A Story With No Words

by

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I. Acknowledgements

To pull off a project like this, it is clear I have many people to thank. First, thank you to my orchestra, to my assistant director Richard Choe, to Sandra and Deb for their ear and cheer section. Thank you to my family and to my Professors: Hoggard, Gil-Ordonez, Bruce, Braxton, and Malin. And to my tutor, back in London, Nicolo Moro – I knew so little when I first arrived there – thank you.

When I first arrived at Wesleyan, I couldn’t read music. It is a clear mark of a great institution to convince me I could do this and see me through the other end.
II. Introduction

My thesis is, in essence, a composition challenge – I want to tell a story with only music. Put so, it appears a rather simple goal, achievable, and further: achieved many times previous. To elaborate: there will be no lyrics – countless ballets jump to mind. Eliminate all visual elements, and here presents my challenge. How much definite meaning can be expressed through only music? Enough to tell a well-defined story with characters, clear actions, and concrete events? What is meaning in music? Where does it come from? And how can a composer harness it?

The first goal of my thesis and of this essay is compositional. By researching and cataloguing different compositional techniques, I hope to build upon what many composers refer to as their “toolbox.” However, if I were to leave it at this, I would not be doing right by my search for musical meaning or, in fact, by my toolbox either. To grasp at an understanding of meaning in music, one must go beyond an encyclopedia of musical phrases, genre insinuations, or mode implications, and ask the question – “Why?”

Take an example:

A young composer, in research for his upcoming commission, learns that an offbeat voicing of a high pitch, short duration figure connotes surprise. Utilizing the technique correctly, he produces the desired effect on his audience. He has collected a tool, no doubt a useful one. However, studying “the why” allows us to learn that this technique has evolutionary origins. The screech is analogous to its vocal expression counterpart – the shriek. The two have physiological origins, which cross cultures and species. “Can a grunt be expressed musically?” is the composer’s
next question. “What of that ‘I don’t know’ sound that accompanies raised shoulders and a vacant expression?” And he is to work, not collecting techniques now, but creating them.

This is the goal of this essay: not only to catalogue compositional techniques that define meaning, but also to thoroughly examine the “why” which underlie them. Unfortunately, due to time constraints there are a number of elements crucial to the understanding of musical meaning which I could not thoroughly investigate and so had to leave blank in my discussion although they still remain in the toolbox displayed below. They include quotation, motif, musical painting, and most regrettably, pitch and rhythmic contour. These are factors, particularly the final pair, heavily affect musical meaning and my essay is certainly at a loss without them.¹ I am also regretful that time concerns kept me from testing out these theories through analysis and composition – and hope that one might use their imagination and musical inductive reasoning to gain a fuller understanding of the theories, words, and graphs which compose this work.

Summary –

In this essay I begin by looking at the origins of musical meaning generally, examining both neurological and musical sources in my research, and settle on and examine three origins: the biological, the cultural, and the intra-opus. Next I look specifically at each tool from my musical toolbox and outline its expressions, strengths, and origins. And finally, drawing on Kate Hevner’s 1937 experiment, I

¹ Although Hevner, 1937 noted them as the weaker of the elements of musical expression.

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look into the process behind constructing a musical figure expressive of a given
meaning – where the tools in our musical toolbox are strongest and how they
combine to express meaning.

Through this essay, I hope to gain a better understanding of the link between
music and meaning, fill up my toolbox, and perhaps open the door for further
innovation and experimentation with the interesting link between music and
meaning. (See the toolbox below for reference purposes.)

The Toolbox

Below see an outline of our toolbox of musical meaning. All are tools composers
regularly use, consciously or subconsciously, to convey meaning to their listeners:

Toolbox & Definitions
1. Quotation – the quotation of different musical works
2. Genre – musical genres (e.g. waltz, march, salsa, tango, rock’n’roll, rap, etc.)
3. Modes / tonality – Major, minor, C major, tonic, dominant
4. Harmonies – consonant, dissonant, simple, complex
5. Pitch – high or low
6. Tempo – constant speed of piece
7. Volume – loudness, softness
8. Timbre – the character of the sound
9. Pitch Contour – melodic movement, up and down, scale degree favoring
10. Rhythmic Contour – rhythmic phrasing
11. Structural – the order and fashion in which the music is arranged
12. Motif – a repeated phrase usually emblematic of a person or emotion
13. Music Painting – the composing of music to resemble a concrete figure (e.g.
ocean waves.
III. Where does musical meaning originate?

If you asked the average Western oriented music listeners to identify emotional meaning and then played out a major scale followed by a minor scale, their reaction would be predictable: “Happy. Sad.” But where did that come from? What made the half steps between the 3-4 and 7-8 scale degrees the essence of joy, while 2-3 and 5-6 indicative of despair?

Musical meaning has many origins, and in my research I outline four categories: the Personal, the Biological, the Cultural, and Intra-Opus. For the purposes of the composer, however, the Personal, holds little advantage. Unless a composer has been commissioned by a single client to write a piece just for him, the Personal cannot play into a composer’s conveying of meaning. The knowledge of ticket holder 34b’s deep-seated fear of “Entry of the Gladiator,” instilled by a short fall off the carnival kiddy-ride in her formative years, for example, is not likely to be much help. Instead we focus on the Biological, the Cultural, and the Intra Opus.

A. Biological

Biological, or evolutionary origins are those elements of musical meaning that hold true across cultures. These are the effects that we are born with or physiologically grow into. The biological is theorized as being one of the first
influences on musical composition\textsuperscript{2} and continues to greatly affect the practice today. Biological origins are found in a number of musical effects. Meanings derived from pitch, tempo, volume, timbre, rhythmic contour, melodic contour, and structural sources all find some origin in the Biological.

The biological influences musical meaning through two channels: (i) the relationship between vocal and musical expression – in other words, the ways in which music imitates physiological based vocal expressions, and (ii) the role of expectation, surprise, and tension in musical meaning.

i. Vocal and musical expression

\textit{Emotions – affect physiological processes – affect vocal production – music imitates ...}

It has long been theorized that music finds much of its meaning through the imitation of physiologically based vocal expressions. Charles Darwin favored the conception that language and music have a common origin, even going so far as to write in \textit{The Decent of Man}, “Musical notes and rhythm were first acquired by the male or female progenitors of mankind for the sake of charming the opposite sex.”\textsuperscript{3}

The claim was first fully outlined by Herbert Spencer in his 1857 article, “The Origin and Function of Music” in which he argued that music is intimately related to vocal expression of emotions claiming they both arose from the emotional influence on

\textsuperscript{3} Mireille Besson, What Can the Brain Tell Us about the Specificity of Language and Music Processing, \textit{Integrated Human Brain Science: Theory, Method, Application (Music),} Tsutomu Nakada, pg. 367
the physiological process. The theory came to be known as Spencer’s Law, and served as the basis for further research in this area.

