

Emotions, music, and literature

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Introduction

Most human activities have emotional consequences. And what we do in our leisure is often designed to elicit emotions. The enjoyment of works of art is no exception. Novels, plays, and movies, can all prompt real emotions about unreal events. The mechanisms we use to understand fiction are the same as those we use to understand the everyday world (Gerrig, 1993); part of the result is that we may laugh or weep about what we know is imaginary. Music is still more mysterious. Why should a piece of pure music – Beethoven’s late piano sonata, the “Hammerklavier”, say – have any emotional impact on us? It can move us even though it refers to nothing at all. If we feel sad as result of listening to a piece of music, then the music isn’t the object of our emotion, but its cause. Usually we cannot say why this piece of music makes us happy whereas that piece makes us sad. Philosophers have struggled with these problems, but they have reached no consensus (see, e.g., Budd, 1985; Robinson, 1997; Nussbaum, 2001). Psychologists and others have addressed emotions and the arts (see, e.g., Hjort & Laver, 1997). But, no-one appears to have a complete explanation of the causal link between the perception of a work of art and the ensuing emotional experience. Our goal in the present chapter is both to review the psychology of emotions in relation to music and literature, as befits a chapter in a handbook, and at the same time to take some steps towards a solution to this mystery.

Music is older than writing: the earliest musical instrument – a flute found in Slovenia – is over 43 thousand years old (Huron, 2003), whereas the invention of writing is only about five thousand years old (Coulmas, 1996). Painting and sculpture started with the creation of objects that are models or metaphors for something else – marks on a cave wall that depict a bison. They survive from 30,000 years ago (Mithen, 1999), about the same time as the start of burial practices, and presumably myths about

the afterlife. Coming at the beginning and end of this sequence of emergence, music and literature are our test-beds.

Pure music is without propositional content. By “pure” music, we mean music that is not a setting for words, that does not follow a program such as Richard Strauss’s *Til Eulenspiegel’s Merry Pranks*, or that does not depict a series of events such as Claude Debussy’s *La Mer* with its three movements entitled, “From dawn till noon on the ocean”, “Play of the waves”, and “Dialogue of wind and sea”.

In contrast, literature does have propositional content. It relies on understanding the propositions that the writer expresses. If you cannot understand: “It is a truth universally acknowledged, that a single man in possession of a good fortune, must be in want of a wife,” then you will not make much of Jane Austen’s novel, *Pride and Prejudice*, of which it is the opening sentence. The appeal of Austen’s novel occurs because many of us are moved by the love that develops between Elizabeth Bennet and Mr. Darcy. The propositional content of the novel, and the ways in which Austen expresses it, lead us to experience a sequence of emotional states even though we know that the characters and their actions are fictitious. Other arts – plays, movies, operas, and representational paintings and sculptures – can also convey propositional contents that have an emotional impact on us. Before children learn to read, these sorts of art can affect them. Hence, written literature is an ideal case study because it depends more than any other art on the mental work that we put into its interpretation.

Our plan for this chapter is to begin with a representative cognitive theory of emotions, which makes the contrasts that we need to solve our puzzle. We then consider the nature of music, and as we review the area we propose a theory of how music evokes emotions in listeners. We describe relevant aspects of literature, and extend our theory to cope with the effects of propositional content on emotions.

Finally, we draw some conclusions about relations between the arts in general and human emotions.

A communicative theory of emotions

The vital problems that social mammals, such as human beings, must solve are those created in their internal environment, such as fatigue and pain, those created in their physical environment, such as the need for shelter, and those created in their social environment, such as the desire for a mate and for offspring. According to a “communicative” theory of emotions (Oatley & Johnson-Laird, 1987, 1996), emotions are communications, in which a small set of signals conveys an individual’s emotional states to others. Although the idea of basic emotions and their expressions remains somewhat controversial (see, e.g. Oatley, Keltner & Jenkins, 2006; Russell, Bachorowski, & Fernandez-Dols, 2003) it is scarcely controversial that a smile is recognized in all cultures as a signal of happiness and social welcome, whereas weeping is a signal of sadness that often elicits sympathy. Such non-verbal signals are human universals (see, e.g. Keltner, et al., 2003) although the cognitive appraisals that elicit them may differ among cultures (Johnson-Laird & Oatley, 2000). The way in which such signals are recognized is very different from the interpretation of propositions expressed in language. Human facial expressions, gestures, and vocal tone, can all contribute to distinctive signals of emotions, akin to signals of enjoyment, alarm, threat, or submission, made by other species of social mammal. Their interpretation is carried out in specialized regions of the brain. In contrast, the meaning of a sentence is composed from the meanings of its parts according to the grammatical relations amongst them. It depends on working memory, because grammatical structures are often recursive (Fitch, Hauser, & Chomsky, 2005), and because the interpretation of discourse calls for readers to determine the referents of expressions.

