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음악학석사학위논문

Theories of Melodic Expectation:
A Comparative Study of
Meyer, Narmour, Huron and Margulis

2013년 2월

서울대학교 대학원

음악과 이론전공

임 솔

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이 논문을 음악학석사학위논문으로 제출함

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Abstract

Theories of Melodic Expectation: A Comparative Study of Meyer, Narmour, Huron and Margulis

The present study deals with the overall ideas related to melodic expectation theories through four major scholars (Leonard Meyer, Eugene Narmour, David Huron and Elizabeth Margulis). By investigating and comparing with their theories, it is possible to construe the melodic expectation through diverse approaches as well as their interrelationships based on the diachronic and synchronic analyses.

The theories of the four scholars are addressed in order to articulate the distinct features in their conceptions. By following Meyer's sight of an expectation, and his epoch-making influence on later scholars such as Narmour, Huron and Margulis, this study specially contemplates reviewing their major theories and discussions of melodic expectation in a chronological order.

Moreover, comparisons and contrasts of their theories and arguments are carried out based on the same touchstones: tension, surprise and gap-fill pattern. By doing this, it is plausible to comprehend their major focus on the issues. Therefore, different concerns and ideas offer how their theories take the distinct footsteps regarding the melodic expectation.

A conclusion is drawn to address the outcome of the comparisons; and questions with respect to musical expectation and further studies are raised. Overall, the study aims to reexamine and extend the four scholars' theories in order to establish the correlations between the theories inherited from

Meyer's expectation theory and to unfold dynamic and intricate aspects of listening experience as to expectation.

Thereby, the historical transformation of melodic expectation from 1950s to 2000s is clearly aligned, and by being juxtaposed with one another, it leads to corroborate every facet of the melodic expectation in relation to perception, cognition and listening experience.

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keywords : melodic expectation, tension, surprise, listening experience, rehearing

***Student Number* : 2011-21813**

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I. Expectation in Music

1. Introduction

Having an expectation is quite important in many aspects of life. People confront a considerable number of expectations, and experience how their expectations are realized or frustrated. In music, people also have similar experience of expectations in life. When people listen to an unfamiliar music on a radio, they might expect of how the next part would be, how the music unfolds, or where a melody goes.

Expecting the future is quite important to all of us. When it comes to music, not only an expectation does play a pivotal role in the listening experience, but also it serves emotional experience which may provide motivation for listening to the music. According to Salimpoor et al. (2011), the dopamine release from caudate increases in period of anticipation. The place of dopamine release is important. Dopamine release from caudate signifies content feelings or pleasures achieved from high-value matters such as love, volunteer works, etc.; whereas, that released from NAcc pertains to immediate desires such as alcohol, drugs, physical love, etc. The decreased dopamine activity is significant at the phase of experience of music listening. This indicates occurrence of an expectation, implying that the musical anticipation outweighs the musical experience.

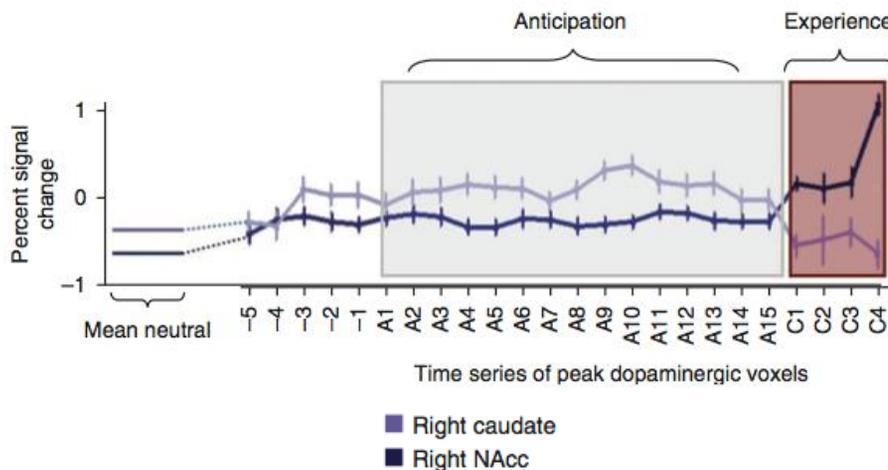


Figure 1. The dopamine release from right caudate and right NAcc (adopted from Salimpoor et al., 2011, 259).

Then, what does it mean of having an expectation to the music? The best instance is that in chord progression, one tries to predict the next chord. Or, in a melody, one has an expectation of its direction whether it goes up or down. If so, it might be proper to ask these questions, why do we expect tonic chord after dominant seventh? Why do we expect a melody to go down after going up?

It is simply because that these are most common in music, and it is what we have most frequently learned. Learning is achieved through a perceptual exposure in a certain amount of time by being accustomed to the musical syntax and probabilities of events. A person who has listened mostly to Western tonal music throughout her or his life might be familiar with the progression of dominant seventh to tonic, since a countless number of music tend to have such progression.

The common phenomenon allows listener to acquire a tendency through certain set of patterning in music. The normative regularities in music turn into internalized norms by multiple exposures, this also develops as schema in listener's brain. Therefore, listeners tend to imagine hearing of tonic chord after dominant seventh according to the schema. David Huron defined schema as "a mental preconception of the habitual course of events" (2006). As schema is involved in habit, convention, exposure as well as style. In other words, listeners learn a certain set of events in music which occurs statistically higher, and a tendency from the probabilities working as top-down processing since it is already preserved in schema.¹ If the exposure to the probabilities has been sustained from the childhood, a certain set of probabilities remain as schematic in listeners. Therefore, the response to musical experience can be more automatic and immediate. As soon as listeners hear dominant seventh, thinking about tonic is not conscious, but reflexive.

Schema and style are related in a sense that one's exposure to a certain type of style can build the schema in her or his brain. The Hollywood movies are famous for showing the Hollywood style which includes elements such as protagonist, antagonist, boy-meets-girl storyline, happy ending, etc. It is known as Hollywood style as repetitively occurrence of same components makes a pattern; viewers naturally expect something frequently exposed through the movies in this style. It is because the style sets the

¹ Top-down processing becomes possible when listeners are experienced and have gained sufficient musical information. Unlike the bottom-up processing which understands a note-to-note level as an immediate stimulus, top-down processing allows listener to understand music based on the previous experience and learning.

schema in viewers. Similarly, if one is exposed to Mozart's music throughout her or his life, one might instantly notice which one is Mozart's music among the random pieces of classic music played on a radio without any reference. The reason behind this is that Mozart's music contains a certain set of patterning, and listening to that over the time allows one to be well acquainted with it. In this sense, one of the arguments about having an expectation is a statistical learning which will be thoroughly discussed in Chapter 2 and 3.

2. The aim of the present study

In order to discuss an expectation in music, there are countless parameters to consider such as tonality, melodic contour, harmonic progression, timbre, text, volume, dynamic, performing style, schema, cadence, rhythm, pitch relations, genres, style etc. All of these parameters are of great importance and interrelated in a piece of music.

Nonetheless, the theoretical explanations or empirical tests regarding an expectation do not fully consider the intricate characteristics of music. Especially, the present study focuses on melodic expectation among them. Since melody is one of the primary parameters to consider in musical structure; hence, the melodic expectation encapsulates the general listening experience as to the musical expectancy.

The present study deals with the overall ideas related to melodic expectation theories through four major scholars (Leonard Meyer, Eugene Narmour, David Huron

and Elizabeth Margulis). In Chapter 2, the theories of the four scholars are addressed as they have enormous influence on the establishment of the theory of melodic expectation, hence of worthwhile to consider. By following Meyer's sight of an expectation, and his epoch-making influence on later scholars such as Narmour, Huron and Margulis, this study specially contemplates reviewing their major theories and discussions of melodic expectation in a chronological order. In Chapter 3, comparisons and contrasts of their theories and arguments are carried out on a basis of the same touchstones: tension, surprise and gap-fill pattern. By doing this, it is plausible to comprehend their major focus on the issues. Moreover, different concerns and ideas on the issues offer how their theories take the distinct footsteps regarding melodic expectation. In Chapter 4, a conclusion is drawn to address the outcome of the comparisons; questions with respect to musical expectation and further studies are raised. Overall, the study aims to reexamine and extend the four scholars' theories in order to establish the correlations between the theories inherited from Meyer's expectation theory and to unfold dynamic and intricate aspects of listening experience as to expectation.

The present study focuses on the four leading scholars who have dealt with melodic expectations. Major references include:

Leonard Meyer: *Emotion and Meaning in Music* (1956)

Music, the arts, and ideas (1967)

Explaining Music: Essays and Explorations (1973)

Style and Music (1989)

Eugene Narmour: The 'genetic code' of melody: Cognitive structures generated by the implication-realization model, *Contemporary Music Review* (1989)

The Analysis and Cognition of Basic Melodic Structures (1990)

David Huron: *Sweet Anticipation: Music and the Psychology of Expectation* (2006)

Von Hippel and Huron: Why do skips precede reversals? The effect of tessitura on melodic structure. *Music Perception* (2000)

Elizabeth Margulis: *Melodic expectation: A discussion and model*, Ph.D dissertation (2003)

A model of melodic expectation, *Music Perception* (2005)

Surprise and listening ahead: Analytic Engagements with Musical Tendencies, *Music Theory Spectrum* (2007)

Thereby, the historical transformation of melodic expectation would be clearly aligned, and by being juxtaposed with one another, it is helpful to construe the overall understanding of the melodic expectation theories from 1950s to 2000s.

II. Expectation Theories from 1950s~2000s: A diachronic survey

1. Expectation and emotion (Leonard Meyer)

1.1. Meaning and expectation in music

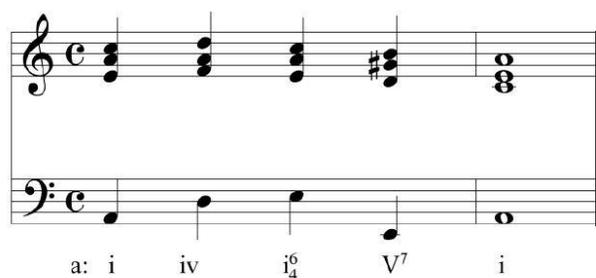
Does music have meaning? In a pathbreaking book, *Emotion and Meaning in Music* of 1956, a theorist, Leonard B. Meyer addressed that people agreed that music has meaning.

Composers and performers of all cultures, theorists of diverse schools and styles, aestheticians and critics of many different persuasions are all agreed that music has meaning and that this meaning is somehow communicated to both participants and listeners. This much, at least, we may take for granted. But what constitutes musical meaning and by what processes it is communicated has been the subject of numerous and often heated debates (1956,1).

As the quotation says, even if people are agreed to that music conveys the meaning, but what is the meaning of the music and how it is communicated are highly controversial among scholars throughout the history of music. People have been arguing that certain characteristics of music can refer to extramusical objects, and thus this relationship is regarded as musical meaning. *Idée fixe* from Hector Berlioz's *Symphony Fantastique* (1830) has been interpreted as an association of the passion for Harriet Smithson and of Berlioz's persistent love for her. A leitmotiv derived from Richard Wagner's Musikdrama is attributed to a specific character in the story of Musikdrama. Whenever the specific leitmotiv appears, it designates something related to that character. Regarding a movie soundtrack, a specific character owns its theme. Minor-mode music with many tritons

and lower basses are adopted for a horror movie, implicating scary atmosphere. Connecting music to extramusical things such as abstract conceptions, ideas, moods, emotions, etc. is considered as meaning.

Is the musical meaning appreciated solely in this way? Or, in other words, if the absolute music is not involved in extramusical materials, is this to say that the absolute music does not carry any musical meaning? In replying to these questions, it seems appropriate to bring the idea that without relying on referential matters people can insist that Brahms's music does have a meaning. The way of thinking about this musical meaning is quite different from the previous examples. If a listener hears a chord progression such as i-iv-i⁶/₄-V⁷ in A minor, the final chord is anticipated as minor tonic chord (Figure1).



The image shows a musical score for a chord progression in A minor. It consists of two staves: a treble clef staff and a bass clef staff, both in common time (C). The treble staff contains five chords: i (A2, C3, E3), iv (A2, C3, F3), i⁶/₄ (A2, C3, E3, G3), V⁷ (A2, C3, E3, G3, B3), and i (A2, C3, E3). The bass staff contains five notes: A2, C3, E3, G3, and A2. Below the bass staff, the chords are labeled: a: i, iv, i⁶/₄, V⁷, i.

Figure 2. A Minor Chord Progression.

If there is a melody running upward, in the second half of a melodic contour a listener might want to hear the melody going downward (Figure 2). Or, if the melody makes a

sequential progression (i.e. C-E-A-E, D-F-B-F), a listener expects to hear the third sequence as E-G-C-G (Figure 3).



Figure 3. An Arch Melodic Contour.



Figure 4. A Sequence.

Then, what these all mean? They all have cause and effect relations. In the antecedent, if a melody goes up, going down is expected to the listeners in the consequent. As it is, based on the relationship between antecedent and consequent events, a musical expectation is aroused. Eduard Hanslick, a music critic in the late nineteenth century advocated this meaning in his *Vom Musikalisch-Schönen* of 1854. He rejected the possibilities that music can evoke feelings or emotions as well as referential qualities. He asserted firmly “in music there is both meaning and logical sequence, but in a musical sense” [[1854] 1974: 50]. As long as the emotional meanings are illustrated within the forms and musical components, he conformed to them. If a motivic relations in the

beginning of Brahms's music is realized in the whole formal structure, this relations described by the musical language has something meaningful.

Accordingly, the viewpoints of the former and latter are distinct with differently concerned musical meanings. As the former believes a referential meaning (a designative meaning), the latter emphasizes an absolute meaning (an embodied meaning). Those who insist that musical meaning is understood via a reference to outside of the musical world value the referential meaning beyond the embodied meaning. As opposed to this, those who purport to consider the absolute meaning claim that music should be understood and appreciated on its own terms rather than for its ties to anything outside the music.