In fact, considerable evidence has been found to support the first two links in this chain – emotions affect physiological processes which in turn affect vocal production. Neurologists have found these connections to have evolutionary origins. These “distinct physiological patterns reflect environmental demands on behavior: ‘Behaviors such as withdrawal, expulsion, fighting, fleeing, and nurturing each make different physiological demands.”4 T. J. Mayne in his 2001 article, gave the example, “fear is associated with a motivation to flee and brings about sympathetic arousal consistent with this action involving increased cardiovascular activation, greater oxygen exchange, and increased glucose availability.”5

These physiological conditions have also been reliably found to limit and direct vocal expression in the area of respiration, vocal vibration, and articulation, to name a few. “For instance anger yields increased tension in the laryngeal musculature coupled with increased sub glottal air pressure. This changes the production of sound at the glottis and hence changes the timbre of the voice.”6 In other words, different emotions lead to different physiological responses that place limitations on the acoustics of the voice. K. R. Scherer, in his 1985 “Component Process Theory of Emotion,” outlined a theory of the likely cognitive process involved: regular cognitive appraisals, or as he termed them, *stimulus evaluation*

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checks (SECs), relay the message to the somatic nervous system, which in turn affects musculature associated with voice production. This process also touches the autonomous nervous systems (e.g., mucous and saliva production) in a manner greatly affecting voice production.8

In fact, significant evidence has been found for universal biological vocal expression. U. Jürgens in a 1979 article, “Vocalization as an emotional indicator: A neuroethological study in the squirrel monkey,” found that “increasing aversiveness of primate vocal calls is correlated with pitch, tonal pitch range, and irregularity of pitch contours.”9 Even further, J.R. Davitz (1964) and later, K.R. Scherer (1986) found these features to extend to negative emotion in human vocal expression.10 In fact, many of these emotionally induced physiological vocal expressions have been found to cross many species. E.S. Morton in his 1977 article in the American Naturalist noted that both “birds and mammals use harsh, relatively low-frequency sounds when hostile, and higher-frequency, more pure tone like sounds when frightened, appeasing, or approaching in a friendly manner.”11

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We then might accept that there are cross-cultural vocal expressions that convey definite meaning. But who says they extend to musical expression? Does musical expression necessarily align with vocal?

In recent years, it has become fairly clear that the answer is yes... and no. While some musical expression lines up with its vocal counterpart, others elements are independent. Neuropsychological research indicates musical aspects, such as, timbre share the same neural resources as speech; while other aspects, such as tonality, diverge, drawing on resources unique to music.\(^\text{12}\)

Some distinctions are clearly drawn. Tonality, harmony, and genre, are not qualities present in vocal expression (at least not in English.) While a talented throat singer might be able to produce a major third on his own, these aspects are widely regarded as independent from vocal expression and considered solely musical constructs. However, other elements, pitch, tempo, volume, timbre, melodic contour, and rhythmic contour, can find parallels in the vocal. The next question, does this necessarily make the two 100% analogous?

A recent, 2006 study, “A Comparison of Acoustic Cues in Music and Three Dimension of Affect,” conducted by Gabriela Ilie and William Forde Thompson, attempted to answer this question by surveying listeners on their emotional understanding of both vocal and music expression independently, and then comparing results. Ilie’s results concluded that yes, there exists a strong analogous


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relationship between vocal and musical expression, but no, they are not identical. There are elements in vocal and musical expression where resulting meaning diverges.

The study examined three elements: intensity (volume), rate (tempo), and pitch height – in regard to three effects, valence (pleasant-unpleasant), energy arousal (awake-tired), and tension arousal (tense-relaxed), all three of these elements having significant consequences in music and speech. The results were mixed. While tempo was found to be identical in all three effects, tempo and pitch height varied. Tempo was found to induce large energy arousal for both music and speech, but after this they diverge – rate manipulations having a significant effect on the listener's perception of valence in speech, but not music, and musical rate affecting tension levels in listeners while no such effect exists for vocal expression.

Pitch height was actually found to have opposite effects. While high pitch in speech retains a higher (positive) valence, in music it is the lower pitch notes that are perceived as positive. Meanwhile, although both speech and music's tension and energy arousal are affected by pitch height – it is in different ways. While the greatest impact of raised pitch-height in speech found in arousal perception, in music the greatest impact is found in tension.

Ilie lists a number of studies that seem to support, at least partially, his results (Bolinger, 1978; Morton, 1994; Ohala, 1984; Scherer & Oshinsky, 1977). However, this remains a very inconclusive and uncharted area of study. Many of his results directly conflicting with many more studies covered as we address each

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musical element individually. Hevner's meticulous categorization of musical effects influence on meaning and understanding, for example, dispute several of Illie’s conclusions. Nonetheless, we can not dismiss Illie’s results, and should take in consideration moving forward, that speech and musical understandings, even in areas in which they both cover, are not necessarily identical. Why not? There could be a number of reasons. Krebs & Dawkins in their 1984 article provide convincing reasoning with their so called Push and Pull Effects. Push Effects, they explain, represent the biological factors and “involve various physiological processes, such as respiration and muscle tension, that are naturally influenced by emotional response.” However, these effects do not exist in a vacuum, and are accompanied by Pull Effects, which Krebs & Dawkins define as “involv[ing] external conditions, such as social norms, that may lead to strategic posing of emotional expression for manipulative purposes (e.g., Krebs & Dawkins, 1984)”

\begin{itemize}
  \item \textit{ii. The role of expectation, surprise, and tension in musical meaning.}
\end{itemize}

Another great tool of the composer arising from the biological is her manipulation of the listener’s expectation, surprise, and tension. The concept first arising from Leonard Meyer's groundbreaking book, \textit{Emotion and Meaning in Music},
the idea quickly gained traction and is most recently and clearly outlined by David Huron in his volume, *Sweet Anticipation: music and the psychology of expectation.*

The theory involves the relationship between the composer and listener, the delicate dance that plays out between them as the music unfolds. Huron’s theory deals solely with the listeners’ expectations of what will come next and the composer’s efforts to manipulate them.

Huron outlines five distinct physiological systems, which he terms: ITPRA, 1) **Imagination**, 2) **Tension**, 3) **Predictions**, 4) **Reaction**, and 5) **Appraisal**. He separates them into two categories: Pre-outcome responses (imagination & tension) and post-outcome responses (prediction, reaction, and appraisal.) He then stresses the divide between autonomic and physiological changes; the former referring to those responses involving the nervous system, affecting attention, arousal and motor movement, the later: those less automatic processes – rumination on the event or conscious evaluation of it.\(^{13}\)

**Pre-outcome:**

The *Imagination Response* is a physiological effect that allows for the imagination of a future event and induces the accompanying emotion in the present time. For example, one could imagine what it would be like to eat a homemade cake, and so be induced to preheat the oven and pull out the pots and pans. Conversely, the university student could imagine the look on her advisor’s face should they fail

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\(^{13}\) David Huron, *Sweet Anticipation: music and the psychology of expectation*, © 2006, pg. 7

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to hand in their thesis by deadline, and so continues her feverish typing at 2 in the morning. Imagination responses require future thinking and rumination.