Many messages that travel through the brain carry specific information of a propositional nature. The communicative theory, however, postulates an evolutionarily older, and cruder, form of internal communication by means of simple signals that are the internal equivalent of the non-verbal expressions we have just discussed. They do not require working memory for their interpretation, because their meanings are not composed grammatically from the meanings of their parts. One set of these signals concerns bodily feelings such as hunger and thirst, which arise from the monitoring of the internal environment. Another set of signals concerns *basic* emotions, which direct attention, mobilize innate bodily resources, and prepare appropriate suites of behaviors. They don't carry propositional information, but set the brain into specific states to coordinate our multiple goals and plans, given the constraints of time pressure and of our limited intellectual resources.

An emotional signal begins with an appraisal, which may or may not be conscious. But, the transition from the appraisal to the emotion is always unconscious. We can't switch the emotion on, or off. As Aristotle (*Nicomachean Ethics*, line 1106a3) wrote, we can't choose to feel anger or fear. Hence, our emotions are a primitive sort of unconscious reasoning that issues, not in propositions, but in simple signals. Typically, we are aware of both the signal and of the appraisal. Introspection can tell us that we're angry because someone insulted us, but it cannot reveal the transition from the appraisal (that an insult has occurred) to the emotion.

The communicative theory postulates *basic* emotions and *complex* emotions (Oatley & Johnson-Laird, 1987, 1996). Basic emotions are innate and have their own distinctive signals in the brain (see, e.g. Panksepp, 1998, 2005) and in universal non-verbal expressions. They include *happiness*, *sadness*, *anger*, and *fear*. Basic emotions can arise as a result of rudimentary appraisals, and they can be experienced for no known

reason (Oatley & Johnson-Laird, 1996). Basic emotions are the biological foundation of the *complex* emotions that appear to be unique to humans. Complex emotions depend on conscious appraisals that relate to our models of ourselves and often to comparisons between alternative possibilities or between actual events and possibilities that we imagine in alternative histories. They therefore can be experienced only for known reasons. They include such emotions as empathy, jealousy, pride, and embarrassment. We feel empathy when we imagine ourselves in someone else's position and feel that person's sadness. Thus, complex emotions integrate a basic emotional signal and a conscious cognitive appraisal. Complex emotions appear to depend on a region in the prefrontal lobes of the brain. If this region is damaged, individuals suffer impairments in their experience of these emotions, and cease to be able to plan their lives or to make sensible decisions (see, e.g., Damasio, 1994).

Music and emotions

Music appears to be universal to all cultures. Some evolutionary psychologists have argued that it serves no useful purpose (e.g., Pinker, 1997); others have suggested to the contrary that it may serve an adaptive role in sexual selection (e.g., Miller, 2000) – an idea that goes back to Darwin (1872/1965). The issue does not appear amenable to empirical testing. Nevertheless, music does depend on some innate predispositions. For example, two-day-old hearing infants of congenitally deaf parents prefer singing that is intended for infants, which is more emotional, than singing that is intended for adults (Masataka, 1999). Likewise, infants recognize melodies that are transposed to a new key or played at a different tempo (Trehub, 2003). At two months of age, they prefer consonance to dissonance (Trainor, Tsang, & Cheung, 2002); and at four months, they prefer a consonant melody to a dissonant one (Zenter & Kagan, 1998). So, why is music universal – what is its appeal?