One of the Leonard B. Meyer's important affirmations is that referential and absolute meanings are different from what formalists and expressionists insist. He especially distinguishes between expressionists and referentialists in that expressionists are regarded as a type of absolutists because they look for the musical meaning in the interplay of the elements and forms of music. As Meyer called himself an absolute expressionist, his expectation theory becomes more specifically explained; he found an antecedent-consequent relationship in the absolute meaning, and drew this relationship in order to establish his expectation theory. If one sees a stormy sky filled with dark clouds, she or he expects that it is about to rain; the stormy sky is an antecedent event forecasting the consequent event. In this relationship of antecedent and consequent, one sets up his or her expectation, finding a reason in the relationship. What Meyer insists on an expectation in music shares the same logic.

A child looks for a sorbet after a meal, but, its mother and her friends eat slowly having a conversation, so a delay to have its delicious dessert leads it to an emotional state. What does it all mean? How can we think about its expectation? If Meyer considers this circumstance in music, a meaning is created in the delay or inhibition of an expectation. A dessert becomes meaningful as it gets harder to earn. Based on the relationship between expectation and emotion, another aspect of music, how to understand this relationship in terms of meaning, emerges for consideration regarding the expectation. His viewpoint is full-fledged to describe the properties of an expectation, and the expectation is for the first time systemically well explained, equipped with psychological aspects.

1.2. The premise of expectation theory

Tendency and expectation

Even though both Hanslick and Meyer are regarded as absolutists, their perspectives are quite different. Hanslick sees music in a static form excluding any emotional elements, whereas Meyer considers music as a procedural object and accepts the fact that emotions are aroused in the interplay of music. In this diachronic perspective, the places one that triggers the emotions, and the other that proves the emotions are fluctuating. Meyer draws this relationship in the antecedent and the consequent. If the antecedent strongly tends to precede a particular consequent, is called tendency.

The notion of tendency is introduced by MacCurdy. According to MacCurdy, tendency “is a pattern reaction that operates, or tends to operate, when activated, in an

automatic way” (MacCurdy 1925, 475; quoted in Meyer 1956, 24). A pattern reaction shapes the similar frame which Meyer calls the antecedent-consequent relationship. If a stimulus comes up in the antecedent, the appropriate reaction follows in the consequent. This relationship constitutes a pattern reaction. If a tendency is found in the probabilities of the relationships in music, an expectation may be found in the listeners who are influenced by those probabilities. Meyer distinguishes the differences between a tendency and an expectation:

The tendency to respond may be either conscious or unconscious. If the pattern reaction runs its normal course to completion, then the whole process may be completely unconscious...The more automatic behavior becomes, the less conscious it is. The tendency to respond becomes conscious where inhibition of some sort is present, when the normal course of the reaction pattern is disturbed or its final completions is inhibited. Such conscious and self-conscious tendencies are often thought of and referred to as “expectations” (24).

What is valuable in Meyer’s theory is that not only he establishes the notion of an expectation in music, but he also corroborates how the meaning of music is created in relation to an expectation. In this sense, delay, deviation or inhibition is worth to consider. When an expectation is evoked, it may not be directly fulfilled. If it is not promptly satisfied, delay may produce some emotional states such as suspense and uncertainty. In terms of musical language, an ordered sequence arising out of the musical syntax can be considered as a norm, and some patterns not following the norm brings about a deviation. At this point, some irrational response and tensions from the deviation are thought to be an emotion or an effect. In this way, Meyer finds a way to

explain the subjective matters without designating to the extramusical matters if a musical norm is confirmed.

At this moment, it seems proper to ask a question: Can an expectation be acquired through learning? or Does it possess an innate property? Meyer thinks that there are broadly two types of expectations: learned and innate. An expectation based on a musical style is achieved through learning. Regarding this, Meyer remarks, “Styles are constructed by musicians in a particular time and place and that they are not based upon universal, natural relationship inherent in the tonal material itself. And if the experience of music is not based upon natural, universal responses, it must be based upon responses which are acquired through learning” (1956, 60-61). As a style is constructed by “a series of choices” by musicians (1989, 3), the backdrops of those choices are not natural and universal but intentional and contemplated. To construct and recognize a musical style, listeners should be exposed to it from an early age.

1.3. Gestalt psychology and the gap-fill melody

There are innate expectations, which are supported by Gestalt psychology. Gestalt psychology is based on the fact that “people often perceive the whole rather than the sum of the parts” (Schacter, Gilbert, and Wegner, 20). Thus, in human perception the wholeness comes first rather than the partial elements. There are many Gestalt principles, but Meyer brings and extends only following concepts.

- 1) Law of Prägnanz: “Psychological organization will always be as ‘good’ as the prevailing conditions allow. In this definition the term ‘good’ is

undefined. It embraces such properties as regularity, symmetry, simplicity and others which we shall meet in the course of our discussion” (1956, 86-87).

- 2) Law of Good Continuation: “A shape or pattern will, other things being equal, tend to be continued in its initial mode of operation. ... Among other things this law helps to account for our being able to hear separate, discrete stimuli as continuous motions and shapes” (1956, 92).
- 3) Law of Return: “other things being equal, it is better to return to any starting point whatsoever than not to return” (Bingham 1910, 33; quoted in Meyer 1956, 151).

These principles account for how people perceive the music as they do visual materials, and the music, which follows these principles, is considered as psychologically organized. In a sense, the views based on Gestalt psychology observe music in synchronic standard. To apply the principles to music, a diachronic viewpoint needs to be included, and one of the outcomes is known as “Gap-fill”. It conceives the synchronic idea, but it is realized in a diachronic sense in the music. Meyer insists that the law of completion arising out of the law of good continuation supports that people are satisfied when something is filled in rather than left out. If something is not fulfilled, people remain in a state of having expectation, waiting for that to be complete. This follows his assertion of the aesthetic experience. “In art inhibition of tendency becomes meaningful because the relationship between the tendency and its necessary resolution is made explicit and apparent. Tendencies do not simply cease to exist: they are resolved, they conclude” (Dewey 1934, 35-36; quoted in Meyer 1956, 23). In this regard, the gap itself, which triggers an expectation, is meaningless if an appropriate result does not follow. Then, the appropriate result after the gap for Meyer is to go step-wise in the opposite direction. Here is the explanation of Gap-fill in *Explaining Music* (1973),

The human mind, searching for stable shapes, wants pattern to be as complete as possible. A skip is a kind of incompleteness: the listener is aware of the gap between the first pitch and the second, and “wants” the gap to be filled in, which stepwise motion in the opposite direction does (8).

The gap-fill pattern is fully investigated in Meyer’s studies and by other scholars. This will be scrutinized in Chapter 3.

2. Implication-Realization Theory (Eugene Narmour)

2.1. Background

Based on the frame of Meyer’s theory, Eugene Narmour further develops the expectation theory pertaining to melody. He speculates a considerable number of melodic structures, which may not be necessarily relevant to the emotional consequences (Margulis 2005, 664), and explains what melodic context is implicative by switching the term ‘expectations’ from Meyer to ‘implications’ (Margulis 2003, 45). Narmour applies the ideas from Gestalt theories to melodic expectancy, and these ideas are proximity, similarity, and common-direction which are the fundamental backdrops to consider pitch, intervallic motion and registral direction. He does not include the top-down system of Gestalt theory because the principles of top-down system such as “good continuation” are difficult to justify and to be universal.

Narmour distinguishes two types of melodic contexts. It is implicative when listeners strongly expect what would be next; whereas, non-implicative when listeners may have some idea of what might be next (Huron, 2006, 94). Within these ideas, his implicative-realization model deals with the strongly implicative musical context. That is,

when the musical context is powerfully suggestive, listeners would feel a certain type of confirmation consequently. The implicative-realization theory categorizes these situations in terms of parameters, and investigates what was the cause within the melodic situations.

First and foremost, Narmour introduces the two “universal formal hypotheses”: $A+A$ implies A and $A+B$ implies C (1990, 3). Small intervals imply further small intervals, whereas large intervals cause further changes regarding the intervallic difference and registral direction.

2.2. Five Predispositions and Basic Structures

If listeners hear a certain melody, they constantly expect what might be next. The implication-realization theory specifies this experience and hypothesizes five types of situations: registral direction, intervallic difference, registral return, proximity, and closure. These are based on the principles of continuation and reversal.

- 1) Registral direction: Small intervals are expected to keep the registral direction, but large intervals are expected to change the registral direction. In Figure 5, a + a in registral direction makes listeners to expect another a (the small letters mean the proximity of F and G).

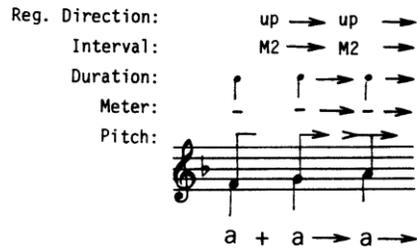


Figure 5. (Adopted from Narmour, 1991, 5).

- 2) Intervallic difference: Small intervals are expected to have another small interval. That is, they imply intervallic similarity. On the other hand, large intervals are expected to create the following intervals smaller. In Figure 6, a larger interval from G to E implies a smaller interval C creating a + b + c realization.

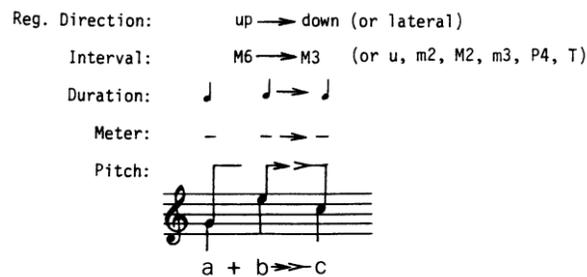


Figure 6. (Adopted from Narmour, 1991, 6).

- 3) Registral return: This is symbolized as aba or aba'. And, registral return refers to the relationship between the first 'a' and last 'a' of aba (1990, 127). If the first 'a' comes to the exact pitch, it is exact registral return (C-D-C). If the first 'a' comes to 'a' near

the pitch, it is near registral return (C-F-B). This theory follows Meyer's Gap fill, thus the Gestalt law of proximity.

- 4) Proximity: This refers to pitch proximity. If listeners hear a pattern of sounds, they expect the next pitch to be close to what they hear.
- 5) Closure: This represents "tendency of intervals to continue in a way that satisfies and terminates expectations by changing registral direction and/or continuing to a smaller interval" (Margulis, 2003, 39). Narmour considers closure as a syntactic melodic event and differentiates it in three forms: articulation, formation and transformation. Articulation is a weak closure at a lower level. Formation is a relatively strong closure, which occurs within the current level. Transformation is strongest closure, which implies a hierarchically higher level to come and pass (1990, 11). He suggests six parametric conditions in which the closure appears creating perceptual groupings.
 1. When simple stopping takes place, that is, when a rest, an onset of another structure, or a repetition interrupts an implied patterning;
 2. When metric emphasis is strong;
 3. When consonance resolves dissonance;
 4. When duration moves cumulatively (short note to long note);
 5. When intervallic motion moves from large interval to small interval; and
 6. When registral direction changes (up to down, down to up, lateral to up, lateral to down, up to lateral, or down to lateral) (Narmour, 1990, 102).

Through above bottom-up principles of melodic expectancy, Narmour continues the ensuing discussion as to melodic structures. When a pitch succession follows both same registral continuation and intervallic similarity, the succession can be considered

“registral-intervallic process” or “process” [P] (1990, 99). He asserts that “when seconds, thirds, or fourths realize registral and intervallic implications of continuation, we say we have a process” (1990, 89). A pitch repeated thrice or more, is called iterative realization [D]. It represents same intervallic motion and lateral registral direction (1990, 96-97). According to Narmour, duplicative notes in melodies are implicative in that if the repetition stops, aesthetic effect might occur in listeners (1990, 98).

Figure 7 shows a musical sequence on a staff with notes and rests. Above the staff are labels (d) above each note. Brackets above the staff group notes into pairs, labeled IP, IP, IP, IP, ID, ID, VP, VP. Below the staff are three rows of labels: Pitch: a b a, Interval: AA, Register: AB. The first four examples are IP, the next two are ID, and the last two are VP.

Pitch:	a	b	a	a	b	a	a	b	a	a	b	a
Interval:	AA	AA	AA	AA	AA	AA	AB	AB				
Register:	A	B	A	B	A	B	A	A	A	A	A	A

Figure 7. (Adopted from Narmour, 1989, 48).

A realization, if confirmed only by either registral continuation or intervallic similarity, instead of both of them, is referred as partial denial in which IP, ID, VP are included. In Figure 7, the first four examples, symbolized as IP, are realized in terms of intervallic similarity. The following examples, which are partially realized in terms of iterative pitches, are considered as ID. The last two examples demonstrate that while implication of registral direction is confirmed, implications of pitch and interval are rejected; the initial registral direction is conceived (A+A), but intervallic continuation is violated (A+B). This is called “registral processes” [VP] (1989, 48).

Figure 8 shows a musical staff with seven measures. Above the staff, brackets labeled '(d)' group the notes in each measure. Below the staff, two rows of labels are provided: 'Interval:' and 'Register:'. The intervals are all 'A A' (perfect unison) for the first six measures, and 'A A' (perfect unison) for the seventh measure. The registers are 'A A' (same register) for the first six measures, and 'A A' (same register) for the seventh measure.

Interval:	A A	A A	A A	A A	A A	A A	A A
Register:	A A	A A	A A	A A	A A	A A	A A

Figure 8. (Adopted from Narmour, 1989, 48).