The *Tension Response*, the autonomic pre-outcome response, regards the physical preparation for a predicted ensuing event. Huron outlines two different factors determining the tension response – the when and the what – and gives an example for each. For the when he uses the example of a friend approaching with an inflated balloon and a sharp pin: “the what” is very clear, “the when” – yet undetermined. Conversely, Huron outlines the “what,” by a baseball outfielder. He knows more or less when the hit will take place (when the pitcher releases the pitch), but “the what” is unknown. What kind of hit will it be, will it reach all the way to him, be collected by the shortstop, or clear the ballpark altogether. In both cases a tension response is enacted, both the balloon victim and the outfielder prepare for the predicted ensuing event, this time through autonomic sources. In the case of waiting on a balloon pop, the usual reaction is “squint eyes, fingers in ears, turn away.” In the case of the outfielder, bend knees, tense muscles – prepare to lurch in any direction.

Simply preparing in this physiological manner, allows the composer to begin to convey meaning, through its effect on the listener’s emotions. These physical preparations have been found to have great effect on emotions. Fritz Strack’s simple experiment involving only a pencil, lips, and teeth provided strong support for this claim. Strack divided participants into two groups, one was instructed to hold the pencil in their mouth using their lips, the other: their teeth. As predicted, the second group reported feeling happier than the first. Holding a pencil with only

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one’s teeth forces the flexing of the zygomatic muscles producing a smile. Emotions and physical responses are not a one-way street. Smiling can, in fact, induce happiness.

*Post-outcome Responses*

The *Prediction Response* is very useful in music as well. This allows for the rewarding or punishing for a correct or incorrect prediction respectively. Huron offers the example of someone predicting that he will slip on the ice walking down his driveway. When he does exactly that, the pain of a bruised coccyx bone is certainly not positive, but there is a level of satisfaction nonetheless that accompanies the accurate prediction.

The final two response systems outlined by Huron, the *Reaction* and the *Appraisal*, complement each other – the first representing the autonomic response, the second, the physiological. The reaction response is immediate. Huron gives the example of touching a hot oven: “you’re hand is drawn back long before the neural signal has time to travel from your hand, to your brain, back down to your hand again.” For appraisal Huron imagines a scene where a woman picks up the phone to discover it is her friend on the other end – an initial feeling of warmth flows over her, but after appraisal she realizes she has forgotten this friend’s birthday and immediately the warmth is replaced by sheer embarrassment.

This has fairly clear implications for the musical meaning composer. To create a feeling of accomplished warmth in the listener, drop the listener clues, and

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then fulfill them. To create unease or defeat, drop these clues, and then move in the opposite direction. Manipulate these imagination, tension, prediction, reaction, and appraisal responses of the listeners. Increase tension at certain points, fulfill predictions, subvert them – all these actions generate emotional responses from listeners and help convey meaning. Huron outlines three main approaches: creating predictability, creating surprise, and creating tension.

Creating predictability is psychologically simple to understand. Instead of our slipping on the ice example outlined above, the composer rather fulfills the listener’s prediction of what musically will come next.

Where would the piece be likely to resolve? – Resolve there.
Where is the piece likely to move? – Move there.
How is the next bit likely to sound? – Sound like that.

The return to the I chord is of particularly regular predictability in Western music. Further still, cadencing V – I\(^{6/4}\) – I at the end of a piece, is sure to be strong for the creation of predictability.

Huron outlines four types of predictability:

1. Schematic predictability – plays on what schemas listeners bring to the listening experience – such as dom\(^7\) will usually be followed by a tonic.
2. Dynamic predictability – Music constructed so as to evoke work-specific expectations.
3. Veridical familiarity – the listener hears the work many times.
4. Conscious predictability – music is organized so that a *knowledgeable* listener will be able to apply known musical rules to accurately predict what is coming next... such as a song which modulates to the minor... will be returning to the major surely once again.

Composers rightfully concern themselves with trying to avoid complete predictability. While one correct prediction may be gratifying for a listener, music with too much predictability commonly becomes boring. Composers avoid this by creating contrastive valence, or so called, pleasant surprises.

Creating surprise is more psychologically complex. While it involves the same four categories present in predictability: the schematic, dynamic, veridical, and conscious, surprise – the feeling, usually inductive of a negative response – is not necessarily so in music. Instead, music is quite capable of creating “pleasant surprises,” which can elate the listener and provide a needed divergence from straight predictability.

Music's strength is in our ability to evaluate the situation almost instantaneously after receiving the initially “nasty surprise.” Once, it is revealed that we are in no immediate danger, the negative response is replaced by it’s corresponding emotion which make up these “pleasant surprises” music is known for.

The psychological effects of surprise are outlined by Huron as thus:

<table>
<thead>
<tr>
<th>The Bad</th>
<th>The Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fight</td>
<td>Fission</td>
</tr>
<tr>
<td>Flight</td>
<td>Laughter</td>
</tr>
<tr>
<td>Freeze</td>
<td>Awe</td>
</tr>
</tbody>
</table>
Fission, which replaces “fight,” is a *thrilling* feeling. Its physiological effects include chills, tears, and a lump in one’s throat. Shivers and chills are often correlated with sudden changes in harmony and abrupt changes in dynamic level. Huron gives the example of Arnold Schoenberg’s *Verklarte Nacht*, which encompasses both effects, and Jaak Panksepp provides a more modern example in Pink Floyd’s *The Final Cut*, which exhibits only the sudden dynamic shift. Tears or the “lump in one’s throat” aspect of fission is induced sometimes by harmonic sequences, and consistently with use of the melodic appoggiatura.

Moving on to our second category flight, once evaluation proves no immediate danger, it is replaced by laughter. Huron found nine categories of musical devises inductive of this humor. In each example, Huron finds humor in violating musical expectations to a dramatic extent. This dramatic extent is what differentiates laughter from fission (or awe, as we will address shortly.)

1. Incongruous sounds – Unusual sound sources – such as duck whistles, kazoos, and slide whistles. The mixing of bizarre instruments with conventional orchestra instruments in order for something to “sound out of place” you must first establish a “place.”

2. Mixed Genres – Switch abruptly between different genres/styles. Exp. “Unbegun” Symphony begins with slow lyrical andante... after about a minute there is a slow transition... moves abruptly to unexpected allegro with trumpet playing “De Campdown Races” and other “fast” tunes. THUS he juxtaposes “high art” with “low art” styles.

3. Drifting Tonality – Unexpected and sudden modulations – modulation to the tritone is particularly effective... since it is so unexpected

4. Metric disruptions

5. Implausible delay – appoggiaturas that fail to resolve at an expected moment.

6. Excessive repetition – in Schickele’s recorded pieces the audience laughs at the 4th repetition – familiar with the 3 repeats tradition.

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7. Incompetence cues – a passage being played with overtly bad technique and intonation.

8. Incongruous quotation

9. Misquotation – Starting to quote a piece and then blatantly changing some pivotal element that everyone knows.

Our final pleasant surprise substitution is that of “awe” for “freeze.” Awe involves the experience of normally fearful situations but from a position of relative safety. Examples include looking out over a steep cliff or watching a disgruntled lion safely behind zoo bars. Physiological indicators include: (1) gasping, (2) breath-holding, (3) lowered chin with the mouth slightly opened, (4) immobility or stillness, (5) reduced blinking.