Most of us respond to this question with the answer: music stirs our emotions. But not everyone agrees. The great nineteenth century music critic Eduard Hanslick argued that the appreciation of music does not depend on the emotions that it creates. He wrote (Hanslick, 1854/1957, p. 11): “An art aims, above all, at producing something beautiful which affects not our feelings but the organ of pure contemplation, our *imagination*.” And the great twentieth century composer Igor Stravinsky (1936, p. 91) wrote: “I consider that music is, by its very nature, powerless to express anything at all, whether a feeling, an attitude of mind, a psychological mood, etc.” A common argument in defense of this position is that emotions are *about* something, but pure music does not have any propositional content that enables it be about anything (see, e.g., Nussbaum, 2001, and Sloboda & Juslin, 2001, for discussion). According to the communicative theory, however, basic emotions can be experienced in the absence of propositional content. They needn’t be about anything. Indeed, from the 1890’s onwards, many experiments have shown that individuals *are* emotionally moved by music (Gilman, 1891, 1892, Downey, 1897), that it is a reliable way to induce moods, and that it elicits activity in regions of the brain known to mediate emotions (for reviews of these three topics, see respectively, Gabrielsson & Lindström, 2001; Västfjäll, 2002; and Peretz & Zatorre, 2003).

A subtle distinction occurs between the emotions that listeners experience from listening to a piece of music and their judgments about what emotion the music expresses. Listeners can tell that a piece is intended to convey happiness though they themselves are irritated by it. The same distinction occurs for readers of imaginative literature. As Oscar Wilde remarked about Dickens’s *The Old Curiosity Shop*: “One would have to have a heart of stone to read the death of Little Nell without laughing”. Granted this distinction, studies that evoke emotions by way of music are essentially

over when the experimenter has selected the materials. That is, their selection shows that at least one individual – the experimenter – is affected by music.

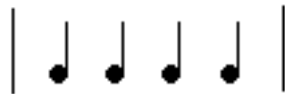
Anecdotal evidence also supports the idea that music evokes emotions. In the 46th minute of Alfred Hitchcock's 47th movie, *Psycho*, the director did something shocking: he killed off his leading lady, Janet Leigh. He had planned to have no music during her murder in the shower, just sounds of the shower and her struggle with her assailant. Unbeknownst to him, the film's composer Bernard Herrmann had composed a sequence of scary music – high-pitched shrieks on the violins, which anyone who has seen the movie is likely to recall. Hitchcock viewed both versions of the movie, one with natural sounds and the other with Herrmann's music, and declared that he had been wrong. The montage was much more frightening with the music (see also Oatley, 2004).

The standard answer is therefore correct: music moves us. But it raises the mystery: how does it do so? It also raises another mystery: why do we like to have our emotions stirred by music and other forms of art? We have only a little to say about this second mystery in our conclusions, and so we turn to the fundamentals of music pertinent to emotion.

Music is a social activity in most cultures. In the West, the single most popular piece of music is *Happy Birthday to You*, which serves a social function. Readers may be surprised to learn that it is not a folk tune, but was composed by Mildred and Patti Hill and published in 1893. Most music in Western culture consists in a melody and an accompaniment, where the accompaniment is a simultaneous performance of other pitches in the form of chords.

A melody is a rhythmical sequence of pitches in a metrical framework. Meter is a regular pulse that provides the framework for rhythm (see e.g. Lerdahl & Jackendoff,

1983; Longuet-Higgins & Lee, 1984; Johnson-Laird, 2002). It makes prediction easier, especially for musicians who have to synchronize their performances. But, meter is more than the number of beats in the measure: beats and their subdivisions can be grouped in different ways. A good example is the contrast between two beats to the measure that are each subdivided into three, and waltz time with three beats to the measure each subdivided into two. One measure in these two meters contains the same number of units, but their structures differ: one has two main pulses, and the other has three main pulses. Even individuals who are not musicians perceive meter, as shown in an unpublished experiment that Johnson-Laird carried out with Jung-Min Lee and Malcolm Bauer. The experimenter counts, “1 2 3 4”, in a regular way to establish a meter, and then claps the following rhythm in the same tempo:



Listeners judge all four notes to be of the same duration. If, instead, the experimenter claps:



then the listeners judge the last note to be shorter than the others. Of course the claps are all of the same brief duration. So, why is the last note in the first case judged to be longer than the last note in the second case? The answer must be that listeners perceive both rhythms as having a meter of four beats to the measure, and that they tacitly infer that there will be a note on the first beat of the next measure. The interval from the onset of the last clap to the onset of this imagined clap is indeed longer in the first case than in the second. Hence, listeners infer unconsciously that the onset of the next clap,

even though it is imaginary, will occur on the first beat of the next measure. These judgments demonstrate the cognitive reality of metrical structure even for non-musicians.