So far, P, D, IP, ID, VP, aba and aba' (from registral return) are investigated as a continuation part of the implication-realization model by supporting the bottom-up Gestalt laws (1989, 49). In contrast, intervallic- registral reversal or reversal [R] hypothesizes that if listeners hear larger than P5, they expect the melody to change the registral direction (A+B), and expect the intervals to be smaller (A+B) (1989, 49). As the partial realization is implied in the process, realization of reversal can be partially confirmed as well (Figure 8); intervallic reversal [IR] represents denial of the registral direction but realization of the intervallic motion. Registral reversal [VR] represents realization of the registral direction but denial of the intervallic motion (1990, 177).

Figure 9 shows a musical staff with four measures. Above the staff, brackets labeled '(d)' group the notes in each measure. Below the staff, two rows of labels are provided: 'Interval:' and 'Register:'. The intervals are 'A B' (perfect second) for all four measures. The registers are 'A B' (different registers) for the first two measures, 'A A' (same register) for the third measure, and 'A B' (different registers) for the fourth measure.

Interval:	A B	A B	A B	A B
Register:	A B	A B	A A	A B

Figure 9. (Adopted from Narmour, 1989, 50).

The retrospective realizations refer to the denials of the two components—registral direction and intervallic similarity. In a retrospective point of view, the rules previously mentioned are all reversed. Therefore, in the models of process small leaps in the implication are denied, and in the models of reversal larger leaps in the implication are denied (Figure 10). For complete denial models, symbols are enclosed in parentheses. [(P)] indicates the larger intervals in succession in the same direction. [(IP)] preserves the larger interval, but violates the directional similarity. [(ID)] occurs when same larger intervals arise in the opposite direction. [(VP)] means registral direction is preserved, but much larger interval is realized. For reversal models, [(R)] implies small interval is followed by a smaller one in the opposite direction. [(IR)] signifies a small interval followed in the same registral direction whereas [(VR)] shows a small interval followed by larger leap in the opposite direction.

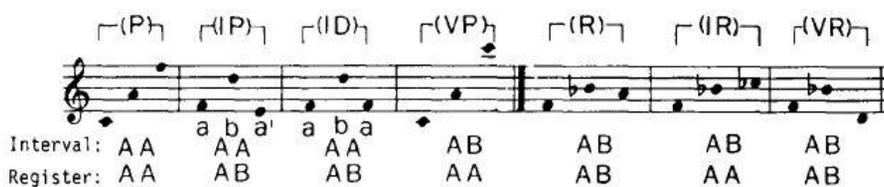


Figure 10. (Adopted from Narmour, 1989, 52).

Even though the specific elements are denied, in a broad sense they preserve the original outline of the structure so that retrospective models tend to be heard as processes (P), intervallic processes (IP), and registral processes (VP) (1989, 52).

2.3. Further Issues

Narmour's I-R theory has a considerable influence on theorists and music psychologists. Especially, his theory has sparked the further empirical studies and many of them actually have been proved and debated what he insists. Besides this, there are numerous matters to ponder in his theory. First, many other scholars have argued that his theory is too complicated because of the symbols. Due to this complexity, in his book, Narmour listed the symbols and their implication at the bottom of the pages so that the reader comprehends what the symbols signify while reading the pages. Therefore, even there are too many symbols aligned, the purpose of the theory which is about melodic implication and realization is relegated. The main purpose becomes to understand and decipher the code. (Margulis, 2003, 43)

Second, Narmour focuses on the note-to-note relation focusing on the intervals. This causes the problems to understand the I-R theory at a higher-level. In other words, the I-R theory is less helpful to capture the listeners' dynamic experience of expectancy in actual listening. It is hard to figure out the relationship between non-adjacent notes (Margulis, 2003, 45). According to Margulis in her doctoral dissertation, "he not only fails to account for the generation of higher levels, but also fails to account for the nature and functioning of those levels" (Margulis, 2003, 46).

Finally, Narmour regards the five prepositions illustrated earlier as universal and innate. To assert this, Narmour substitutes the word, expectation to implication. "Implication' can be understood as noncommittal, designing tendencies to which a

listener may or may not attend” (Margulis, 2003, 36). Implication is thought as more neutral than expectation, and this emphasizes the fact that the five principles are experienced universally and generally.

Another reason for proposing the universality, Narmour’s theory is based on Gestalt principles which underlie the general perception in human nature (Margulis, 2003, 37); the five principles are rooted from Gestalt theory, and this is understood that the five principles can be comprehended innately. However, several empirical studies reveal that “the expectations are learned, and that the predictive heuristics used by the listeners are the products of sustained exposure to commonplace musical patterns” (Huron, 2006, 95). According to Huron, statistical learning is pivotal in expectancy theory, and this opposes the idea of innate implication. To be specific, two of the five prepositions along with gap-fill are attacked. Von Hippel and Huron (2000) assert that those are inadequate for explaining listeners’ expectation in music; it seems more likely that those are mere outcomes when there are constraints on tessitura. According to them, when there are constraints on tessitura, notes cannot go in the same direction but change the one. Thus, whether listeners anticipate or not, the reversals are bound to happen. They are not designed to reflect the general instinct of human; rather they have to occur because of musical reason (von Hippel and Huron, 2000). In fact, listeners’ anticipation highly depends on melodic structure they have faced often, so their expectations are conditioned and enculturated rather than innate.

Even if there are some controversial matters remain, Narmour’s I-R theory made an outstanding achievement in explicating the melodic complexity. By specifically

examining the note-to-note implications at the lowest level, it is accessible to explain the implication-realization relationship theoretically and systematically. Additionally, Narmour suggests the ways to test his principles empirically, and as a result this entails diverse researches to prove and discuss his theory. This type of the approach is considered revolutionary as a theorist. Because when theorists found something that was not experimentally tested, they thought that is the power of the theory (Juslin and Sloboda, 2010, 587). Many researches are carried out pertaining to melodic expectation based on Narmour's I-R theory, and consequently, those researches reinforce what the theory purposes and compensate what the theory was missing.

3. ITPRA Theory (David Huron)

3.1. The premise of Huron's expectation theory

In *Sweet Anticipation: Music and the psychology of expectation* (2006), David Huron illustrates psychological theory of expectation in relation to the music, where he seems to be influenced by Meyer's theory of expectation. Meyer thinks the emotion is created when an expectation is not fulfilled, whereas Huron examines how expectations create emotional consequences. The interesting difference between Huron's theory and others is that he searches for the reason of expectation on biological foundation; consequently, explains it on pure biological grounds. "The biological purpose of expectation is to prepare an organism for the future" (2006, 6). Human is apt to expect something naturally because it is directly related to his survival. If one correctly expects

a coming harmful object, he earns more time to prepare for the object either by fleeing or hiding. Conversely, if one fails to expect the same, he might not survive. In this sense, to expect something is vital for one's survival. Huron places "surprise" in the core of his theory in order to describe the phenomenon and the theory. When someone is surprised due to a certain reason, her body needs more energy to comprehend the surprising situation whether it is negative or positive for oneself. If a surprise happens, "body responds quickly—under the presumption that the outcome is bad and that the body must belatedly rally resources to deal with an unanticipated situation" (Huron, 2006, 21). This body's quick judgment is considered as "reaction response". If one is surprised, the rapid reaction is triggered, and thus, the physiological changes occur in body: increased heart rate, volume of respiration, amount of perspiration, etc. (2006, 21). In other words, "bodies don't like surprises" (2006, 21).

Based on the biological origin, Huron establishes so-called ITPRA theory. Broadly speaking, Huron distinguishes the emotions from the expectations. Because of expectations, there are consequent feeling states, and he incorporates them in the time course. According to him, these are "five expectation-related emotion response systems", known as, Imagination, Tension, Prediction, Reaction, and Appraisal (ITPRA). Overall, the purpose of these responses is to react well accordingly in a given circumstance.

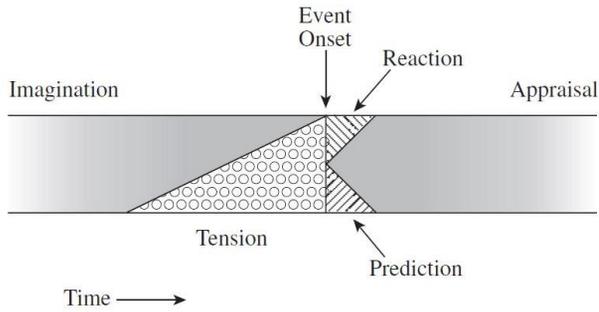


Figure 1.1

Schematic diagram of the time-course of the “ITPRA” theory of expectation. Feeling states are first activated by imagining different outcomes (**I**). As an anticipated event approaches, physiological arousal typically increases, often leading to a feeling of increasing tension (**T**). Once the event has happened, some feelings are immediately evoked related to whether one’s predictions were borne out (**P**). In addition, a fast reaction response is activated based on a very cursory and conservative assessment of the situation (**R**). Finally, feeling states are evoked that represent a less hasty appraisal of the outcome (**A**).

Figure 11. A reproduction of Figure 1.1 from 2006.

These five systems are divided into two groups: *pre-outcome responses* and *post-outcome responses*. In this theory, expectation works as a stimulus. So, before the expectation comes out, the pre-outcome state prevails including imagination and tension responses. And, after the occurrence of expected or unexpected events, the post-outcome state begins exploiting prediction, reaction, and appraisal responses. Figure 10 from the book (2006, 17) shows the relationships among these responses.

Huron thoroughly discusses the five response systems. Imagination is the first and foremost step in the course of having an expectation. Imagination has a great power in allowing oneself to prepare for an emotional outcome. Imagining the event makes oneself to be exposed to indirect experience whether it is positive or negative.

As one knows the expected event is closer, the body enters the new mechanism in which a distinct physiological state appears. Huron goes, “unlike the imagination response, the tension response is linked to the period immediately prior to the anticipated moment of outcome” (2006, 11). The tensional feelings can cause the physiological changes, which evoke the preparation for the event.

Once the anticipated or unanticipated outcome occurs, the post-outcome phase activates. It seems that the outcome is better conceived if it is predictable and familiar. Upon anticipation of the event, the proper motor responses operate immediately. Therefore, the unnecessary energy cost is prevented. In this sense, the prediction is crucial to judge the accuracy of one’s anticipation, the outcome, and their correlation. Positive feelings are involved when the event is predicted. And negative responses are associated if the event is not predicted.

Reaction response is evoked upon activation of the prediction response. Huron provides the idea of reflex as the instance of reaction response. If someone accidentally sits on the hot radiator, she may get startled and stand up reflexively. As to the outcome, one would have a certain kind of reaction in order to assess the stimulus. In terms of functional role, the reaction is protective. Moreover, as the reflex, the reaction response would be unconscious and immediate. In contrast, the assessment, which is conscious and slow, is regarded as appraisal response.

Appraisal response, therefore, is quite complicated and goes beyond responses of the stimulus. This is the last process of the five responses systems. Whereas the reaction

involves the unconsciousness, the appraisal involves the consciousness. The appraisal response reflects the accurate assessment of the event afterwards. These contrasting responses represent two neurologically different purposes: “(1) the need to respond as quickly as possible to dangerous circumstances, and (2) the need to judge as accurately as possible the value of some event or situation” (Juslin and Sloboda, 2010, 538).

3.2. Contrastive Valence

The last two systems of ITPRA theory connect to the contrastive valence theory. To illustrate this theory, Huron draws the description of surprise. If a surprising event occurs, someone might be extremely startled. However, if the event is about a birthday party or anything positive, one might assess the situation as positively as a result. The prediction and reaction response will be negatively valenced when that person did not expect the event. But, as soon as the appraisal response activates, one might feel better and better if the outcome turns out to be positive. What Huron appeals here is that even though the appraisal is thought to be good, surprise is not really good in the biological terms.

The phenomenon of “surprise” represents a failure of expectation. From a biological perspective, surprise is always a bad thing. Even when the surprising outcome turns out to be good, failing to anticipate the outcome means that the brain has failed to provide useful information about possible futures. Predictive failures are therefore cause for biological alarm. If an animal is to be prepared for the future, the best surprise is no surprise (2006, 21).

The process of assessment to conceive surprise as good is thought as what Huron dubbed, contrastive valence. When a surprise happens between the reaction response and

appraisal response, a limbic contrast can follow. The immediate response to a surprise is considered bad whereas the appraisal of the surprise seems to be acceptable. This interaction, Huron suggests, of the fast and slow responses can be applied to the listening experience. If a listener does not expect to hear an unpleasant sound stimulus, it can lead up to the negative extreme of feelings. By contrast, when a listener does not expect to hear a pleasant sound stimulus, it can be felt more pleasant. In this context, the possible explanation for the interaction is contrastive valence; “an unexpected good outcome would be experienced as more positively valenced than an expected good outcome” (2006, 23).

It seems quite interesting based on what Huron has discussed before. The pleasure from correct prediction occurs if the prediction is accurately presumed. That is, the precise anticipation is biologically adaptive. However, with regard to emotional response and contextual meaning, contrastive valence is valid. To assert this, Huron draws the example from his own experience, which is about the surprise party. If someone is quite shocked because many of friends shout out “surprise!” as he enters the front door at home. He might show fearsome expression on the face and body in a second as a reaction response, but the appraisal response activates by interpreting the social context as a positive phenomena. Shortly after, he or she might feel comfortable and extremely happy since all the friends gathered to celebrate an important day for him or her (Juslin and Sloboda, 2010, 598).

This theory goes beyond the biological explanation of expectation by further examining the mechanism of expectancy. To illustrate listeners’ expectations, a

contextual environment where the event becomes unexpected or expected should be concerned. For instance, a deviation in traditional harmonic progression of five notes might sound surprising. However, in a larger context, if this unusual progression is repeated throughout a piece, this surprising moment becomes bored and tedious. If a tonic chord arrives at the cadence in the Mozart's aria, it sounds good since the arrival at the cadence sounds compelling in Mozart's aria. On the other hand, if listeners hear the Britten's aria, they might feel that the harmonic progressions are much more complex to anticipate compared to one of Mozart. However, if the consonant chord arrives at the cadence or climax out of the mass, this might sound even more compelling than the one in Mozart's since listeners have lost the way of what to expect. Within this situation where no anticipation occurs, the surprising moment evaluated as positive seems powerful to the listeners. As to contrastive valence, it is plausible to understand the importance of contextual environment to affect the expectation, and the dynamic aspects of expectations are perceived by the listeners as the events unfold.