This effect proves harder to recreate in music. Some successful effects include: high dynamic level, frequent use of choral textures, large numbers of instruments or voices, and sustained major or minor chords. This feeling of awe, when it surfaces in music, often appears at the climax of a piece or in the final forte retard culminating a large work.

All three of these subversions of the initially negative surprise – fission, laughter, and awe – prove a great resource to the musical meaning composer.

Thus far we have only discussed emotions after an event has taken place. Tension, our final effect allows for alteration of emotions leading up to the musical event. We previously mentioned two sources of pre-outcome emotion – the
imagination response and the tension response. Due to music’s more sudden, in the moment, and fleeting nature – the long range time period needed for imagination responses rarely take form, much more common in music is the tension response outlined above.

Creating tension is very much like playfully taunting your dog with a treat you know he’s desperate for. You hold it out; he reaches for it; you pull it away at the last moment. There is a strong and building feeling of anticipation growing in your pet: if he can just reach a little higher, extend a little further… Then you give in, and toss him the treat. The tension has passed, anticipation gone… that is, until you pull another treat from your pocket.

In this case the treat is the listeners’ anticipated resolution. The game played between you and him (dangling it in front, pulling it away at the last moment) is the composer’s music leading to the resolution, and the listeners – they’re the dog.

Huron put it this way, “the most important factor influencing the tension response is delay. Tension response increases as the moment of the predicted outcome approaches. If the composer chooses an early resolution instead of later than the tension response will fail to reach its potential peak.”

At the very beginning of a piece, the tension is low for there is usually little to no inkling as to where the piece is proceeding. Often as the piece plays, the number of possibilities drops rapidly. If the composer wishes to build the tension perhaps he will drop a premonition (an “early warning” as to where the piece is planning to proceed), and retard as approaching the anticipated conclusion. Alternatively, if the

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15 David Huron, Sweet Anticipation: Music and the psychology of expectation, © 2006, pg. 318
composer is aiming for a more sudden transition, he can either drop no clues and keep the resolution ambiguous, or he might clearly display an anticipated resolution, and when the moment arrives, take off in the opposite direction.

All three, fulfilling expectation, creating surprise, and building tension have strong emotional effects on the listener and the ability to convey great musical meaning across cultures. Expectation, surprise, and tension are felt around the world, independent of musical background and may be utilized by all composers.

However, although the emotions and ITPRA responses outlined by Huron may be universal and a crucial element in the biological, the means to reach them most often include cultural musical elements. While the manipulation of tension by delay and dropping early hints may exist across cultures, the use of the 3-4 suspension is decidedly western.

(B) Cultural

The second origin of musical meaning comes from the culture in which we are born and raised. While a number of musical effects are evolutionary, or “built in,” many more are conditioned. Culture affects musical meaning in numerous ways. Perhaps most clearly, many musical cultures create distinct structures and rules seemingly independent of any biological or physiological influence. Perhaps the clearest example in Western musical culture is that referenced above – modes: major = happy, minor = sad. There is nothing innate in this classification. Travel outside of the Western music world, and these modes often have no such attached meaning. In fact, many cultures outside the Western system developed modal
structures to classify musical meaning - perhaps one of the most intriguing and complex taking hold in South India. There, hundreds of ragas (scales) exist which convey all gradients of meaning. [See table 1 below for a small selection] These ragas are all well known by the South Indian audience, and each of the many emotions represented by this great number of ragas, would come as naturally as the major, minor interaction played out above.

Table 1 - Ascending (A) and descending (D) of the raga scales are given in Western notation and have C as a basic note.

<table>
<thead>
<tr>
<th>Indian terms</th>
<th>Emotions</th>
<th>Corresponding raga</th>
<th>Scale degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Śrīgāra</td>
<td>Love</td>
<td>Khānas</td>
<td>A: C F E F G A B♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c B♭ A G F E D C</td>
</tr>
<tr>
<td>2. Karuna</td>
<td>Compassion</td>
<td>Śabāna</td>
<td>A: C D E F G F A B♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c B♭ A G F E F D E D C</td>
</tr>
<tr>
<td>3. Roudra</td>
<td>Terror</td>
<td>Gaula</td>
<td>A: C D♭ F G B♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c B♭ A G F D♭ E F D♭ C</td>
</tr>
<tr>
<td>4. Hāsya</td>
<td>Laughter</td>
<td>Sākaraśabhaṇam</td>
<td>A: C D♭ E F G A B♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c B♭ A G F E D C</td>
</tr>
<tr>
<td>5. Adbhūta</td>
<td>Wonder</td>
<td>Nātakurinjī</td>
<td>A: c D E F B♭ A♭ G A B♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c B♭ A♭ F E F G E D C</td>
</tr>
<tr>
<td>6. Vīra</td>
<td>Heroism</td>
<td>Aṭāṇā</td>
<td>A: C D F G B♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c B♭ A G F E B♭ D C</td>
</tr>
<tr>
<td>7. Bhīṣmatra</td>
<td>Disgust</td>
<td>Tāntrupī</td>
<td>A: C D♭ E♭ B♭ F G A♭ B♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c B♭ A♭ G F E B♭ D♭ C</td>
</tr>
<tr>
<td>8. Bhayānaka</td>
<td>Fear</td>
<td>Hamsāṇandi</td>
<td>A: C D♭ E♭ A♭ B♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c B♭ A♭ F♭ E D♭ B♭ C</td>
</tr>
<tr>
<td>9. Śanta</td>
<td>Peace</td>
<td>Sama</td>
<td>A: C D F G A♭ c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: c A G F E D C</td>
</tr>
</tbody>
</table>

The musical meaning conveyable through these structures is vast, but culture does not limit itself to structural influence.
Music and culture do not have an independent existence from one another. Music touches many aspects of our culture from dance, to religion, to funerals and weddings – music is present. And through these interactions it picks up meaning. Music has also existed with culture through time, and picked up associations of the time period depending on the period’s popular genre. Music too exists over space and has picked up associations with locations. A simple four bar phrase could land a listener at a wedding, funeral, Texas, Louisiana, 1980s, 1880s, dancing a romantic waltz, or walking a solemn march. It’s associations are many.

