotional communion'; (2) through attachment to artworks; and (3) by facilitating the integration of different aspects of the self.

The first way that music can provide a basis for intimacy is in making possible the kind of listening experience aptly described by philosopher Jerrold Levinson as resulting in 'emotional communion'. Listening to music can mimic (or be analogous with) engagement in an intimate relationship when we empathetically experience the sounds presented, mirror the feelings expressed in the music, and imagine that these feelings express an agent's authentic emotional experience. Such listening is 'analogous' with intimacy as it offers more than a simulacrum of feeling, but less than full-blooded, genuine empathy with another. It provides, if you will, the 'form' of intimacy without its content. Levinson writes: 'we are in effect imagining that we are sharing in the precise emotional experience of another human being, the man or woman responsible for the music we hear.' Such an experience of music carries with it, 'the sense of intimate contact with the mind and soul of another, the sense that one is manifestly not alone in the emotional universe' (Levinson, 1990). I say that such listening 'mimics' an intimate relationship because any relation between a listener and a musical work is necessarily one-sided, and human intimacy is usually conceived of as mutual. Listeners may be intimate

with music, but it sounds strained and implausible to say that music is intimate with listeners.

As we saw earlier, many listeners who experience strong responses to music do in fact connect their responses with thoughts and feelings about composers. There is evidence that fans of musical genres in which the composer is not always so prominent (popular music, jazz, and folk music, for example) will be more likely to attribute to performers the feelings expressed in the music (Gabrielsson, 2006). An experience of intimacy — even a mimicry or analogue of such an experience — can be a powerfully emotional experience. Music can play this role, that is, it can be regarded as a vehicle of authentic emotional experience, only because of its intrinsically social character. To put it otherwise, if the 'expression' of emotion in music was individual and private, we might still attribute the emotion to the composer, but we would not see ourselves as capable of sharing in it.

Second, a number of writers have noted how our relationship with artworks can resemble our relationships with other people (Berenson, 1992; Sharpe, 2004; Storr, 1992). One aspect of this resemblance is that we can become attached to artworks just as we can become attached to persons. We want to hear a particular work at a particular instance, and no substitution is satisfactory. Compare this to the way in which you may wish to share a joke or remark with a particular friend and communicating it to anyone else would be much less satisfying. Researchers Panksepp and Bernatzky go so far as to suspect that the bonds that attach listeners to the music that moves them has underlying neurobiological similarities to the love that people feel for one another (Panksepp & Bernatzky, 2002). If the idea of 'attachment' to musical works and performances is taken seriously, then it is but a small step more to the idea that listeners can be (one-sidedly) intimate with music. And just as intimacy with another person involves lowering boundaries and defenses, so too can intimacy with music. Listeners who experience more or less strong responses to music have let the music get under their defenses, even to the point that they might be overwhelmed.

Finally, solitary listening to music can be an intimate experience such that the listener is intimate with himself or, more concretely, different aspects of the self are brought together and re-integrated through engagement with music. Anthony Storr has argued that music's importance and appeal can be traced to its capacity to order human experience. Music both arouses emotion and provides a structure or framework for those emotions. Music can do so, on Storr's

account, because it is itself an exemplification of order or structured pattern (Storr, 1992).

For an indication of how music's abstract patterns may contribute to the self-coherence of particular listeners, I turn to the work of the cognitive scientist William Benzon (2001). Benzon is primarily concerned with the loss of self experienced by musicians during particularly intense concentration in performance, but his thoughts are also relevant to understanding listeners' experience. In line with much current and past philosophical reflection on the nature of the self, Benzon conceives of the self as a social construct which manages a complex of roles and statuses. One crucial way in which the self accomplishes this task is through inner speech, our commonsense understanding of 'thinking'. Here Benzon draws on psychologist Lev Vygotsky's classic work *Thought and Language* (Vygotsky, 1986). Vygotsky's basic idea is that as children acquire language they gradually also begin to use internal speech to direct their own activities. As a child's command of language grows, this self-directed speech becomes silent and internal. It should be noted that this claim does not imply that the standard condition of enculturated adults is to have internal speech going on all the time. Internal speech is just one of the ways (albeit a crucial way) in which the composite aspects of a self are managed. It can be turned off, if not completely at will then with some practice, in meditation. It also ceases during activities which require or elicit complete (or near-complete) absorption.

Benzon argues that during fluent musical performance (when the music seems to 'flow' with little effort) the performer's self-directed speech ceases; it no longer plays a role in directing her activity (Benzon, 2001). It is tempting to think that a similar process occurs when we are fully absorbed in listening to music. Inner speech ceases and its place is taken by music. Hence one social process (speech) is replaced by another (music). Yet although the music is external, it is not alien. If the music has been chosen by a listener then he is likely to be very familiar with it. Even if the listener has not previously heard a particular work he will be able to follow it if he is familiar with the underlying tonal patterns. Although some music is more readily comprehensible than other music, no music can be totally foreign or completely unfamiliar because it is all a human product. That is, it is a product of human ingenuity, human construction, shaped by human patterns of organization for human purposes. Certain features of music as a stimulus make it particularly attractive and deserving as an object of intense external focus. These features include its structure as developing and unfolding across time, and the lack of determinate

propositional content. (This extends even to vocal music, as the 'meaning' of a song is not reducible to the meaning of its text, even when — and this is frequently not the case — the text is fully comprehensible.) So a focus on music takes one out of oneself when internal speech is silenced and replaced by music; when the music ceases the benefits of such an intense external focus remain.

The kind of responses to music that have been the focus of this paper are so enigmatic that a prominent philosopher of music doubts that there is very much we can do to explain them (Sharpe, 2004). Such doubt probably has more to do with continuing reluctance to consult empirical data as it does with the relative difficulty of the problem. It is not always evident how empirical results are to be marshalled in support of particular philosophical positions. Surely, a methodologically rich and wide-ranging approach is required. To understand strong emotional responses to music in general we must first try to understand why any music matters to anyone. Part of the reason why it does so has to do with what I have called music's intrinsically social nature. Music must not be treated simply as auditory stimulus, 'work of art', cultural sign, or bearer of personal associative meaning, but as all of these at once.[10]

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