3.3. Statistical Learning

According to Huron (2006), statistical learning means, "learning based on how frequently a particular event occurs, or how tightly two or more events are correlated". The reason of an expectation for the final tonic chord after the progression I-IV-V is that the common features activate the listeners' tendency. Also, a considerable number of melodies appeared in the tonal music shares the arch-shaped contour. In that, melody,

which goes upward in the first half, goes downward in the second half. With high exposure to this circumstance, listeners naturally expect the melody to run downward in the second half. The tendency of listeners' understanding of music corresponds to the statistical distribution of musical environments. The rationale of Huron's expectation theory is related to why people expect certain common features in music. In order to investigate his idea of statistical learning, the statistical regularities of the music are described. The regularities, he listed, are pitch proximity, step declination, step inertia, melodic regression and melodic arch. Related ones, among them are explained here.

One of the important regularities in music is pitch proximity. It represents that in a pitch succession, the one moves to the next closer one. As people have learned in counterpoint, this sounds appropriate. A step-wise motion in the sequence has been preferred for a long time in the history of Western music. Considering some musical examples from different cultural backgrounds, it can be said that the small intervals prevail, and outnumber the large ones. The dominance of small intervals has been witnessed by many studies (Ortmann, 1926; Merriam, Whinery and Fred, 1956; Dowling, 1967; Huron, 2001, 2006).

Huron also includes the idea of step-inertia as a common musical feature even this feature is quite complicated. According to him, step-inertia means, "small pitch interval 1 or 2 semitones tend to be followed by pitches that continue in the same direction" (2006, 77). If listeners are tested, step-inertia is applied for ascending and descending intervals both. The interesting fact is that in actual music, only descending step-inertia is valid. If the melodic intervals are large, they tend to move in the ascending direction rather than

descending one. Conversely, the small melodic intervals are more likely to move in the descending direction. Moreover, von Hippel's work suggests that when both musicians and non-musicians are tested, the step-inertia instinct is shown only among the musicians. This, in other words, indicates that more exposure to music allows listeners to be educated in learning and recognizing the melodic structures.

The interesting but controversial idea is post-skip reversal. According to step-inertia, small intervals are followed by another small interval in the same direction. Likewise, the large intervals are different, in terms that they do not trigger another interval in the same direction. Von Hippel (1998) discusses it in his dissertation and dubs post-skip reversal; this signifies that after the large intervals, the following interval makes a change in direction. This is certainly a familiar phenomenon for most educated musicians.

According to Watt's (1924) analysis, and that of von Hippel and Huron (2000) too, larger leaps are mostly followed by a change of direction in actual music from diverse cultures. Watt shows his result from Schubert's Lied and Ojibway songs, whereas von Hippel and Huron uses the musical examples from four different continents including traditional European folksongs, Chinese folksongs, South African folksongs and Native American songs. Huron (2006) summarizes their research as follows,

Like human heights, the distribution of pitches in melodies exhibits a central tendency. Melodies do not simply wander around in an unbounded pitch space. Melodies also display a stable range or tessitura. The most frequently

occurring pitches in a melody lie near the center of the melody's range. Pitches near the extremes of the range occur less commonly. This makes melodies a candidate for regression to the mean (82).

To explain the post-skip reversal, the authors question *why* this happens. Tessitura or range and regression to the mean are drawn to describe the phenomenon.² The authors assert that post-skip reversal is natural outcome because the melodies are derived from a range; the large ascending intervals place the melody in the extremely upper range of that melody. Thus, melody has to go downward rather than upward because melodies have a central tendency, which has to be around the mean value. This central tendency is illustrated by the regression to the mean. If values are distributed to the extreme, they have a tendency to come closer to the mean value.

Regarding the listeners' expectation to post-skip reversal, it seems debatable since the answer is not simple as before. Huron's answer for this is based on the experiment conducted by von Hippel (2002). If listeners were asked to decide whether the following melody is ascending or descending given the controlled melody samples, their answers depend on what they focus on. If listeners concentrate on post-skip reversal, they expect the large intervals to be followed by a change of direction. On the other hand, if listeners are accustomed to the regression to the mean, they expect the intervals to be placed on the extreme of the range to come closer to the mean pitch value.

² Huron (2006) defines regression to the mean that "as the melody moves farther away from the mean or median pitch, listeners would increasingly expect the next pitch to be closer to the mean" (93).

Pertaining to the statistical learning theory, these features appear commonly in a statistical sense. Since these properties of melody prevail, listeners who are exposed to music are meant to expect them accordingly. The reason why people anticipate these features while listening to the music is best explained by the fact that these features are available in the music as Huron suggested. The statistical theory implies that the expectations are learned and educated through statistical regularities. The more exposed the listeners are to the statistical regularities, the more likely they are to expect them.

4. Expectation in musical analysis (Elizabeth Margulis)

4.1. A taxonomy of expectation in music

Based on Meyer's theory of tendency in music, Margulis (2007) tries to exploit a tool to apply to a music analysis. In distinguishing the term like expectation used in a musical analysis, and further applying it properly, Margulis structures a framework that includes taxonomy of expectation. In five basic ways, expectations in music are categorized as: origin, nature, time course, object, and consequence.

Whenever people meet a new person, they wonder from where she or he has come. It is same in a musical circumstance. The fundamental question when it comes to an expectation might involve its origin. Where does this expectation come from? Margulis also considers why one has the expectation. She insists that the analyst should be extra

careful about his or her perspective because in any case it can affect readers. Therefore, the origin concerns to the grounds, why listeners have the specific expectation.

A nature means what property of an expectation is laid in listeners' mind. An analyst should consider whether an expectation is felt or cognized, or whether it is conscious or unconscious. In addition, a time course is a crucial element to be included. Margulis claims that an expectation is projected to a specific moment or a course of passage in music. After the point of event, is this to say that an expectation has disappeared? Or where does the expectation go after the point of arrival? Margulis exemplified it with the instance of sequence. If a sequence occurs, an expectation for the sequence has grown until the chance comes or an expectation goes along with the sequence and its changes. The former seems like the expectation that is interrupted by a change does no longer exist. Margulis notes that this "marks a fulfillment only in retrospect" (2007, 206). The latter is the case in which an expectation is delayed and then fulfilled. This means that it "consists of the fulfillment of an actively delayed expectation" (2007, 206). What concerns her is that the analytic discourse does not tell these differences, which are clearly distinct.

An object and consequence of an expectation need to be clearly stated when analysts are concerned with them. An object is an entity that the expectation is heading for. It can be a chord, a phrase, a topic, or a tempo. Each of them is expected to function differently. According to Margulis, a consequence is the most crucial one, noting "what is its effect on our thoughts, emotions, behaviors, or other expectations?" (2007, 206). Also, a consequence makes the expectation valuable.

As Margulis's work is based on Meyer's, she states how these taxonomical categories are matched with some explanations of Meyer. "The listener" in Meyer's writings means well-educated listeners who are familiar with a certain style (Margulis, 2007, 206). This background relates to what Margulis refers to "origin". Additionally, what Margulis refers to "nature" of an expectation can be understood in Meyer's words. The "nature" of an expectation "may be experienced as kinetic tension and resolution—that is, as feeling and affect", and this can lead to "physiological changes and adjustments, [and] motor behavior"(1973, 113; quoted in Margulis 2007, 207). Margulis argues that Meyer was aware of the fact that "objects" of expectation can be several, and concerned "consequences" as well. For him, "consequences" are diversely understood in that the "consequence" of an expectation can draw the attention and affect listeners' understanding. Also they can be "proximate or remote" (1973, 112; quoted in Margulis 2007, 207). Margulis observes that this is connected to the idea of "time course".

4.2. Music Analysis

Margulis, on the basis of her argument, demonstrates the possible music analysis concerning the taxonomy of musical expectations. Among the several analyses of hers, one shown here, which is the piece of Haydn. An excerpt of the third movement of Haydn's Symphony No. 104 taken from Meyer's *Explaining Music* (1973) shows a repetitive pattern starting in m.41.



Figure 12. Haydn Symphony No. 104 (Meyer, 1973, 114).

In m.41, an upbeat staccato note is followed by a low note with trills on downbeat. And, this is resolved by a step down in the next measure. This pattern is repeated twice and for the third time the pattern is broken by the rest on m.45. If a perfect patterning of a sequence occurs in music, listeners expect something different as a breakthrough to the chains of sequences. In this example, as Margulis comments, “it’s possible to expect a specific contour, rhythm, and gesture at the way the music has encouraged listening at this relatively low, measure-to-measure temporal level” (2007, 209). The empty two measures allow oneself to imagine mentally the part of the pattern. Margulis points out that this explains the nature of the expectation; this type is a felt one rather than a cognized one. At this point, Margulis connects the rationale of tendency to this nature of expectation. Until the rest in m. 45, the listeners probably do not realize that they are having an expectation. A tendency becomes conscious as a pattern reaction is interrupted. However, what Margulis adds on is that even if they do not “know” the existence of the expectation in mind, they might “feel” it. In her words, “the expectation seems more felt when you’re having it, but more cognized when it is thwarted, a fact which marks its most arresting consequence” (2007, 210). Therefore, she does not deny the fact that the expectation already lies in one’s mind.

4.3. Three Types of Tensions

The major work Margulis has done is the creation of her model, which made it possible to quantify the predictions of expectedness of notes in melodies. The model accounts for a relationship between expectedness ratings and three different types of tensions representing the listeners' experience: surprise-tension, denial-tension and expectancy-tension. These are based on the taxonomy from Fred Lerdahl's (2001) idea of melodic attraction and implicative denial. Also, inspired by literary theorist Charles Altieri (2003), Margulis differentiated "the experience of intensity (surprise-tension)", "the highlighting of a melody's apparent intentionality (denial-tension)", and "the impression of desire or forward-directedness in melody (expectancy-tension)" (2005, 692).

The three types of tensions are fleet and brief in the course of the melody, interweaving one another. The first type is called *surprise-tension*, and its ratings are achieved by the inverse of the expectancy ratings. The expectancy ratings are the calculated results on a pitch considering the factors like stability, proximity, mobility, direction and hierarchy. She defines surprise-tension that "highly predictable events (those with high expectancy ratings) generate little surprise-tension, but extremely unpredictable events (those with low expectancy ratings) generate considerable amounts" (Margulis, 2005, 693). Second, *denial-tension* is achieved by Lerdahl's (2001) formula.

IMPLICATIVE DENIAL FORMULA

$$E_m - E_r,$$

Figure 13. (Adopted from Margulis, 2005, 693).

E_m stands for the maximally expected pitch's ratings whereas E_r stands for the ratings of actual occurrence. Margulis clearly defines the denial-tension as follows,

Whereas the expectancy rating measures the expectedness of a given continuation in relation to all possible continuations for all possible events, the implicative denial rating measures the continuation's expectedness in relation only to those continuations possible following the actually occurring events (2005, 693).

The final tension type is called, *expectancy-tension* which is highly relevant to the expectancy ratings regarding a future event. In contrast to the surprise-tension, expectancy-tension correlates the expectancy ratings. Strong expectations are related to high expectancy-tension, and weak expectations are related to low expectancy-tension. This subtly captures the dynamics of the melodic tension. According to Margulis, unstable events generate more expectancy-tension. Because in the unstable event, listeners highly expect the stable event, and this tendency generates the high expectancy-tension. The following table distinguishes the three types of tensions.

**An Outline of the Three Tension Types, Their Qualitative Aspects,
and Their Source in Melodic Expectancy**

Tension Type	Associated Experience	Expectancy Source	Formula
Surprise	Intensity, dynamism	Inversely proportional to expectancy rating	$\frac{1}{w_i [(s_i \times p_i \times m_i) + d_i]}$
Denial	Will, intention, determinedness	Directly proportional to implicative denial	$E_m - E_r$
Expectancy	Yearning, strain	Directly proportional to expectancy rating of most-expected possible continuation	E_m (of next event)

Figure 14. (Adopted from Margulis, 2005, 695).

Margulis's model proposes the hierarchical component on the basis of the models of Narmour and Lerdaahl. It is possible, by adding the hierarchy, to compare the interrelationships of the factors more closely. However, it is still doubtful whether hierarchy parameter helps to understand the lucid relationships between expectation and tension. As noted earlier, the overall expectancy ratings of the higher level are underestimated compared to those of note-to-note level. For hierarchical level, the way she extracted the head notes from the actual music follows the actual musical experience, but the result does not coincide with the procedure. Considering Figure 1, it makes sense in the hierarchical level that the second segment does not have any attention from it, but in actual experience, the difference of the register may affect the melodic expectancy.

III. Issues and Arguments: A synchronic comparison

1. Tension

So far theories of Meyer, Narmour, Huron and Margulis have been explained. In this chapter, they are to be compared on the basis of the issues such as tension, surprise and the gap-fill concept. Tension and surprise represent the pre-outcome- and the post-outcome responses respectively. A state of having tension in listening to the melody before an event occurs is of importance in that tensing moment is often illustrated as an experience of the expectation. Surprise is one of the responses after a stimulus. It accounts for the thoughts already conceived at a conscious level as well as at an unconscious level. Moreover, the gap-fill pattern illuminates the way listeners expect in the course of melody, raising a question whether it reflects an innate property or statistical learning. In a nutshell, it is plausible to see how listeners are expecting the event, reacting to deviation, and perceiving the melodic event. Throughout these issues, this chapter addresses the perspectives of the scholars and how they unfold them.