Even in instances where music is not considered to be associated: the rev of an engine, a gunshot, the sound of falling rain, or a horse trotting, this does not mean that these sounds are beyond music’s reach. Just as music imitates speech to find meaning in the biological, music can also use cultural imitation to recreate iconic sounds within a culture.\(^\text{16}\)

\((C)\) Intra-Opus

Intra-Opus, Latin for “within a work,” is defined by its name. Above we have dealt with the musical world you are born with (biological), the musical world we grow up in (cultural), and finally we enter the musical world created by the piece we are listening to. The intra-opus’s main strength of musical meaning is found in the “motif,” popularized by Wagner and heartily adopted by film composers. Although a motif would likely be comprised of multiple biological and cultural musical meanings, it also develops its own meaning within the context of the work to which

\(^{16}\) Hit link to hear a racecar, but see a trombone: [http://www.youtube.com/watch?v=DEnPrbpcxmo](http://www.youtube.com/watch?v=DEnPrbpcxmo)
it belongs. In his book, *Film Music*, Peter Larsen defines a motif as “a short musical idea, melodic, harmonic, rhythmic, or any combination of these three.” And then he continues, insisting that what truly creates a motif is its repetition. And he adds its tendency to often become an element that is used as a point of departure for the construction of larger structures.\(^{17}\) The “theme,” another property of the intra-opus, he continues, is similar to the motif, however, “while a motif can be melodic, rhythmic, or harmonic, a theme is usually based on a melody... [and] while a motif is short, incomplete – a musical idea, a theme – which might be made out of two or more motifs – forms and independent, complete, and enclosed unit.”\(^{18}\)

The intra-opus motif and theme allow the composer to convey a second level of meaning. Motifs in film are often associated with a certain character or emotion: the re-emergence of motif-x, signals to the audience that character-x is just around the corner, being thought of, or feeling x-emotion. The composer’s ability to manipulate a previously stated motif/theme creates this second level of musical meaning. If our hero’s tune re-enters, this time modified from its original upbeat major to the sorrowful minor key, the listener presumes not only that something is sad, but adding in the second layer: they now assume our hero is sad.

\(^{17}\) Peter Larsen, *Film Music*, pg. 44
\(^{18}\) Peter Larsen, *Film Music*, pg. 45
IV. Our tools – their uses, strengths, and origins

So now that we have established the origins of musical meaning, let us move on to discover its language and return to our toolbox. What are the composer’s tools? How are they used most effectively? And from where does their musical meaning stem?

I define the composer’s toolbox to be made out of 13 elements listed below.

A Composer’s Basic “Musical Meaning” Toolbox

1. Genre
2. Modes
3. Tonality
4. Harmonies
5. Pitch
6. Tempo
7. Volume
8. Timbre
9. Pitch Contour
10. Rhythmic Contour
11. Structural
12. Motif
13. Music Painting

1. Genre

Genre is perhaps the most purely cultural tool in the composer’s toolbox. While arguments might be made for certain biological elements – the analogous nature of a march’s 2/2 steady rhythm with soldier’s even marching footsteps, the steady drum which pounds behind (present in many cultures) – it is clear from the great variety of genre understandings across cultures that genre is a primarily culturally based tool.
Genre has enormous ability to convey meaning. It can set location, time period, as well as clearly define emotional state or character interaction. Film music often takes advantage of genre to convey location. *Sam Fox Moving Picture Music*, an early 20th century anthology by J.S. Zamecnik which “musical directors” drew from to accompany a number of different films, relies heavily on genre music to convey its meaning. Nine of its 25 pieces could be clearly classified as genre based: “Indian Music,” “Oriental Veil Dance,” “Chinese Music,” “Oriental Music,” “Mexican or Spanish Music,” “Funeral March,” “Church Music,” “Cowboy Music,” and “Sailor Music.”

“Chinese Music,” reprinted on the next page, is particularly effective for today’s Western audience as well that of 1913’s to which it was directed. While, from an ethnomusicology standpoint, it likely classifies as inaccurate to Chinese culture, to the musical meaning scholar, it is very effective. For our purposes, its closeness to actual Chinese music is not important, what matters rather is the Western audience’s perception of Chinese music. And even though J.S. Zamenik was limited to piano instrumentation – the listener is transported to China. “Chinese Music,” proves a very effective use of genre to convey musical meaning.
CHINESE MUSIC

Allegro moderato.

J. S. Zamecnik.

For audio please follow below link: http://www.mont-alto.com/photoplaymusic/SamFoxMovingPictureVol1/Chinese.mid
Another handy use for genre in musical meaning is to set the period the action takes place. While some genres are pervasive through time, certainly genres can be associated with periods. While classical music has existed throughout many ages and remains today, hearing it tends to throw the listener back to Medieval Europe, times of top hats, corsets, and horse drawn carriages. Today’s listeners can even map out the last half century in genre music: 1940/50 – Jazz, 1960/70s – Rock, Motown, 1980-90 – Pop/Rap. Although these are not hard tools, as rock and roll continued into the 1980-90s and indeed continues today, certain categories within genres, such as beach-boy type vocal harmonies over simple chord progressions, will most likely entice the listener to travel from 2010 landing somewhere in the 1960s. The classical music genre is often used in film for European Medieval period pieces. See nearly any BBC masterpiece theater or medieval period piece.

Genre also has meanings that go beyond period and location – often it is related to what it is usually used for: Waltz, Tango, March – all have corresponding actions that convey the meaning. A waltz – a romantic dance, usually took place between a man courting a young lady – so likewise in music it continues to convey this meaning independent of whether anyone is dancing. These meanings have then been reaffirmed in various musical forms over the ages (ballet, in particular.) The tango – a dance with much heavier contact – connotes the sexual aspect of the romantic, the March existing in many variations – across the variations there is a feeling of going somewhere with a purpose, perhaps with dignity.

Returning to J.S. Zamecnik’s film music anthology. “Funeral March,” is a genre that may very well transport us to a location - a funeral, but it could also go
beyond this. Whether in a church, with casket or no, a funeral march connotes the distinct feeling that we have entered a solemn occasion. (See appendences.)

2. Mode

Behind genre, mode is perhaps the most culture-based tool in a composer's toolbox. As previously mentioned modes don’t cross cultures, but rather are part of the musical structure Western culture has constructed.

While mode is one of the stronger conveyers of mood, it is also very limited. Most research revolves around the major/minor distinction outlined previously. This distinction has been proved many times over. R.G. Crowder in his 1985 study, found the association using sine-wave triads in young adults. Investigations with real music proved likewise successful.\(^{19}\) This distinction was even found in children as young as 3 in Kastner and Crowder's 1990 study, however in Gerardi and Gerken's 1995 study, children 3-5 did not show reliable associations, the youngest successful age group ranging from 7-8.

Major has been found to express: happy, happiness, joy, graceful, serene, solemn, and attraction, while conversely minor was shown to express: sad, lamentation, dreamy, dignified, agitation, sadness, tension, disgust, and anger.\(^ {20}\)

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19 Crowder, 1985; Hevner 1935a; Kleinen 1968; Krumhansl 1997; Nielzen & Cesarec 1982; Peretz et al.1998; Wedin 1972c.)

2. Tonality

The musical meaning origins of tonality, is an interesting case. While “tonal,” “atonal,” or “chromatic” in the western context is clearly culturally based, of those traditions which retain a “correct” or “tonal” structure, the breaking from that structure, aka the movement into the “chromatic” or “atonal,” I hypothesize, might have similar musical meanings as western culture. This movement from order to disorder coveys a movement from the joyful, dull, and peaceful (tonal) to the sad and angry (chromatic), to the angry once more (atonal) in western structures.\textsuperscript{21} However, to draw conclusions beyond the western paradigm without sufficient testing would be irresponsible. But certainly the movement from order to disorder, outside of musical context, might be seen as analogous to anger or “blowing up.”