As many theorists have pointed out (e.g. Povel, 1984), the critical feature of a rhythm is the sequence of onsets of its notes. Hence, if you clap the rhythm of a familiar piece, then listeners will be able to identify it. Clapping, of course, provides information only about onset times. If you play the sequence of pitches in a melody with each pitch having the same duration, it is hard for listeners to identify the melody. You might therefore suppose that more information is conveyed by the rhythm than by the sequence of pitches. The conclusion is unwarranted. The problem is that the equal duration of the pitches produces a new, albeit uniform, rhythm, which masks the real rhythm of the melody.

A simple demonstration showing that a sequence of pitches can identify a melody is Parsons's (1975) *Directory of Tunes and Musical Themes*. This directory represents any melody merely by its contour. It represents, for example, the famous opening of Beethoven's Fifth symphony as follows:

* R R D U R R D . . .

where * denotes the first note, R a repeat of the previous note, U an upward step, and D a downward step. As the directory shows, these eight symbols are common to five other themes, including one from Sullivan's *HMS Pinafore*. But, once the first fifteen notes of any theme in the classical repertory have been encoded in the notation, it is almost always identified uniquely.

In the Western tradition, melodies are *tonal* from the earliest music that survives through the great classical composers, the Romantics, and most twentieth century music, including popular songs, jazz, and rock and roll. Tonal melodies are made up

from a subset of the possible pitches in the Western scale, and in this subset one note, the tonic, is more important than the others. This note also gives its name to the key of the piece. For example, a melody in the key of C major is made up from the following seven notes: C D E F G A B, from the standard scale of twelve notes. The chorus of the Beatles's *Yellow Submarine* starts with the following sequence of pitches, which we've transposed to the key of C major:

| G G G G A | D D D D D D | D D D D D | C C C C C |

The vertical lines demarcate the measures. The key of C minor, which is slightly more dissonant, is made up from the following notes: C D Eb F G A B C. Only one note makes the key a minor one, Eb (i.e., E flat).

Western music has a number of global variables, whose values normally hold constant for some length of time during a piece. The seven most important of these variables are as follows:

Tempo, which varies from slow to fast.

Volume, which varies from soft to loud.

Register, which may be high or low, e.g., a melody may be a sequence of low pitches.

Dissonance, which includes whether the key is major or minor.

Timbre, which depends on the particular instrument that is played.

Range of melody, which may include only notes close to each other or may include large jumps in pitch.

Meter, which is the number of beats per measure.

Our theory of how music creates emotions is, like Aristotle's (*Politics*, line 1340a11 et seq.), a mimetic one. Its first hypothesis is that music in itself creates only the basic emotions of happiness, sadness, anxiety, and anger. Music can also

manipulate our level of arousal, and thus our general level of excitement. Of course, factors outside music, such as lyrics or a drama that it accompanies, can elicit complex emotions. Similarly, individuals can acquire associations between certain sorts of music and emotions, such as the association between waltzes and dancing, and these too can color the emotions that music creates. But, what the present hypothesis rules out is that music alone can create object-oriented emotions of love or hate, or complex emotions. Evidence corroborates this account. Children aged from four to six are able to discriminate music expressing basic emotions (Cunningham & Sterling, 1988). Adults can recognize these emotions in music (Krumhansl, 1997). Music therapists can improvise music to convey these emotions to others (Bunt & Pavlicevic, 2001).

Meyer (1956) in one of the earliest and best known theories of emotion and music argued that music sets up expectations, which may be delayed in fulfillment. He wrote: "Emotion or affect is aroused when a tendency to respond is arrested or inhibited" (p. 14). The longer resolution is postponed, the greater the affect. Hence, emotion depends on the structure of music. This account is not incompatible with our hypothesis, and it may explain how music affects arousal. But, it has little to say about the different emotions, such as happiness or sadness, that music evokes (Budd, 1985).