1.1. Different Definitions

Tension has been discussed in diverse areas of music as it is rudimentary concept in understanding the experience of music. Although it is not fully explored in terms of its relation to listeners' perception, there are several investigations broadly focusing two different areas, where tension is differently understood in both of them. One is to consider the relations between tension and musical parameters such as tempo, loudness,

pitch contour etc.; the other, is the relation of tension to expectation. This chapter focuses on the second approach lying on the basis of the fact that “tension rises as expectations rise, and resolves when expectations are realized” (Granot & Eitan, 2011). The different definitions of tension by Meyer, Huron, and Margulis are examined, compared and contrasted. Then, the problems of analyzing a piece of music using three types of tensions are investigated.

Meyer’s notion of tension

The scholars who understand tension in context of the musical expectation concern the basic structure of tension. That is, tension and resolution make a pattern set which underlie the melodic structure as Fred Lerdahl explains in *Tonal Pitch Space* (2001): “Fundamental to the experience of tonal music is the hearing of patterns of tension and relaxation as the events in a piece unfold” (2001, 142). Thus, tension plays a pivotal role in building a musical force to be released. For Meyer, this is a feeling evoked in listeners when they cognize the tendency in the music. Tendency has a direction to arrive at the goal, and before the arrival, a state of tension is aroused. Meyer (1956) especially stresses this pattern as a complete set in terms of musical meaning. If tension is evoked and the appropriate resolution does not follow, then the tension would not be different from one of daily experience. The complete pattern set is the important characteristics of the aesthetic experience; he distinguishes the musical experience from non-aesthetic experience. In musical experience, tension is followed by a proper resolution, so the experience becomes meaningful and valuable. However, non-aesthetic experience is

meaningless since the aroused tension is not properly resolved, but dispersed. Thus, the complete set contributes not only to a proper process in music but also to a corresponding musical meaning.

For Meyer, suspense is important to understand his concept of tension. And, as he says that “expectation is not specific; the state is one of suspense”, suspense is significant, and it needs to be understood in relation to uncertainty and doubt (1956, 27); suspense arises when the event is doubtful and uncertain, and it is one of the artifacts caused by the inhibition or delay. Based on the pattern set, suspense and tension are described as follow,

The greater the buildup of suspense, of tension, the greater the emotional release upon resolution. This observation points up the fact that in aesthetic experience emotional pattern must be considered not only in terms of tension itself but also in terms of the progression from tension to release. And the experience of suspense is aesthetically valueless unless it is followed by a release which is understandable in the given context (1956, 28).

Compared to the former quotation, which illustrates the pattern set, both are quite similar and convey fundamentally the same logic. In fact, he seems to equate suspense with tension. In this sense, it is possible to argue that Meyer does not distinguish the concepts of suspense and tension.

Meyer articulates that expectation, suspense and tension basically share the same idea that they are the artifacts of the unclear circumstances. He notes, “expectation may also result because the stimulus situation is doubtful or ambiguous” (1956, 26). When it comes to ambiguity, he remarks, “ambiguity is important because it gives rise to

particularly strong tensions and powerful expectations” (1956, 51). In this sense, expectation, suspense and tension fundamentally have been resulted from the instable and incomplete musical events, but they are not thoroughly distinguished in his book.

In the later work, Meyer (1996) provides an interesting insight about tension as he notes “musical experience, then, brings two interacting but distinguishable kinds of tensional experience: one primarily involves motor/bodily tension, the other mental tension” (473). Their functions can be different at individual level, as former is more related to the continuity and latter to the closure. For instance, the important cadential moment such as dominant pedal before the recapitulation contributes to high syntactic tension, implying moderate level of motor tension for continuation. Moreover, Meyer offers a suggestion that motor tension can be aroused without being involved in cognitive tension, but cognitive tension always entails bodily tension. Thus, the music from an action film can evoke bodily tension even if the music itself is simple; the sophisticated aria from the important and dramatic moment involves physical tension as well as syntactic tension. From this perspective, it is possible that he is aware of the significant role of tension in listeners’ experience. As to musical expectation, there are two kinds of musical circumstances where tension is aroused; in one, syntax, which aligns the probabilities and leads the musical process, affects a feeling of tension; in other, tension is resulted when continuation and goal are uncertain and obscure.

Huron's notion of tension

Huron defines tension by applying the term, “tension” in the process of explaining ITPRA theory. It is because “the stress commonly accompanies the rise of anticipatory arousal”, and to designate the “distinct physiological states in anticipation of future outcomes”, the term, “tension” is chosen (2006, 11). Especially, the urged feeling which conceives a strong tendency, waiting for something to be realized is referred as “feeling of anticipation” (2006, 306). According to Huron, the slightly different terms represent the same notion depending on scholars; “psychologist Jamshed Bharucha suggests the term “yearning.” Music theorist Eugene Narmour uses the term “implicative”; while theorist Elizabeth Margulis purposes the technical term “tension-S.” I prefer more straightforward term “anticipation” (2006, 306). In addition, Margulis (2003) has used the term “tension-S” in her dissertation; it has been replaced by the term “expectancy-tension” (Margulis, 2005).

In Huron's conception, tension is related to when the outcome will occur, and what will occur. Also, in terms of the time-course, he notes, “unlike the imagination response, the tension response is linked to the period immediately prior to the anticipated moment of outcome” (2006,11). He also argues that the degree of tension is highly related to the certainty or uncertainty of the outcome. If the outcome is quite certain, the tension is weakly aroused. In contrast, if the outcome is uncertain, the tension is highly aroused. Also, the highly aroused tension means that a person needs to sustain the increased arousal or attention for a certain period of time. Thus, this consumes a considerable

amount of energy of our body and may lead to a negative feeling as he describes as follow.

In general, organisms should try to avoid situations of high uncertainty. High uncertainty requires arousal and vigilance, both of which incur an energy cost. Consequently, it would be adaptive for an organism to experience high tension responses as unpleasant. That is, even if only positive outcomes are possible, high uncertainty will lead to a certain amount of unpleasant stress (Huron, 2006, 12).

Huron further extends the concept of tension into musical context by suggesting a musical example, and more by trying to explain the mechanism of tension in a musical sense. For example, an anticipation embellishment, a suspension, an oddball note and a delay are the musical techniques related to tension and expectation.

Moreover, Huron argues that “when the resolution occurs, the tension dissolves—that is, the sense of yearning or expectancy abates” (2006, 308). And, this can be translated in Meyer’s words. While explaining the gap-fill, he remarks, “melodically speaking, relaxation is associated with the decline in tension which is effected when pitches are lower” (1956, 139). In this conception, Huron finds another contrastive valence. If the outcome is likely to be certain, it leads to “the effect of increasing the limbic reward for the (post-outcome) prediction response” (2006, 308). Compared to this, (pre-outcome) tension response is high as explained earlier. Hence, he suggests that “the contrast between the high pre-outcome tension and the positive post-outcome prediction response provides another limbic contrast” (2006, 308). In other words, if an anticipation tone is included in the cadence, listeners are more certain about the cadence. Even if a

tension might be decreasing, a pleasantness derived from the high prediction response will accompany.

Margulis's notion of tension

Whereas, Meyer focuses on the pattern set without putting an emphasis on tension; Lerdahl and Margulis also hold this frame while putting a heavy emphasis on the components of tension. Lerdahl articulates that “attractions and expectations generate characteristic sensations of tension and repose across the course of a melody” (Margulis, 2003, 65). Also, Margulis takes this rationale to structure her model concerning tension. By using a quantification analysis, both of them try to capture the flow of tension through a noticeable graph. Lerdahl (1996) even formulates the hierarchical structure based on the fluctuating tensions. However, Meyer (1996) criticizes the primary concept of tension and relaxation patterns in music in Lerdahl's study because he considers that the tension-relaxation patterns cannot construct a hierarchy as music unfolds. Meyer argues that a degree of tension ranges from very low to very high without any relation to the function, and thus, tension does not contain a feature that can construct a hierarchy.

In Margulis's case, as previously explained in Chapter 2, three tension types are correlated within a series of events. The remarkable point is that these types are differently lined as shown in Figure 14;

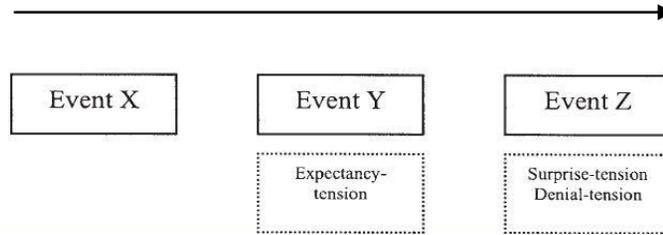


Figure 15. The three types of tension (Margulis, 2005, 696, revised).

Whereas surprise-tension and denial-tension are backward-looking, expectancy-tension is forward-looking. More specifically, the rating of expectancy-tension is calculated based on event Y and the ensuing event Z, but those of surprise-tension and denial-tension on event Z are obtained given the past event X and Y. Margulis suggests that the boxes in Figure 14 are moving like a sliding window. Each tension can arise out of each note simultaneously. Since more sophisticated aspects of her model are eliminated here, the relationship among tensions in terms of direction, stability, and proximity is not discussed.

Margulis, by dealing with three types of tensions separately, claims that the multiple dimensions of musical experience can be reserved. She, in this sense, believes that the indescribable and ineffable aspects of listening experience can be theorized and verbally explained.

1.2. Comparison and contrast

Margulis's insight to tension, compared to Meyer's and Huron's understandings, is different in many respects, thus demanding to be scrutinized. First of all, the terminology

Margulis has chosen is misleading. According to Huron, “tension is almost the exact opposite of surprise”(2006, 307). It is partly because tension belongs to the pre-outcome response whereas surprise belongs to the post-outcome response. Meyer and Huron, both of them, regard that tension is evoked before the event, and a degree of tension depends on a degree of uncertainty. In Meyer’s words, tension is the artifact of the antecedent, Huron concerns that tension response in ITPRA theory belongs to the pre-outcome phase.

However, this conception does not apply to the term, surprise-tension. In fact, the way that surprise-tension is calculated has to be opposite. Surprise-tension is about how event Z goes against the expectancy rating as to event Y. In this sense, surprise-tension has no longer a property of tension, so the term confuses the readers. Instead of indicating it as surprise-tension, it is rather thought as surprise. If it is only about surprise, then this makes sense in terms of procedure as Huron notes, “Surprise happens *after* events” (2006, 307). Technically surprise-tension does not utterly convey the general meaning of tension discussed here, and neither the denial-tension.

Secondly, Margulis, compared to Meyer and Huron articulates the mechanism arousing tension differently. Since the surprise-tension and denial-tension function differently and conceive the different concepts, Huron regards expectancy-tension as the same as his own view of tension. Yet, the way of finding a degree of tension in context to expectation is slightly different in expectancy-tension. According to Margulis’s model, stronger expectancy generates high expectancy-tension whereas weaker expectancy does low expectancy-tension. If the ensuing event is highly expecting, high expectation-tension is yielded. This is quite opposite to Meyer’s view. As mentioned earlier, Meyer

understands the circumstance, which engenders tension, as comprising of insecure and insufficient events. Moreover, Huron understands the basic mechanism of tension in this way as well.

Sometimes outcomes are utterly certain and have little consequence. These situations evoke little tension. In other cases, we may have little idea about what will happen...then we will tend to be more alert and aroused as the moment approaches when the outcome will be made known (2006, 12).

Accordingly, the mechanism of expectancy-tension is dealing with the different mechanisms of tension explained by both Meyer and Huron. In fact, Margulis states that the expectancy-tension “pertains not to the degree to which an event satisfies or denies expectations created by preceding events, but to the strength of expectation generated by an event about future ones” (2003, 150). To construe the expectancy-tension, the particular meaning of tension should be thought as strength rather than the general meaning of tension provided by Meyer and Huron.

Apart from a theoretical explanation, in real listening experience, it is not that simple to claim that uncertainty gives rise to more tension. Even if a person knows that a certain chord would appear at the end of a melody due to the knowledge of that piece, she or he still experiences a state of tension. However, in a physiological term, a complete uncertainty causes the highest arousal. People may have an experience that the first experience of a certain event is unforgettable. For instance, if one watches an unseen movie, then a degree of arousal for excitement and thrill from the movie is the highest. Then, if he or she wants to see that movie again to feel that affect, the same experience of high arousal will never come. Even if as the time goes the impression of that movie

might come in a different way, but the thrill and excitement from the first experience will always be hard to earn again. Even though it is quite different in terms of music, the basic conception still applies to the musical experience. Therefore, this explains why composers do not write a breath-taking melody in a rondo form since listeners might get tired of it. What makes a breath-taking melody is a rare appearance of it.

Lastly, the fundamental nature of tension is different in Margulis's theory. Basically, the notion of tension refers to a particular feeling state of a person. The nature of tension is originally and mainly discussed in physiology, and when tension applies to a diverse range of studies, it still designates how a person reacts. As to music this refers to the fact that while a listener experiences in the course of music, whether physiological changes are produced in one's body. When Meyer explains gap-fill or suspense in respect to the tension, the subject of it is the listener. The pre-outcome tension response is wholly on the basis of how one reacts. However, the three types of tensions in Margulis's model deal purely with the interrelationships of the tones. Therefore, a gap between the theoretical analysis and the physiological experiment can be produced. In other words, the theoretical analysis does not reflect the reality.

1.3. Analyzing tension

The analysis of the opening Mozart Piano Sonata K. 282 reveals how Margulis (2005) applies her theory into the actual music. The three tension types are applied respectively, and the purpose of them reflects the fluctuating tension in the course of the

melody. Among the three graphs she provided, the one relating to expectancy-tension is shown in Figure 16.