3. Harmony

Harmonies are inherently based in mode, and to the best of my knowledge, have been restricted to western culture testing. However, in this regard, they have been thoroughly tested, and offer some interesting opportunities for the musical meaning composer.

As a general rule, Alf Gabrielsson and Erik Linstrom lay out in their chapter “The Influence of musical structure on emotional expression,” the expressions often associated with simple and consonant harmony vs. those associated with the complex and dissonant.

\textsuperscript{21} Thompson & Robitaille, © 1992, pg. 241 Soboda
Simple, consonant harmony: happy/gay, relaxed, graceful, serene, dreamy, dignified, and majestic

Complex and dissonant harmony: excitement, tension, vigor, anger, sadness, and unpleasantness.22

Many scholars delve deeper into harmonic connotations, examining the meaning conveyed in each harmonic triad. (See below Huron’s classification of musical understanding of chromatic mediant chords in both major (table #1) and minor (table #2) keys.)

Table #1

<table>
<thead>
<tr>
<th>Chord</th>
<th>Expectedness</th>
<th>Tendency</th>
<th>Valence</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI</td>
<td>surprising, bold</td>
<td>leading, unresolved, forward-leaning, strong tendency, heralding change, anticipatory, tense, suggestive, dangled</td>
<td>bright, joyful</td>
<td>quizzical</td>
</tr>
<tr>
<td>bVI</td>
<td>sudden, abrupt, surprising, shocking, daring, bold</td>
<td>suggestive</td>
<td>hopeful, open, bright, airy, powerful, solid, heroic, majestic</td>
<td>confident, sure, strident, enigmatic</td>
</tr>
<tr>
<td>bV</td>
<td>unexpected, surprising</td>
<td></td>
<td>dark, mysterious, serious, sad, gloomy, negative, wrenching, anguished, sorrowful, angst, troubled</td>
<td>stately, impassioned</td>
</tr>
<tr>
<td>III</td>
<td>different</td>
<td>leading, directed, unresolved, stable, final</td>
<td>warm, homely, mellow, simple, light, airy, solemn, firm, duller</td>
<td>questioning</td>
</tr>
<tr>
<td>bIII</td>
<td>sudden, jolting, shifty</td>
<td>strong, solid</td>
<td>positive, bright, sunny, joyful, buoyant, luminous</td>
<td>resolute</td>
</tr>
<tr>
<td>biii</td>
<td>surprised, unusual, weird</td>
<td>retiring, tentative</td>
<td>somber, desolate, dramatic, empty, despairing, tragic, gloomy, sad, resigned, hopeless, stark, serious, reflective, hollow, pensive</td>
<td></td>
</tr>
</tbody>
</table>

22 Alf Gabrielsson and Erik Linstrom, “The Influence of musical structure on emotional expression,”

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Table #2
Table 14.2
Reported qualia for chromatic mediant chords in a minor key context:

<table>
<thead>
<tr>
<th>Chord</th>
<th>Expectedness</th>
<th>Tendency</th>
<th>Valence</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>#VI</td>
<td>novel, futuristic,</td>
<td>stable, settled,</td>
<td>upbeat, energetic,</td>
<td>whole, heightened,</td>
</tr>
<tr>
<td></td>
<td>bold, conventional</td>
<td>complete, final,</td>
<td>bright</td>
<td>strong, simple,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>leading, urging,</td>
<td></td>
<td>uncomplicated,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pushy</td>
<td></td>
<td>plain</td>
</tr>
<tr>
<td>#vi</td>
<td>surprising,</td>
<td>confident, resolute,</td>
<td>weighty, airy,</td>
<td>melodious, strident,</td>
</tr>
<tr>
<td></td>
<td>challenging</td>
<td>enticing, incomplete,</td>
<td>serious, majestic</td>
<td>expansive, solid</td>
</tr>
<tr>
<td>vi</td>
<td>unexpected,</td>
<td>unexpected,</td>
<td>mysterious,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>different,</td>
<td></td>
<td>cheerful, somber,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>newness,</td>
<td></td>
<td>dark, tragic,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>abrupt, eccentric</td>
<td></td>
<td>despairing,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>death, depressed</td>
<td></td>
</tr>
<tr>
<td>#iii</td>
<td>surprising, edgy,</td>
<td>transitional, falling,</td>
<td>satisfying, positive,</td>
<td>simple, plain,</td>
</tr>
<tr>
<td></td>
<td>sudden</td>
<td>promising, temporary,</td>
<td></td>
<td>hollow, crisp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>committed, directed,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>suggestive, drawing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>is, settled, resolved</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#iii</td>
<td>surprise</td>
<td>restful, resigned</td>
<td>somber, sad,</td>
<td>whimsical, light</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>mysterious,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>serious, solemn,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>stately, solid,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>melanchotic</td>
<td></td>
</tr>
<tr>
<td>iii</td>
<td>surprising,</td>
<td>compelling,</td>
<td>dark, ominous,</td>
<td>rich, fuzzy, cozy,</td>
</tr>
<tr>
<td></td>
<td>unprepared</td>
<td>foreboding, insistent,</td>
<td>murky, solemn,</td>
<td>sensitive, detached</td>
</tr>
<tr>
<td></td>
<td></td>
<td>leading, tentative</td>
<td>mysterious,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ethereal, disturbed,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>anxious</td>
<td></td>
</tr>
</tbody>
</table>

Beyond this harmonies can be defined by open or closed nature.

4. Pitch

Pitch retains strong expressive origins from the biological. As previously noted, “increasing aversiveness of primate calls” has been found to be correlated with pitch. Further E.S. Morton in his 1977 article in the American Naturalist noted that in both birds and mammals “low-frequency sounds [are indicative of] hostility, while “higher-frequency tones” are emitted when frightened, appeasing or approaching in a friendly manner.”23 Pitch contour, a subject we will not have time to address musically in this essay, also find origins in the biological.

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23 E.S. Morton, 1977
Aversiveness not only correlates with pitch, but also with tonal pitch range, and irregularity of pitch contours.

Musically, high pitch has generally been associated with expressions such as “happy, graceful, serene, dreamy, and exciting,” as well as with “surprise, potency, anger, fear, and activity,” while low pitch often suggests “sadness, dignity/solemnity, vigor, and excitement,” in addition to “boredom and pleasantness.”

In studies of bichords (chords with only two pitches), higher register rated higher in ‘activity,’’ as well as less stable, restless, tense and of higher potency than low register bichords. When the tones were broken down into their intervals, the qualities held true, high-pitched rated more happy than low pitched.

5. Tempo

Among the factors effecting emotional expression in music, tempo is widely regarded as one of the strongest. Fast tempos have been found to be more pleasant, happy/gay, joy, activity/excitement/restless, potency, surprise, anger, and fear, graceful, vigorous, while slow rhythms were found expressive of: serious, complaining, sadness, calmness/serenity, dignity/solemnity, sentimental,

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29 Rigg, 1939; Motte-Haber, 1968; A. Gabrielsson & E. Lindstrom, 2001, Hevner, 1937

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tenderness, boredom, and disgust. Although these cover a broad spectrum of emotion, musical meaning of tempo remains analogous to our own physical reactions to these emotions. It is hard to imagine a sad, bored, solemn, or dignified person racing about at a fast speed.