Arguments to the contrary of our hypothesis also exist. The music critic Deryck Cooke (1959) argued that music can express attitudes – that is, it does have propositional content. Hence, he allocated to the different notes of the scale complex emotions, such as, "pleasurable longing in the context of flux". And he assigned different emotions to various sequences of pitches in melodies. Gabriel (1978) failed to corroborate their occurrence in an experimental investigation (cf. Sloboda, 1985, p. 63). Scherer (2005) also argues that basic emotions are far too impoverished to do justice to our experiences listening to music. One aspect of the perception of music, however, is

that it is easy to “project” a program onto pure music – a propensity that musicians, critics, and non-musicians all possess (see, e.g., Downey, 1897). This propensity can in turn lead us to ascribe emotions other than basic ones to a piece of music. Ives (1962, p. 36), for example, does so when he describes the opening of Beethoven’s Fifth symphony as “the soul of humanity at the door of divine mysteries, radiant in the faith that it will be opened – and the human become divine”. McClary (1991, p. 128) goes a step further but in the opposite direction when she writes about Beethoven’s Ninth symphony, “The point of recapitulation in the first movement in the *Ninth* is one of the most horrifying moments in music, as the carefully prepared cadence is frustrated, damming up energy which finally explodes in the throttling, murderous rage of a rapist incapable of attaining release.” When listeners indulge in this practice, they are imagining a program for which the music might make a suitable accompaniment rather than responding to the music in itself. Pure music has no propositional content and so it cannot express anything other than basic emotions. One person’s program is another person’s parody.

The second hypothesis of our theory is that music creates emotions in a mimetic way. It mimics the main characteristics of emotional behavior, speech, and thought (Scherer, 1986; Davies, 1994; Juslin & Laukka, 2003). It does so, in part, with settings of global parameters that create basic emotions. A simple illustration is that when a person is sad, they move slowly, and speak softly with an intonation contour that does not make great leaps. When a person is happy, however, they move more rapidly, speak loudly, and with an intonation contour that can make great leaps for emphasis. The theory accordingly postulates the following sorts of setting:

- happiness – medium tempo, loud, concordant
- sadness – slow, muted, slightly discordant
- anxiety – scurrying, low pitch, discordant

anger – fast, loud, high pitch, discordant

Bunt and Pavlicevic (2001) report a similar list of settings in the music that therapists improvised to convey emotions. Juslin (2001) also describes such a list, which he relates to innate programs for the vocal expression of emotions.

The third hypothesis of our theory is that music creates basic emotions because they depend on rudimentary cognitive appraisals calling for only minimal computational power. Computational power concerns what a system can compute, and minimal computational power depends on a system that has only a finite number of states – it makes no use of working memory for the results of intermediate computations (Hopcroft & Ullman, 1979). One corroboration of this hypothesis is the speed with which music conveys emotions. Individuals need less than a quarter of a second – a chord or a few notes of melody – to identify whether a musical excerpt is happy or sad (Peretz, Gagnon, & Bouchard, 1998).

Another corroboration comes from a computer program that Johnson-Laird devised to create melodies. A common view among composers is that melodies are a result of unconscious inspiration. Aaron Copland (1957, p. 102) wrote, “The composer starts with his theme; and the theme is a gift from heaven. He doesn’t know where it comes from – has no control over it. It comes almost like automatic writing.” The process of creating a melody is indeed akin to improvisation. Beethoven was a great improviser, and had no time for musicians who could not improvise:

It has always been known that the greatest piano-forte players were also the greatest composers; but how did they play? Not like the pianists of to-day, who prance up and down the keyboard with passages that they have practised - putsch, putsch, putsch; what does that mean? Nothing!

– Beethoven (see Kinderman, 2000, p.106).

Melodies are often a result of unconscious processes, and so they too are created – at least in their initial form – using minimal computational power, because unconscious processes have no access to working memory. But, the creation of melodies can rely on long-term memories of other melodies, and of musical structures such as chord sequences. The minimal finite state system capable of infinitely many different outputs is one based on a matrix of transitions. Many theorists have analyzed the transition probabilities from one pitch to another in a set of melodies (e.g., Simonton, 2001). But, a melody also has a rhythm, which needs to be taken into account. One solution, which the computer makes possible, is to construct an array of transitions from one pitch *and* its duration to the interval of the next pitch and its duration. The program takes as input a corpus of melodies and constructs such an array. The user then provides a chord sequence and specifies the number of beats in the bar. The program uses the probabilities in its array of transitions to generate a novel melody. Each call to the program generates a new melody, and the chances of it creating the same melody twice are negligible. Johnson-Laird used the program to construct arrays of transitions from corpora of happy, sad, and anxiety-provoking melodies, and then to generate melodies from these arrays. Figure 1 presents examples of each sort of melody. Audiences to whom they were played concurred that they conveyed the appropriate emotion, even though the melodies exploited only some of the relevant global variables.