As Meyer articulates the patterns of tension and relaxation, the high peak in the graph relates to the tension and the lower one to the relaxation. However, it seems likely that the meaning created from the pattern set proposed by Meyer is hard to find through the graph, since the relationship of tension-relaxation in his theory is quite different. Whereas the pattern set of Meyer indicates the feeling of listener in hearing the syntax of music, the higher and lower peaks in the graph involve the ratings of tones. In addition, the period of tension-relaxation is different. Listeners do not hear the patterns of tension and relaxation in between two single tones. Meyer distinguishes tension types as motor and mental, and if his category is applied to this graph, it is more likely to be a cognized tension without being accompanied by the motor tension.

The reason that it relates to cognized tension is that the high peak of A-flat on graph represents the one at the end of m. 3. It is because the note is the 7th of a V7 requiring a resolution to G in the next measure. However, in reality this may not urge a resolution with a sense of yearning. Rather, A-flat sounds one of the leading tone to approach the tonic and to close the phrase. Furthermore, the D earns relatively high expectancy-tension, which corresponds to the first note in m. 2. Unlike the previous explanation for the highest peak, it is hard to understand the reason of this rating in describing with musical terms.

Margulis's approach offers a better way to appreciate the tensional consequences of expectancy as she compares to those of Lerdahl and Narmour. Since they analyze the same excerpt in *Music Perception* (Vol. 13, No. 3, Spring 1996), a comparison can be easily achieved. However, as pointed out, a disjunction between the analysis based on the written symbols in the score and the experience of felt-tension in listeners still remains.

The image displays a musical score for the first nine measures of Mozart's Piano Sonata K.282. The tempo is marked 'Adagio' and the key signature is B-flat major. The score is written for piano and consists of four systems of staves. The first system (measures 1-3) shows the right hand with a melodic line and the left hand with a simple accompaniment. The second system (measures 4-5) features a more active left hand with sixteenth-note patterns. The third system (measures 6-7) continues the left hand's rhythmic pattern while the right hand has more complex phrasing. The fourth system (measures 8-9) concludes the excerpt with a final cadence in the right hand and a rhythmic flourish in the left hand. Dynamic markings include piano (p) and forte (f).

Figure 16. Mozart Piano Sonata K.282, mm. 1-9.

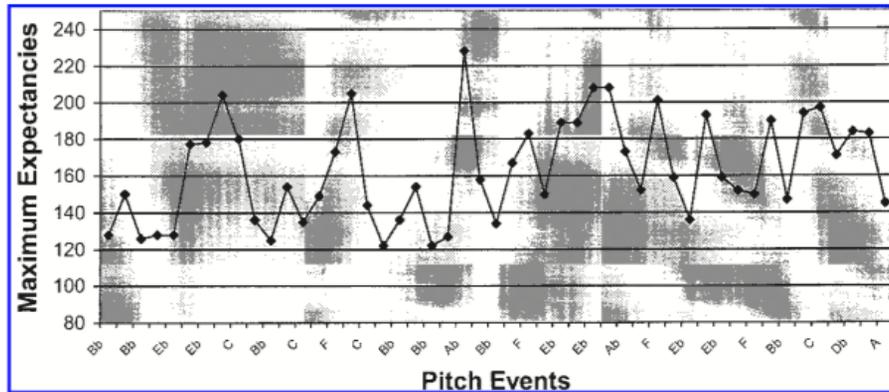


Fig. 13. Predicted overall expectancy-tension across the course of the melody of measures 1-8 of Mozart K. 282, where the tempo is quarter = 48.

Figure 17. (Adopted from Margulis, 2005, 705).

2. Surprise

Surprise is a familiar and common response in our daily experience. We encounter many surprising situations throughout the life. Someone gets surprised because the unexpected outcome causes arousing of a surprising feeling. For instance, someone is driving on a lonely highway, and a deer jumps in the road. It is surprising because one does not expect a deer on the highway. And, the same time, one realizes that the unconscious expectation already set in his mind is violated, that is the highway will be free from deer. This relationship between expectation and surprise underlie the property of the surprise, and within music, this can be understood in various ways.

2.1. Definitions of surprise by Meyer, Margulis and Huron:

A comparison

In terms of melodic expectancy, scholars have tried to articulate the relationship between the surprise and expectation. Meyer focuses on surprising result, which is based on the situation where no active expectation is involved.

Although the consequent in any musical sequence must, in this sense, be possible, it may nevertheless be unexpected. But the unexpected should not be confused with the surprising. For when expectation is aroused, the unexpected is always considered to be a possibility, and, though it remains the less expected of several alternatives, it is not a complete surprise. Conditions of active expectation (especially general expectation and suspense) are not the most favorable to surprise. For the listener is on guard, anticipating a new and possibly unexpected consequent. Surprise is most intense where no special expectation is active, where, because there has been no inhibition of a tendency, continuity is expected (1956, 29).

He finds surprise in the situation where many alternative results exist. In other words, “for the weaker the probability of a particular consequent in any message, the greater the uncertainty involved in the antecedent-consequent relationship” (1957, 416). In terms of information theory, this is to say that “the consequents are more or less equiprobable” because “the situation is characterized by a high degree of shuffledness” (Meyer, 1957, 416). Then, people are not certain of what to expect in the antecedent (the subject of an expectation is not certain), and accordingly the outcome in the consequent is considered as surprising. This is consistent with his thought of ambiguity; “the more equal the probability of different alternative consequents, the more likely that the musical progression will seem ambiguous” (Meyer, 1957, 416). This ambiguity consequently leads to higher chance of evoking surprise.

Whereas, Meyer understands surprise in relation to the expectation in the context of the relationship between antecedent and consequent, Margulis extends this in relation to an unconscious expectation. Embracing Meyer's view on surprise, Margulis seeks for the underlying reason of arousing surprise feeling. A deer is the unexpected outcome since one anticipates that the highway should be deer-free; as a deer violates this anticipation, one realizes her or his anticipation in a conscious sense. In her words, the nature of the expectation "goes unrecognized until violated" (2007, 210). Concerning unconsciousness, Meyer indicates that, "so long as expectations are satisfied without delay, so long as tendencies are uninhibited, ...the response will probably remain unconscious" (1956, 30-31). From this, their views demonstrate consistency in terms of the arguments of consciousness. According to the rationale of Margulis's study, which extends the ideas of Meyer, it is likely that she follows his ideas of consciousness and unconsciousness.

Even if Margulis shares Meyer's views, there is a marked difference. At the surprising moment, the conscious expectancy is not involved, but as the consciousness emerges, the anticipation becomes obvious from 'unrecognized' to 'recognized'. By evaluating the process in backward direction from the consequent to the antecedent, Margulis tries to figure out what makes a surprise astonishing. In fact, if Meyer says, surprise comes out of the place where many subsequent outcomes are possible, Margulis argues that there might be a one-to-one relationship between expectation and surprise, but one conceives this expectation unconsciously as she remarks, "you can be surprised without having been consciously expectant" (2007, 203). Therefore, when one searches for what makes something surprising, a ground, which causes surprise, would be found

in the antecedent. Strictly speaking, this viewpoint is different from Meyer's in that her perspective is no longer based on information theory.

This, in a sense, explicitly substantiates one of the natures of expectation that is the time-course. According to Huron, after the violation of an expectation, consciousness is engaged, entering a phase where the process is reexamined. This is referred to as an appraisal. While a surprise is not concerned with consciousness, an appraisal works with conscious processing. This illustration reminds the part of his ITPRA process, especially the course from response to appraisal.

Comprehending surprise, for Huron, plays a crucial role in understanding musical expectation in general. In a biological sense, surprise is considered negative since it comes out when an anticipation is false (2006, 39); in animals, the worst-case scenario of false anticipation can lead up to the death. Thus, reacting correctly pertains not only to the pleasure of confirmation but also to the matter of life. The reaction response from ITPRA theory highly relates to the surprise. And the reaction response has its own biological function, which is to assume a worst-case scenario and protect oneself.

Huron's explanation, in this biological perspective, about 'the unexpected' has a crucial difference from Meyer's. It is plausible, by comparing the meanings of their 'the unexpected', to understand how they comprehend the relationship between expectation and surprise. Huron presumes that the automatic response to 'the unexpected' represents surprise. His understanding of surprise covers a longer range of degrees of surprise. He defines surprise as such in his glossary,

A common response to unexpected stimuli. A characteristic facial expression may be evoked where the mouth remains open (facilitating breathing) and the eyelids remain retracted (facilitating perception) (2006, 420).

Huron puts the emphasis on the unexpectedness in order to interpret surprise since bodies physically react to the unexpected. From a biological perspective, unexpectedness almost always causes surprise in theory.

Meyer, on the other hand, understands ‘the unexpected’ in context of information theory. If there are two types of situations to consider the quantity of information, one would be “highly organized and the possible consequents in the pattern process will have a high degree of probability”, and the other would be “characterized by a high degree of shuffledness so that the consequents are more or less equi-probable” (1957, 416). In the former situation, ‘the unexpected’ has a slight chance to occur in the consequent since it is considered to be less expected one. In the latter, ‘the unexpected’ is not particularly expected because it is among several possible consequences which are equally probable. In fact, while ‘the unexpected’ belongs to the possible candidates of expectation in the antecedent, it can end up with either surprise or not in the consequent. In this sense, the relationship between ‘the unexpected’ and surprise does not necessarily build so-called cause-and-effect relationship—not a one-to-one relationship. Concisely, in Meyer’s view, if ‘the unexpected’ is realized in the consequent, it can be surprising. Having no subject to expect causes a surprise. Or, if it is not even realized, it does not cause anything remaining as one of the candidates.

In Margulis's stance, 'the unexpected' can be translated as consciously uncovered as surprise. If surprise occurs, there is a cause that, contributes to the surprise effect. This cause may not be consciously realized, but a sensation of surprise is still permitted.

2.2. Surprise-related emotions and types of surprises

Huron not only does establish the conception of surprise in relevant to expectation, but also delves deeper into the relationship between surprise and emotional consequences. According to his ITPRA theory, surprise is thought to be one of the responses after the event onset. In relation to this, in Chapter 2, the contrastive valence theory explains how the negative response becomes the positive appraisal. The fast decision from the brain can elicit the fear-related responses such as fight, flight, and freeze as to surprise. What Huron claims is that these typical responses to danger share the similar biological kinship with three emotional responses: frisson, laughter, and awe. If the emotional effects arise out of these three responses, brain makes a better judgment of the situation by giving up the first response. Once the slow judgment is activated, the brain knows that an attack from music is not one to be afraid of. Thus, the experiences of laughter, awe and frisson appearing in music are fundamentally compatible with "other forms of pleasurable risk-taking, such as hang gliding, skydiving..." (Huron, 2006, 36).

While something is understood biologically negative in the process of the fast-track assessment, the slower one scrutinizes the situation carefully. Additionally, this can be followed by the emotional expressions like laughter, awe, and frisson, which are strongly related to surprise.

The valuable aspects that Huron provides are based on the relationship between these surprise-related emotional responses and musical techniques. Since the present study deals with the fact, what the scholar had done, the statements of the details from his analysis can be redundant. In short, he demonstrates how frisson, laughter, and awe are evoked through musical settings.

Besides this, Huron considers the musical experiences through different types of surprises: schematic surprise, veridical surprise and dynamic surprise. These are the surprises evoked when listeners are unconsciously engaged. Schematic surprise describes the experience when music violates listeners' schema, which is already set in their mind. Veridical surprise explains a violation of listeners' expectation for a given musical work. Dynamic surprise occurs when the musical work provides a work-specific expectation, then it is thwarted. Compared to the first two of them, dynamic surprise is Huron's term and idea. The related musical techniques, as to dynamic surprise, deal with metrical displacement, dynamics, syncopation, etc. Yet, as Huron admits, there are no pure examples, which provide dynamic surprises since schematic and veridical violations are correlated. There can be a verbal description to inform the fundamental idea of dynamic violation. If a certain passage has a single syncopated event, and this passage is repeated several times. Finally, when the passage reoccurs without the syncopation, this leads to the dynamic surprise to the listeners.

2.3. Surprise and music analysis

Huron extends the understanding of surprise, its roles and effects in music, while Margulis extends the relationship between expectation and surprise by applying the different types of surprise to analysis of musical piece. She analyzes music pieces with the notion of surprise in order to examine the musical processing within the interplay of harmony and syntax. Of course, to some extent, it is related to the melodic expectation, but more to the general matters.

In example of Beethoven Sonata Op. 53 in C major, the appearance B-flat major chord in m.5 is not that surprising since many people are very familiar with “Waldstein” sonata. Nevertheless, in thinking of the larger tonal context, this is IV/IV in C major, which may sound surprising. These subtle differences in the surprising moment are explained when Margulis applies the modular theory of mental processing, which was proposed by Jerry Fodor (1983).³ According to the modular theory,

Certain perceptual strands progress in isolation from other ones. The idea is that it would take too much time to employ all the brain’s resources in response to all sensory input; instead, efficient modules exist to handle particular perceptual domains (Margulis, 2007, 210).

The theory underlies the fact that perception only takes a limited amount of information. Modules form perceptual representations, and perceptual processes are operated by the modules.

³ The modularity has been discussed by many scholars to investigate how we perceive music. For more information, see Jackendoff 1991, 1992; Temperley 1995; Justus and Bharucha 2001; Peretz and Coltheart 2003.

In thinking of the normative tonal relations, B-flat major chord in m.5 sounds surprising, but concerning the repeated hearings of this piece, it is not surprising. Some perceptual strands occupied with the normative tonal relations do not accept the memory of the opening by regarding this moment as surprising.

This deviation reoccurs upon the repetition of the opening passage. The corresponding chord is now D major chord in m. 21. The effect is the opposite. The strand focusing on the normative tonal relation finds this chord usual. However, the different strand devoted to the memory of opening regards this chord as deviant. This relationship based on the module is illustrated in Figure 19.

Allegro con brio.