6. Volume

Volume likewise seems to fit the above relation between the musical expression and emotional action response. High volume associates itself with a spectrum of expressions of large intensity. Excitement, triumphant, joy, Gaiety, intensity, strength/power, solemnity, tension, and anger, have all been correlated to high volume. Conversely, low volume is associated with the smaller: melancholy, delicate, peaceful, softness, tenderness, fear, and sadness. It would be hard to imagine an excited, triumphant, joyful, gay, intense, tense, angry person speaking at a whisper. However, in the results two adjectives stand out – solemnity as high volume, and fear as low volume – which might not always correlate to its “action counterpart.”

Volume has also been studied through the size and speed of its variation. While large variation has been shown to be expressive of fear, small variation aligns itself with expressions of happiness, pleasantness, and activity. Rapid changes are found to be playful, amusing, pleading. Fear was also identified as a corresponding

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30 Behne, 1972; Motte-Haber, 1968; A. Gabrielsson & E. Lindstrom, 2001, Hevner 1937
32 Scherer & Oshinsky, 1977
33 Watson, 1942
expression.\textsuperscript{34} No volume changes at all have been found to be expressive of sad, peaceful, dignified, serious, and also happy.\textsuperscript{35}

7. Timbre

Timbre finds much musical meaning through its biological origins. E.S. Morton in his 1977 article, previously referenced, found evidence of hostility in harsher timbres, while “pure like sounds” were emitted when “frightened, appeasing, or approaching in a friendly manner.”\textsuperscript{36}

To the expression of musical meaning, timbre is an important player, as written by Earis and Patricia Holmes, “timbre is a fundamental and personal vehicle for conveying expressive intent, making a vital contribution to the communication of emotion in music.”\textsuperscript{37}

However, despite it’s importance, it remains a difficult quality to accurately define. The definition of timbre ANSI reads “the attribute of auditory sensation, in terms of which a listener can judge that two sounds, similarly presented and having the same loudness and pitch are different.”\textsuperscript{38} However, this definition doesn’t say what it is, rather only outlines what its not.

\textsuperscript{34} Krumhansl, 1997
\textsuperscript{35} Watson, 1942
\textsuperscript{36} E.S. Morton, 1977
\textsuperscript{37} Holmes, P., (2010). AN Exploration of Musical Communication through Expressive use of Timbre: the Performer’s Perspective \textit{(in press)}, pg. 181
Lerdahl and Jackendoff outline the problem, “timbre is a dimension of musical structure which is not hierarchical in nature.”

Something cannot have more timbre or less timbre, lower or higher timbre, or louder or softer timbre either. Timbre also remains hard to define as Western tonal music has never attempted to conceive timbre on any hierarchical plane. These affects have led a number of people to conclude that timbre cannot be perceived independently.

However, although a thorough classification might be impossible, Giovanni Fiaschi, in his 2009 article, “The Role of Expectation in the Constitution of Subjective Musical Experience,” outlines six important timbre features often identified as expressive tools: brightness, roughness, richness, attack quality, the harmonic or overtones produced by the instruments vibrations, and the relative strength of frequency spectrum.

The relationship between harmonics and musical meaning has been further studied. Tones with many harmonics have been found to be expressive of potency, anger, disgust, fear, activity, or surprise. Tones with fewer harmonics, and limiting the harmonics to the lower, are expressive of pleasantness, boredom, happiness, or sadness. Tones with amplified higher harmonics express anger, while tones with

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suppressed higher harmonics are found to be expressive of tenderness and
sadness.\textsuperscript{44}

Emotional expression present in attack quality has also received some study.
A softer, or more rounded envelope has been shown to express tenderness, sadness,
fear, disgust, boredom, and potency, while sharper (rapid attack and decay) are
found expressive of anger, happiness, surprise, and activity.\textsuperscript{45}

Further, Behrens and Green's 1993 study found sadness best expressed
through voice or violin, anger through timpani, and fear through violin. While, it is
certain that biological factors play a large role in the expressiveness of timbre, there
are no doubt cultural factors in play. Simply the number of accounts of travelers
reporting back on all the “funny sounding” instruments when entering a new
musical culture should be sufficient. However, as it always does, culture intervenes
in many ways. Certain instruments have certain connotations, culturally for
Western culture. The kazoo, for an unconventional example, associates itself with
birthdays, parties, and general fun – and thus perhaps overriding any biological
influences, the kazoo timbre will express joy, excitement, etc.

7. Structural

Structural expression is an interesting element in musical meaning. While
some studies, indicate, “that various manipulations of musical form may not matter

\textsuperscript{44} A. Gabrielsson & E. Lindstrom, 2001
\textsuperscript{45} Juslin, P.N. (1997). Perceived emotional expression in synthesized performances of a short melody:
Capturing the listener’s judgment policy. \textit{Musicae Scientiae}, 1, 225-56; A. Gabrielsson & E. Lindstrom, 2001
very much,”46 others conclude that it is local structures, small chunks that contain great meaning; it is rather the large musical structures that matter less.47

The creation of expectation, anticipation, as well as tension clearly relies on structural effects, particularly if the composer intends to build tension to its more substantial levels, including “premonitions” (early warning signs) and utilizing extended suspensions. However, these may very well be considered small chunks, rather than a large musical structure equivalent to Konecni’s study in which he found he was able to shift Beethoven’s sonata and string quartets movements with no significant expressive variation.

However, structure, large structure, movements can prove important for intra-opus motif and theme manipulation. Although Konecni and his co-authors were able to shift around the movements of Beethoven’s sonatas and string quartets with little to know expressive variation, this could not hold true for manipulated motifs and themes. The minor inversion of our hero’s theme, (previously mentioned in our definition of the intra-opus,) would not be understood correctly if it was shifted before the initial hero motif. While before we had a hero becoming sad, we the shift we are left with a sad person becoming heroic – this quite clearly drastically changes the narrative.

III. Building Expressive Music – Application of the Musical Meaning Toolbox:

46 Konecni 1984; Tillman & Bigand 1996

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Clarity and Definite Meaning through Combination

One aspect likely noted is the wide range and starch dichotomy of emotions many of the elements outlined above have been found to express. High pitch, for instance, was found expressive of happiness, along with anger. Often times the expressions even seem in direct contradiction with each other. Do these elements really hold any meaning at all, or have we set off on a wild goose chase? The answer is not a simple yes and no respectively. There is no goose chase, but no pitch alone is unlikely to display happiness.

Musical elements, like elements of behavior, elements of speech gain their meaning from their interaction with one another. While a man running at high velocity could mean a number of things – fear, anger, excitement – add in that he is jumping as he runs and twirling around in circles, and we have landed on excitement as the reason for this sudden outburst of velocity. Music is much the same, each element of a melody having an impact on what is conveyed. The next question becomes, how do we define this interaction? What elements are stronger? Perhaps even, how do I create a formula for the happy?