Insert Figure 1 about here

Melodies may have an improvisational quality, at least when they first come to a composer's mind, but the process of composition may lead to modifications. Even though Beethoven was a great improviser, his process of composition was laborious – at least eight thousand pages of his notebooks survive. Composed music has a large-scale structure, and Beethoven began his career by using “models” of these structures from

Haydn and Mozart (Sisman, 2000). Such structures, and the sequences of chords, call for more computational power than unconscious processes can muster. They need a working memory for the results of intermediate computations (see Johnson-Laird, 2002), and musical notation can act as a substitute for such a memory. Musical structure, however, is what Hanslick (1957/1854) considered as crucial for beauty. Our perception of this structure may in turn lead to an “esthetic” emotion (Scherer, 2004) – an emotion that we regard as akin to awe, a complex emotion rooted in anxiety.

Literature and emotions

Just as pure music is non-propositional, fictional literature is propositional. When we read fiction we expect to experience emotions. The question is: how can such propositional content prompt these emotions?

As with music, we distinguish between the esthetic emotion in response to literature from the emotions of involvement in a story (Oatley, 1994). The esthetic emotion depends on an appreciation of beauty in the use of language. It calls for readers to achieve an esthetic distance from the work (Cupchik, 2002) and for them to have had a sufficient experience with literature to develop an appreciation of its skillful use. Consider, for instance, the first stanza of Coleridge’s “Kubla Khan” published in 1816 (Coleridge, 1977):

In Xanadu did Kubla Khan
 A stately pleasure dome decree:
 Where Alph, the sacred river, ran
 Through caverns measureless to man
 Down to a sunless sea.

The iambic rhythm, the assonance on the sound of “ah,” the alliterations (e.g. Kubla Khan), the rhymes (e.g. Khan, ran, man), the exoticism (Xanadu), may all move us in a

way akin to music. However, our understanding of the propositional content of literature also elicits emotions. In “Kubla Khan,” the content is difficult. We come to understand it either from several readings and much contemplation, or from knowing some of Coleridge’s preoccupations, or from having someone knowledgeable explain it to us (e.g., Paglia, 2005). The poem is a metaphor for the place of art and the artist in society. Hence, the pleasure dome is a metonymic figure (synecdoche) for art in general. The sacred river is a metaphor for the stream of artistic creativity that flows through society. The poem evokes further images: the source of creativity in nature and sexuality (“as if this earth in fast thick pants were breathing”), the potential enmity between the artist and society (“ancestral voices prophesying war”), an image of the artist (“A damsel with a dulcimer”), and the status of the artist as demi-god (“for he on honey dew hath fed / and drunk the milk of paradise”). Some poetry, such as Mallarmé’s, makes its emotional effect almost entirely in terms of its music rather than its propositional content. It was Mallarmé who reminded his painter friend, Degas, that poetry was made from words, not ideas.

Certain novelists, notably Flaubert, have insisted that the arrangements of words in their works should be as delicate and precise as those of poetry (see, e.g., Williams, 2004). Yet, in prose, the emphasis shifts towards a primacy of the propositional. Consider the opening line of L.P. Hartley’s (1953) novel, *The Go-Between*: “The past is another country: they do things differently there.” “Another country” is a wonderful metaphor, but it does not have the rhythmic and alliterative music of “A damsel with a dulcimer.” Above all in literature, propositional content prompts our emotions. These emotions can be basic, but they can be complex emotions too, depending on appraisals of the self in relation to others. Consider jealousy. It springs from our suspicion that a third person might displace us in a relationship with someone we love. The basic

emotion may be fear or anger, but jealousy depends on inferences about the relations among three individuals, and these inferences in turn hinge on propositional content. A beautiful depiction of jealousy occurs in Frank O'Connor's short story, "My Oedipus Complex" (O'Connor, 1963). The protagonist is a young boy, and the story follows his growing understanding of the impact of his father's return from the War and his own displacement from the center of his mother's affections. We enter his world and empathize with his anger and distress as he realizes that he has been displaced. The emotional effect on us is powerful and fascinating, because it resonates with emotions that we have experienced too. But something mysterious and ambiguous remains: the boy has not quite understood his own emotion.