21. *pp*

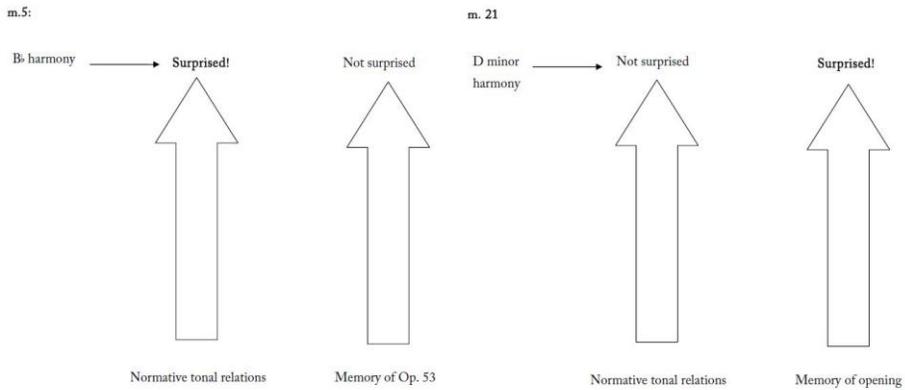
8 *cresc.* *f* *sf* *decresc.*

Figure 18. Beethoven Piano Sonata Op.53, First movement, mm.1-13.

17 *pp*

22 *cresc.*

Figure 19. Beethoven Piano Sonata Op.53, First movement, mm. 17-25.



EXAMPLE 10. *Mm.5 and 21 trigger surprise in different perceptual strands.*

Figure 20. (Adopted from Margulis, 2007, 214).

Another excerpt of Mozart Piano Sonata No.9 K. 310, first movement can account for a surprising moment using modularity theory. The opening of this piece has a distinctive quality; the continuing eighth chords create a sense of urgency, and the melodic figure in first two measures falls to the leading-tone persistently asking for a resolution. This distinctive basic idea is repeated twice, and this reappears in m. 9.



Figure 21. Mozart Piano Sonata K. 310, No.9, First movement, mm. 1-9.

The development of this piece starts with the same material of the opening except that A minor is changed to C major now. When the basic idea is presented and restated, the diminished chord in measure 52 sounds surprising. This moment has dual sides as previous ones, and modularity theory can account for this phenomenon. If the module is devoted to the memory of opening, this is certainly a violation because the chord interrupts the symmetry of the sentence structure. On the other hand, listeners who are familiar with the style of sonatas regard this deviation as normative. It is because that they are in a state of expectation that a drastic change will occur in the development section. As soon as the same material occurs in the development, a deviation is anticipated for realization. This can be summarized as previous Figure. Figure 22 depicts this relation.



Figure 22. Mozart Piano Sonata No. 9 Kv. 310, First movement, mm. 50-57.

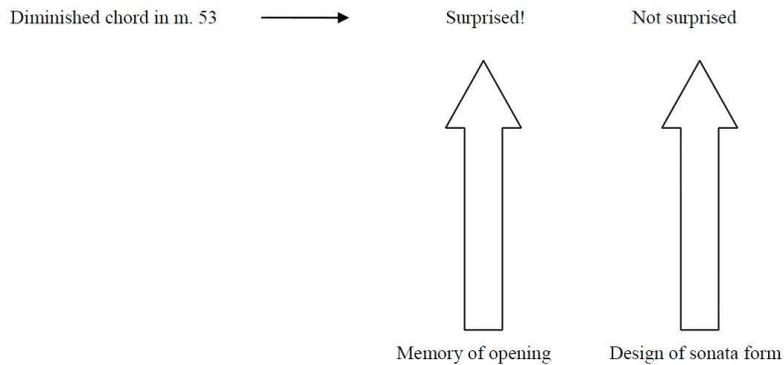


Figure 23. M. 53 can be either surprising or not according to each module.

Overall, the analysis using modularity theory supports and reflects the way of listeners' experience. Even if this process of modularity does not evidently take place, a delicate difference, in hearing of the music whether in the course of the work or for innumerable times, is well distinguished via the theory. As Margulis notes, however, there are several controversial matters to apply to this theory. The matters in which modularity can be devoted to the aspects of human mind, as musical processing, etc. are not illustrated, hence the application does not demonstrate the fact but provides suggestion.

Given these different approaches to understand surprise in music, it might be proper to raise a question if one gets surprised in a specific part of the music, which he listens to, would he be surprised after repeated listening? The first response to a certain fact that goes against one's expectation might be an expression of the surprise. Since that violation is new, and one perceives that the realization is not the one in mind. If one understands this violation and realization, how the listening experience is changed in the

second time to the same piece? Does one take the same step again to the unexpected spot or is the surprising spot is no longer surprising? Of course, once people have heard the surprising passage innumerable times, it would no longer be surprising. However, in borrowing the concept of Huron, the emotional expressions can be changed. For instance, the passage evoked laughter becomes “weird” after repeated listening. Surprise can be illustrated in terms of degree, but of flavors such as laughter, awe and frisson. In this regards, repeated listening of the deviations in musical probabilities can lead to whole different ranges of surprise. As Huron notes, “musicians cannot generate laughter, awe, or frisson without violating the listener’s expectation” (2006, 304), the relationship between surprise and musical structures is specially tightened and manipulations of this can enhance delicate flavor of listening experience.

3. Gap-fill melodies: Innateness vs. learning effect

3.1. Innateness: Meyer and Narmour

The notion of gap-fill in Meyer

The gap-fill concept is one of the most important ideas of Meyer, when it comes to melodic expectation. It suits well to his theory of expectation that after a gap, listeners expect it to be filled, and it is supported by several experiments by Schmuckler (1989) and Schellenberg (1997). Meyer even argues that “many melodies are constructed to satisfy an expectation for gap-fill” (von Hippel, 2000b, 141), and designates the gap-fill

concept as one of the archetypes, which has a considerable influence on listeners' melodic expectation.

Narmour reiterates this concept of gap-fill. Several experimental tests are carried out to demonstrate the validity of gap-fill melody and its relation to listeners' perception of melody. Some of the tests confirm the importance of gap-fill melodies in melodic perception, but von Hippel and Huron investigate the concept thoroughly arguing that the gap-fill concept is an artifact of the melodic tessitura.

Another issue regarding the gap-fill melodies is their origins and related ideas of the gap-fill concept such as: pitch proximity, step inertia etc. Here, by examining the theoretical arguments of Meyer and Narmour, we discuss how the scholars have dealt with this issue, and so far what have been revealed.

The gap-fill melody is one of the archetypes that Meyer insists. This is similar to the rules of the counterpoint, which have been maintained from the Renaissance period. After a gap, the conjunct descending notes are followed to fill the skipped over space. This is common in a considerable number of melodies. In addition, a fierce discussion over its origin and effect has been involved. Meyer illustrates that,

Suppose a student were to ask: "Why does this melody of Palestrina descend in stepwise fashion after an upward skip of a sixth?" We might answer: "Well, that was the rule," or "That's what composers writing at the time usually did" (1973, 8).

Then, if the student asks "Why Palestrina follow this practice?", Meyer provides the answer with the Gestalt principle of completeness (1973, 8). After the skip, which

causes an incomplete status, listeners have a structural gap, and this needs to be completely filled after all.

In the experimental works (Rosner & Meyer 1982, 1986; Schmuckler 1989), gap-fill melodies are tested to observe whether they can be used in classifying the melodies among the listeners. The tests conducted by Rosner and Meyer (1982, 1986) confirm that listeners are able to classify the melodies which incorporates the specific melodic archetypes such as a gap-fill and a changing-note pattern. Schmuckler (1989) also finds out that listeners rated higher for the melodies with such archetypes. However, these findings do not support the relationship between the gap-fill melodies and expectation.

The gap-fill concept in Narmour's theory

In Narmour's perspective, gap-fill melodies are created through hierarchical analysis. Bottom-up processing supports his five principles; whereas top-down processing is understood in terms of hierarchy and style. The following, as an example, is the theme from Clementi Sonatina Op. 36, No. 5, II, "Aire Suisse", measures 25-32. Through the hierarchical structure analysis, Narmour can sort out the notes in a higher level, which corresponds to the gap-fill melody. It is dubbed "RP" based on model's rule and remains the generalized style schema.

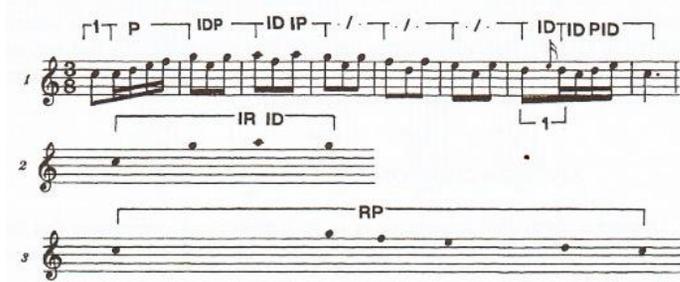


Figure 24. (Adopted from Narmour, 1999, 567).

In terms of the basic structure, Meyer's notion of gap-fill is recalled as registral direction and registral return. Registral direction regards that if listeners hear the small interval in the implicative interval, the next interval will also be small in the same direction. In the case of the large interval, it is different; if listeners hear the large interval, the following interval is expected to be small with a change in the direction. In registral return, listeners expect the last note to be the same to the first note or as close as the first note. Likewise, these principles are based on Gestalt principles such as proximity, similarity, and good continuation. Krumhansl succinctly remarks as follow,

The model says that given a small implicative interval, listeners expect that the melodic direction will continue (in Gestalt terms, good continuation); the next interval will be small (proximity) or similar in size (similarity); or the melody will reverse direction and return to the earlier pitch range (symmetry) (1995).

That is why Narmour claims that these bottom-up components are universal, automatic and innate. They represent what listeners immediately perceive in the tones. Some of the experimental works (Cuddy and Lunney, 1995; Schellenberg, 1996,1997) support Narmour's principles as perceptual organization in melodic expectancy, but it is

against the fact that they are innate. However, in the experiment by Cuddy and Lunney (1995), even if there is no huge difference between trained and untrained listeners, the fact that all of them have been exposed to Western music from the early age should not be overlooked.

Meyer and Narmour have focused on the natural dispositions of listeners, trying to reveal that how listeners have a melodic expectation given the principles of Gestalt. On the other hand, Paul von Hippel and David Huron believe that learning plays a significant role in melodic expectations, thus emphasizing the statistical values.

3.2. Learning effect: von Hippel and Huron

The statistical observation

Before the core analysis of gap-fill melodies by von Hippel and Huron (2000), it is important to review von Hippel's preliminary work (2000a), which deals with pitch proximity since this illustrates the importance of statistical analysis as well as of tessitura in understanding of melody.

Von Hippel (2000a) tries to redefine the pitch proximity, which is traditionally understood as "the tendency for small pitch intervals to outnumber large ones" (2000a, 315). This old definition does not designate the one by Narmour and Schellenberg. The preferable definition of pitch proximity incorporates two components: tessitura and mobility. Von Hippel, through statistical analysis, arranges and reorganizes the pitches from diverse musical cultures, including Chinese, African, Native American and

European folk songs. He finds out the preponderance of the small intervals over the large intervals, and attributes the grounds to the constraints on tessitura and mobility. “Not only do pitches tend to hover around the center of the tessitura, but also a single pitch tends to be close to the pitch that preceded it” (Margulis, 2003, 91). The graphical representation of his analysis is shown in the Figure 24.

Von Hippel’s analysis demonstrates that the cause of the pitch proximity in listeners’ expectation can be attributed to the musical circumstances. Moreover, gap-fill melodies are not the creation of the composers; rather they are the results from constraints on tessitura and mobility. This is further elaborated by him in the following study with Huron (2000).

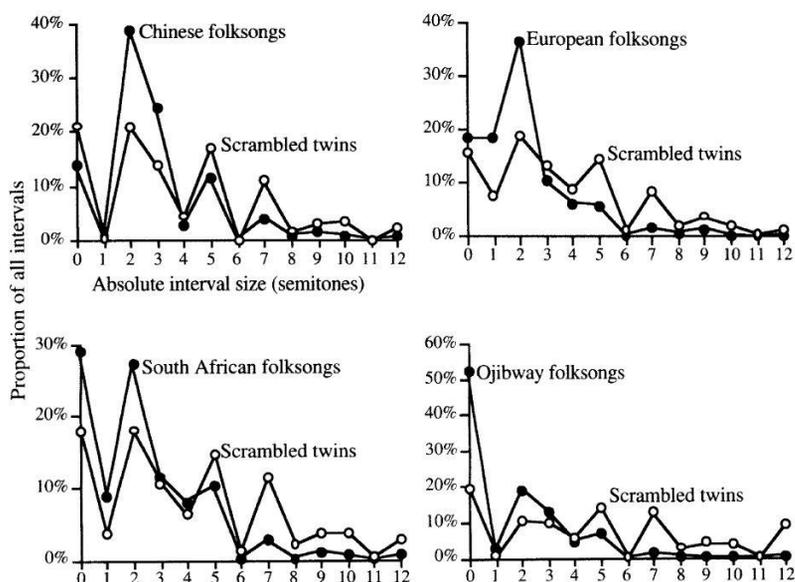


Figure 25. (Adopted from Von Hippel, 2000a, 319)

(Note: Scrambled twins indicate that rearranged pitches of the each folk song at random.)

Redefining the gap-fill concept

The collaborative study of von Hippel and Huron (2000) suggests that the gap-fill concept is not an important archetype that listeners should perceive; instead, the gap-fill concept is merely an artifact produced by the constraints of the tessitura or melodic range. The gap-fill concept is now recalled as post-skip reversal by von Hippel and Huron. They reorganize the pitches generating a new melody through the analysis that constrains the tessitura of the pitch'es. Nevertheless, post-skip reversals prevail, and even with the manipulations occur in all the folk songs. And, Lieder used them in his experiments. Von Hippel and Huron remark, "post-skip reversals will occur in *any* melody unless the composer has taken steps to avoid them" (2000, 81). The results implicate several considerations. First, post-skip reversals are not motivated to satisfy the listeners' melodic expectations. Second, they are created not by the composers' manipulations but by the statistical reasons. Third, the listeners are very enculturated; "melodic structure shapes expectation" (2000, 83). Or, the constraints on tessitura work whether the melody reaches on the extreme pitch by skip or not.