Kate Hevner, University of Minnesota, completed a series of six studies on expressiveness in music to answer these questions. Her experiments determined: the affective value of the major versus the minor mode, ascending versus descending melody, firm versus flowing rhythms, modern dissonant harmonies versus classical consonance, and finally the affective value of pitch and tempo in music.
For each of her six experiments she isolated the studied variables (independent of one another) and recorded the relative effectiveness of each element on eight emotional qualities: happy, graceful, serene, dreamy, sad, dignified, vigorous, and exiting. (Below see her findings on the relative effectiveness of pitch and tempo)

![Diagram of pitch and tempo effectiveness]

**Fig. 1. Relative Effectiveness of Pitch and Tempo on Every Affective State (From D./P.E.d., Table I)**

We can see that while pitch has a great effect in conveying sadness, its importance in conveying a dreamy state is quite low. Likewise, vigorous, while seemingly indispensable with the musical expression of exciting, proves almost forgettable when musically conveying vigorous. This would not necessarily make it impossible to express the exciting musically with a slow tempo. Although mode (major/minor) is a powerful indicator of happy and sad, there are sad funeral marches written in major. The remaining aspects outside of mode, (pitch, tempo, harmony, genre, etc.)
must combine to overwhelm this strong association we in the western world come
to understand from a very young age.

Through her research, Hevner assembles a table of “Relative weights for
musical characteristics for each affective state.” (See below)

<table>
<thead>
<tr>
<th>Musical element</th>
<th>dignified</th>
<th>solemn</th>
<th>sad</th>
<th>dreamy</th>
<th>serene</th>
<th>graceful</th>
<th>happy</th>
<th>exciting</th>
<th>vigorous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>major 4</td>
<td>minor 20</td>
<td>minor 13</td>
<td>major 3</td>
<td>major 21</td>
<td>major 24</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Tempo</td>
<td>slow 14</td>
<td>slow 12</td>
<td>slow 15</td>
<td>slow 20</td>
<td>fast 6</td>
<td>high 20</td>
<td>fast 21</td>
<td>fast 6</td>
<td></td>
</tr>
<tr>
<td>Pitch</td>
<td>low 10</td>
<td>low 10</td>
<td>high 6</td>
<td>high 8</td>
<td>high 16</td>
<td>fast 6</td>
<td>low 9</td>
<td>low 13</td>
<td></td>
</tr>
<tr>
<td>Rhythm</td>
<td>firm 18</td>
<td>firm 3</td>
<td>flowing 2</td>
<td>flowing 5</td>
<td>flowing 8</td>
<td>flowing 10</td>
<td>firm 2</td>
<td>firm 10</td>
<td></td>
</tr>
<tr>
<td>Harmony</td>
<td>simple 3</td>
<td>complex 7</td>
<td>simple 4</td>
<td>simple 10</td>
<td>simple 12</td>
<td>simple 16</td>
<td>complex 14</td>
<td>complex 8</td>
<td></td>
</tr>
<tr>
<td>Melody</td>
<td>ascend 4</td>
<td>—</td>
<td>—</td>
<td>ascend 3</td>
<td>descend 3</td>
<td>—</td>
<td>descend 7</td>
<td>descend 8</td>
<td></td>
</tr>
</tbody>
</table>

This is a gem to the musical meaning composer. Although, inspiration, many argue,
and I concur, may not come from a chart, certainly direction can. There is a reason
we study and analyze those who came before us, and likewise to convey meaning
through music this chart might prove an invaluable resource.48

48 Note: I discovered this chart post-composition, but should I get stuck in future compositional
projects, I will certainly give Hevner a glance.

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4/10/11
Conclusion –

There can be discomfort with many composers, or artists more generally, with the attempt to deconstruct their art, using tests and studies, tables and graphs, polls and formulas. The compositional process, they say, is inspired. It is personal. It is mysterious. I agree.

I do not believe my essay changes this. Nonetheless, technology is catching up increasingly with the composer. One fascinating example is an upcoming young composer in the modern classical genre, Emily Howell, whose work received several favorable reviews until her true nature was discovered.

She was a puppet of University of California Music Professor David Cope, well, not a puppet, a computer program, and not really a puppet at all as she was very independent creating arias and sonatas all on her own.

Cope’s creation of two computer programs: EMI, followed by its successor: Emily Howell, sparked considerable controversy in the composition community. Labeling themselves composition programs, EMI was an imitative program, but “Emily Howell” seeks to create new, innovative works. And these works are no obscure affair. National Public Radio, introduced the program, “[Emily Howell’s] modern masterpieces make her among the most technically unique composers in America.”

Through the work of Hevner’s 1937 study and her graph outlined above, it seems certain that a computer could create a sad melody. It could follow the rules

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and generate anger, fear, serenity, and perhaps even emulate dignity. But I do not believe this infringes on the composers true role.

The compositional process is inspired. It is personal. It is mysterious. I find this to be true. And so these mysterious aspects, these inspired moments, these are what the composer must endeavor for. This is where the energy must be spent. I will take a graph and a computer to tell me what has been done before, I am thankful for a map, but there is a moment spent in musical meaning composition when you close your eyes and see your character, and then from somewhere deep within you, you pull a note, an interval, a tempo, a rhythm, and a melody emerges which simply couldn’t fit any other character as the one you have personified within it. Perhaps one day a computer will be able to close its eyes and imagine. It is not inconceivable. But I hope it takes its time for I truly enjoy this.
Appendices:

FUNERAL MARCH

J. S. Zamecnik.
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Scene 1, part I

Opening, introducing hero and true love

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Opening - Hero - Home

And he had a tear line

Who wasn't yet in flutes. see how shrill it...
II - Our hero makes his move

Scene I

Our hero makes his move
On the screen before we start:
Hero Stand!

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Our hero tries to sort out how to say what he's trying to say.

Practicing (in the mirror)

Our hero makes his move

Defeated

Sure of himself

or...

or...
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move

Sprightly, with great energy

Spritely, with great energy

Spritely, with great energy

Spritely, with great energy
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
II - Our hero makes his move
Scene 1 - part II
The Duel, (hero loses)
Elizabeth Gauvey-Kern

Stealing true love

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Scene 1 - The duel
Scene 1 - The duel

Hero stands

Stand

Stands

Scene 1 - The duel
Scene 1 - The duel
Scene 1 - The duel

worth fighting for
Scene 1 - The duel

True love sits
Scene 1 - The duel
Scene 1 - The duel
Scene 1 - The duel
Scene 1 - The duel

True love stands

Stand

What was that sound you showed me that sounded like a gun shot?
Scene 1 - The duel
Score

Scene II
Hero wakes up alone:
A search, dispair, setting off

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Use playing on the bridge sound in basses when get’ta villain
Scene II
Scene II

then to the strings

\[\text{then to the strings}\]
Scene 3:
Villain and True love, a deul, and reunited

Elizabeth Gauvey-Kern

Score
Villain and True Love
Villain and True Love
Villain and True Love