T.S. Eliot (1953/1919) argued that artists do not describe emotions subjectively but offer instead an external, objective, pattern of events, which he referred to as the "objective correlative". Our appraisal of these events leads us to experience emotions. This view foreshadows those theories of emotions that hinge on our cognitive appraisals. We use our knowledge of the language to assemble the meanings of sentences from the meanings of the words and the grammatical relations amongst them. And, as experiments have shown, we use these meanings to construct a mental model of the individuals and events to which the discourse refers (see, e.g., Johnson-Laird, 1983, Ch. 14; Garnham, 2001). But, how does such a model – the objective correlative – suggest emotions?

We propose three hypotheses intended to answer this question (see Oatley, 1994). The first hypothesis is that literature can suggest emotions because we identify with the protagonist and resist antagonists. The propositional content of a story affects us most powerfully when like Alice through the looking glass we enter through its surface into its interior. The typical mode of narrative, as Bruner (1986) has pointed out,

concerns human plans and their vicissitudes. The author provides us with the content that allows us to construct a dynamic model that simulates such a world, its characters, and their interactions (Oatley, 1999). And we enter the simulation when we identify with a character in the story (see Freud, 1985/1905-1906). Flaubert is supposed to have said, “*Madame Bovary, C’est Moi*”. But, we too can become Madame Bovary as we read the novel. We are caught up in her experience (see also Miall & Kuiken, 2002; Zillmann, 1994). We run her plans on our own planning processors. When these plans meet vicissitudes, we experience emotions. They occur within our simulation, and they are our emotions. Identification is empathy, as shown in the emotions elicited from movies (Trabasso & Chung, 2004). But, the empathy is not quite as it is in real life, because we empathize with a fiction, a non-existent individual whom we have created in our simulation of the story (see also Lipps, 1962; Kreitler & Kreitler, 1962). Although the effects are familiar, they remain surprising. As Hamlet says, after witnessing an actor affected by emotion as he plays a part: “What’s Hecuba to him, or he to Hecuba?” (Shakespeare, 1981/1600). It may be that actors, during rehearsal though not necessarily during performance (Konijn, 2000), use Stanislavsky’s (1936) method of drawing on their own autobiography to re-experience certain emotions.

Our second hypothesis is that literature can prompt us to feel an emotion about a character. Tan and Frijda have proposed a theory that is a version of this idea, but intended to cover the same ground as our first hypothesis about identification with characters (Tan 1996, Tan & Frijda, 1999). They argue that an author provides appraisal patterns and that we pick up these patterns as they apply to characters. As a result we may feel sympathetic emotions towards these characters. Tan (1996) calls these “witness emotions”. We argue that when we analyze events in our simulation, we infer how they would strike a character in it so that we can feel sympathy for the

character, but in our view the process co-exists with identification. Indeed, we may like or admire a protagonist, or fear or loathe a villain. When Dorothea, the heroine of George Eliot's *Middlemarch*, agrees to marry the aged scholar Casaubon, she is full of enthusiasm to help him with his work and we share some of her enthusiasm. At the same time, our heart sinks. Our response is in part because Eliot has conveyed Casaubon's character to us in a way that goes beyond Dorothea's understanding of him. One of the skills of great writers is to make us feel the emotions of a character with whom we identify, and quite different emotions towards the same character.

This distinction was important for medieval Indian literary theorists such as Abhinavagupta (see e.g. Ingalls, Masson, & Patwardhan, 1990). They described the emotions depicted by an actor in a play, using facial expressions, gestures, tone of voice, and the content of utterances, and the corresponding emotions – *rasas* in Sanskrit – that occur in audiences (see Oatley, Keltner & Jenkins, 2006, p. 112). For example, when an actor depicts amusement or anger, the audience identifies and feels amusement or anger. But, when an actor depicts sorrow, the audience feels compassion for the character; and when an actor depicts something disgusting, the audience feels loathing. According to these theorists, *rasas* were literary emotions and subtly distinct from the emotions of daily life. Each well-constructed work should be based on a single *rasa*, which is the basis for a genre, e.g., a love story, a comedy, a tragedy, etc. Within a story, other *rasas* would also occur, but in a supporting and transient way. Hogan (2003) has reviewed stories worldwide and reports that the two most common genres are the love story and the story of an angry conflict.

The third hypothesis of our theory is that emotions can also depend on personal memories (Larsen & Seilman, 1998). Events in a simulation may elicit only our memory of an emotion while the events themselves remain implicit. Hence, according to Scheff

(1979), we may cry at the fate of the protagonists in *Romeo and Juliet*, because we are re-experiencing earlier losses of our own, which are reactivated, though not necessarily consciously, by the play's events.

Following these hypotheses we can propose a generalization. Along with the cues in a text that enable the reader or audience member to construct a simulation, any literary work has also what Oatley (1999) has called a "suggestion structure". It is principally this structure that prompts emotions in the ways indicated by our three hypotheses: by suggesting (i) empathetic identifications, (ii) sympathies and antagonisms, and (iii) scenes that might prompt memories. Although figurative language is not necessary to this structure (see e.g. Oatley, 2004), tropes such as metaphor and metonymy (see Lodge, 1977) prompt emotions principally by suggestion. An individual may read Hartley's metaphor, "The past is another country", and think of a visit to another country, Kashmir, which triggers thoughts of being in a 450-year-old painting by Breugel, with chickens walking in the road, and people carrying bundles of firewood. This thought adds emotional potency to the metaphor. Western theories of poetics neglect the role of suggestion, but in Eastern poetics it is stressed and there is a Sanskrit word for it, *dhvani*. Abhinavagupta argued that *dhvani* is the heart of poetry (see Ingalls, Masson, & Patwardhan, 1990).

Experiments have shown that stories do elicit emotions in people who read them (Miall & Kuiken, 2002; Oatley, 2002). Furthermore, Nundy (1996) has corroborated the role of personal suggestion. The participants read a short story by Russell Banks in which a man cruelly severs his relationship with a woman. The participants experienced strong emotions as a result, but their nature differed from one person to another: some readers were angry, others were sad, and a few were disgusted. Another corroboration of suggestion is that readers of a narrative piece had more

memories that were personal (as compared with generic memories) than readers of a non-narrative piece of the same length, propositional content, and reading difficulty (Mar, Oatley, & Eng, 2003).

Conclusions

Emotions arise from unconscious transitions, and so we are often puzzled by our emotional reactions. Sometimes, they are so aberrant in intensity and so prolonged in their effects that they create a psychological illness (Johnson-Laird, Mancini, & Gangemi, 2006). Art may help us to understand them better. One of the principal theories of the relation of emotion to art is due to Collingwood (1938): art is the expression of an emotion in a particular language – words, sculpture, paintings – so that we come to understand the emotion better (Oatley, 2003). Music is mystifying in its emotional effects, but we enjoy the emotions it creates. In contrast, literature helps us to understand the relation between propositional content and subjective feelings – to understand the causes of an emotion, and why a particular individual in a particular circumstance feels a particular emotion. The Indian theorists said that we fail to understand our emotions because a thick crust of egotism obscures our vision. *Rasas*, however, allow us to see more deeply into their nature, because of their literary context. Nussbaum (1986) similarly translates Aristotle's *katharsis* as “clarification” or “illumination”. In literary fiction, it becomes possible to understand emotions as they occur in a wider set of circumstances than we would encounter in our ordinary lives.

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Legend to figure:

Figure 1: Three melodies (happy in the key of C major, sad in the key of C minor, and anxious in the key of C minor) created by a computer program using a finite-state system of transitions derived from corpora of real melodies

Fig 1

The image displays three staves of musical notation, each with a tempo marking in green. The first staff is in treble clef, 4/4 time, with a tempo marking of ♩ = 180. It features a complex, fast melody with many sixteenth notes and accents. The second staff is also in treble clef, 4/4 time, with a tempo marking of ♩ = 40. It shows a slower, more melodic line with some chromaticism. The third staff is in bass clef, 3/4 time, with a tempo marking of ♩ = 150. It contains a steady, rhythmic accompaniment with a 'pizz' marking at the beginning.