Von Hippel (2000b), to comprehend the role of gap-fill in listeners, reanalyzes the experiments conducted by Rosner and Meyer (1982, 1986). He investigates whether the theoretical concept of Meyer's archetype can be valid in listening experience, and the effect and role of the gap-fill patterns among the trained as well untrained listeners. After reevaluating the previous tests, he finds that gap-fill patterns do not affect judgments of untrained listeners'. As a result, he concludes that gap-fill either plays a small role or no role in classifying the melodies among the listeners.

3.3. Summary

It is important to see Huron's summarized concert (2006) to conceive the overall stance of him and other scholars. According to Huron, there are four notated melodic structures: pitch proximity, central pitch tendency, ascending or descending step tendency, and arch phrase tendency. Ideally, these patterns are expected in listeners as pitch proximity, regression to the mean, downward steps, and arch phrases. However, unlikely these are realized as pitch proximity, post-skip reversal, step inertia, and late-phrase declination. These results reflect the fact that there is a difference between the notated structures and the way listeners comprehend. Step-inertia, for instance, is not what actual music represents, but as Narmour suggests, "listeners expect a small interval to be followed by a subsequent small interval in the same direction" (Huron, 2006, 94). Moreover, post-skip reversals are attributed to the central pitch tendency, which indicates that pitches are distributed based on the center. In fact, "the most frequently occurring pitches in melodies tend to lie near the center of some distribution" (2006, 91).

Apart from Gestalt principles, von Hippel and Huron argue that the post-skip reversal is not an innate property of listeners in terms of the melodic expectation. It reveals what we often face in the music itself. The statistical analysis shows that there are certain patterns appearing in the Western tonal music, and conforming to the melodic expectation of listeners. Even if there is a gap between the written notes and the listeners' perception, these statistical results, at least, reason the phenomenon in listeners' expectation of melody.

An examination on the innateness or learning effect on the listeners' experience of melodic expectation requires understanding of each side of the information-input. The experimental tests, to evaluate the validity of the theoretical claims, are inevitable. Although, the experiments comprise limited circumstances compared to the written piece analyses, still their results reflect more closely the way listeners experience. Since Huron's statistical learning theory executes both the sides, it is more convincing than mere understanding the property of Meyer-Narmour views. It is meaningful to say that statistical learning is consistent with Meyer's original view of an expectation in that learned habit responses contribute to an individual's expectation. Meyer views the gap-fill melodies as exception, but Huron does not.

Indeed, the close relationship between the notated melodic structures and listeners' perception is not established only by the experiments. As Huron and von Hippel see, the close examination of the written scores plays a pivotal role in comprehending how listeners experience the melody. In the beginning, a student asks, "Why does Palestrina follow this practice?", and Meyer answers to this with Gestalt principles (1973, 8). But, if the student asks, "Why do composers follow this practice?", an appropriate answer is now, "That is what they have been frequently exposed".

IV. Conclusions

Revisiting theories of melodic expectation

An examination of the central theories of melodic expectation contributes in framing the overall idea of the topic. However, with the time, the methodology of the study and the approach keep changing, but as investigated in Chapter 3, the fundamental notions of melodic expectation still communicate and influence the conducted studies. Meyer set forth the principles of melodic expectation as explicating musical meaning. Narmour extracted those principles and extended to his theoretical conceptions. They were specified as symbols indicating relationships of the intervals, and applied to the music analysis. Compared to them, Huron and Margulis have actively investigated this topic in 2000s. Huron, unlike others, embraced biological examinations and evolutionary psychological aspects in order to construe the expectation itself, and reevaluated and retouched the findings in terms of music. Thus, Meyer viewed an expectation as one of the emotional responses to understand musical meaning; whereas, in Huron's views, it became a full-fledged subject to delve into listening experience. On the other hand, Margulis not only developed her own model to capture the dynamic aspects of melodic expectation but also rearticulated the notions of expectation in music analysis based on Meyer's views. But, she also tried to figure out how the melodic expectation works in notes as well as how it is related to music analysis.

By revisiting individual theories, it became salient that how melodic expectation has been discussed and explored in various but similar ways. The present study tried to capture the subtle differences in the opinions of the four mentioned scholars by looking into the same issues such as tension, surprise and gap-fill patterns. By doing this, it is possible to grasp the influence and relation among these scholars, and the broader perspective in which melodic expectations have been studied. Each step of the four scholars is remarkable and contributes to a time-oriented view in music. Generally, scholars have discussed music with its formal scheme and structure. Moreover, based on the hierarchy, more important notes are extracted to reconstruct the formal scheme. This scheme is represented as Schenker's graph and Lerdahl's hierarchic trees as such. Meyer (1996) and Narmour (1977) opposingly articulated that these hierarchic graphs imply atemporal relationships among the parameters. They properly pointed out the limitation of the analysis based on the structural viewpoint since the analysis lacked the time-course factor, which plays a key role in music itself and listening experience.

In 1996, an interesting collaborative work was published in *Music Perception*. Music theorists—Eugene Narmour, Fred Lerdahl, and Robert Gjerdingen and psychologists—Jamshed Bharucha, Carol Krumhansl and Carolyn Palmer authored articles focusing on the same piece Mozart's Piano Sonata in E-flat Major, K. 282. Then, Leonard Meyer thoroughly reviewed and provided a commentary at the end of the issue. His commentary pointed out several issues such as hierarchic structure, experience/explanation, implication, methodology, etc. and provided thoughtful comments according to them. Meyer was doubtful about Lerdahl's fundamental idea as

he said, “I wonder whether it is proper to analyze temporal relationships in terms of hierarchic trees” (457). Along with this, Meyer also remarked, “the structural background—ursatz, pitch-set relationships, golden section, and the like—may provide the fundamental constraints for a piece of music, just as chemical structure may be the basis for the shape and color of some flower. But explaining the experience of the music or the flower is a different matter” (461). Overall, Meyer pinpointed what was missing in the analyses based on structural perspective. According to him, time-course in music and listening experience should be properly represented in analysis.

Temporal and procedural aspects in music analysis are significant as the melodic expectation. Huron and Margulis took these aspects as well, but their time-oriented views were differently supported. Huron specifically distinguished the expectation-related responses in order, which played a large role in comprehending his expectation system. If he focused on the biological reasoning, Margulis concentrated on the temporal flow in music analysis. Her time-oriented understanding of melodic expectation was realized in her model. It covered temporality as one of factors, which constructed the model. In addition, the calculated expectation values represented the fluctuating force in music listening.

In this sense, it can be asked—have the theories of a melodic expectation included every aspect of understanding music and listening experience? Is there any limitation in expectation theory itself? In fact, there are more fundamental questions to consider in terms of the melodic expectation. First, how does an expectation change over the melodies through repeated hearing? Simply, listener will be better in recognizing the

melody and will know what comes next in the course of melodic processing. Then, what does this mean to the aesthetic value and affective experience of listening to music? Second, the theories have been primarily based on Western tonal music and the way listeners, who are accustomed to hear the Western tonal music, respond to the musical events. Therefore, it is proper to question how the melodic expectation is different in contemporary music, and how these theories can provide an explanation for this. The following content will focus on these concerns and will try to be instrumental in explicating them.

On rehearing and re-perceiving music

As most of the people will agree, a limited number of classical music has been maintained through a countless number of years. Listeners and musicians, both are exposed to this limited repertoire. Multiple exposures and repeated listening allow listeners to know what comes next. Theoretically, if one knows what will happen next; tension and surprise accompanied with the expectation procedure are changed. Physiologically speaking, the experience in repeated listening is less estimated compared to the one in the first-time listening. The experience of the first-time listening is more arousing, exciting, and therefore this feeling is more memorable. As the basis of Meyer's expectation theory, when one does not know what will happen in the consequent, the level of suspense, tension and attention is highest. Hence, the meaning brought by the

consequent is even more significant. However, classical music is an art of rehearing. The dispositions and the characteristics of the music account for the possibility of rehearing.

Specifically, what prompts listeners to rehear the music? And what does this mean to them? Scholars also have debated on this issue (Meyer, 1961; Jackendoff, 1991, 1992; Justus and Bharucha, 2001; Margulis, 2007). Among these discussions, Meyer's essay, *On rehearing music* (1961) directly provides several crucial points about listening experience. Concerning his basic notion of expectation in relation to emotion, Meyer wondered why listeners still enjoy music after repeated exposures to it. In this sense, it relates more to an emotional change for rehearing music rather than a change in perception. The following points reveal his overall idea in three ways along with the arguments.

First, listening to music requires complex sensibilities and evokes the implications of an event, which are not acquired for first-time listening. Implications of the higher structural levels, complex patterns and forms are not comprehended without a familiarity with tones, so these are appreciated after listeners get to know the superficial matters such as basic structures, motives, etc. Since music is a complex art and has many layers and levels, repeated listening is mandatory to fully apprehend the music. Also, the process of getting to be familiar with the music provides a different experience of expectations due to limited capacity of information and memory. Whereas the themes and motives are memorized through repeated exposures, the melodies in the transitional or development sections are not. Thus, the unexpected moments still remain, delivering lively energy to listening experience.

On the other hand, two kinds of processing systems are worthwhile to ponder at this point regarding perceptual changes in a melody through rehearing. These systems are top-down and bottom-up.⁴ According to Narmour (1991), both systems can contribute to musical affect, and “two separate expectation systems interact yet remain independent” (3). Especially, top-down processing plays a large role in understanding music. Narmour remarked, “Musically, this top-down system divides into intra- and extraopus styles, where both prior learning before listening to a piece and immediate learning during a piece influence expectation” (1991, 3). Therefore, as top-down processing and bottom-up processing confront and conflict with each other, appreciation of music is distinctly evaluated through rehearing. It is because the interaction between top-down and bottom-up processing happens differently at times and at levels.

Second, rehearing music is a process in which listeners’ expectation is modified by the input of the subsequent information. As the listeners’ expectation is set by the learned habit responses, “each musical experience—whether a work heard before or not—modifies, though perhaps only slightly, the internalized probability system (the habit responses) upon which prediction depends” (1961, 261).

⁴ Top-down processing in music means a processing in which listeners use prior experience and learning to distinguish and understand music in terms of style, background knowledge etc. Conversely, in the bottom-up mode, listeners understand music as a note-to-note relation without any aesthetical meaning or prior experience.

Broadly speaking, the way of understanding musical events from top-down system seems similar to the idea of schematic expectation.⁵ In this way, the role of bottom-up processing is compatible with veridical expectation. Justus and Bharucha (2001) suggested that even if veridical information exists, a process of musical stimulus in schema continues. Based on the modularity theory by Fodor (1983), they insisted that the module devoted to schematic information plays an important role in expectations, thus the incoming information keeps violating the schematic knowledge. This reflects why the repeated listening is possible.

Third, a mere note in a score is not all about music. Music is something to be experienced and realized in the course of time. In fact, different performers can make the music in a completely different way. The performer “shapes and confirms our expectations not about *what* events will take place, but about *how* the events will take place—the manner and timing of their arrival” (Meyer, 1961, 262). In a distinct style of performance, listeners are able to experience a wholly different music. This fact increases listeners’ enjoyment in rehearing music, and provides reasoning of the rehearing of music.

Accordingly, even if the types of expectations are distinct in rehearing music, the interplay of expectations activates and drives the listening experience fresh, enjoyable and meaningful. Furthermore, a reason of rehearing music is cogently stated through these mechanisms of experience of melodic expectancy. Additionally, Huron (2006) also

⁵ The ideas of schematic and veridical expectations are introduced by Bharucha (1987). Schematic expectations are immediate predictions earned from an extensive amount of previous experience. Veridical expectations pertain to particular knowledge gained from a specific piece.

concerned the repeated listening and believed that this causes different consequences in emotional responses. The emotional effect caused in a passage can enhance the effect or transform to different emotional responses. For instance, a passage evoking frisson can increase a degree of frisson through repeated hearing.

Expectation in contemporary music

The second issue is an expectation regarding contemporary music. Are the theories of the four scholars applicable to contemporary music? In what aspects, understanding of the melodic expectation in contemporary music is different? Meyer (1963) noted, tonal relationship contributes to the fundamental difference between contemporary music and familiar music—music of Bach, Wagner, etc. In their music, tonal relationship is strongly built based on syntax and implication. The music by the contemporary composers does not have this relationship. Hence, it is hard to remember, to understand, and even to find a meaning. In the underlying statement, Meyer seems to conclude that aesthetic experience from non-aesthetic experience depends on the proper resolution of tension.

In everyday experience the tensions created by the inhibition of tendencies often go unresolved. They are merely dissipated in the press of irrelevant events. In this sense daily experience is meaningless and accidental. In art inhibition of tendency becomes meaningful because the relationship between the tendency and its necessary resolution is made explicit and apparent. Tendencies do not simply cease to exist: they are resolved, they conclude (1956, 23).

As a result, based on this the music by contemporary composers is considered as daily experience, and thus meaningless and accidental since a proper relationship between tendency and its resolution may not exist in it.

Then, is this all about contemporary music? As to this second issue, an aesthetic explanation with a follow-up experimental study is not thoroughly provided yet. The melodic expectation theory grounded by Meyer has been discussed through a considerable number of scholars, but as Meyer did, the theory is firmly based on Western tonal music. Diverse folk songs were investigated, but not too much atonal music was involved since the theory basically accounts for tonal music. However, this does not conclude that contemporary music does not evoke an expectation. There is certainly an expectation involved in the contemporary music even if it is not for the melody. Thus, it is necessary to set out an expectation theory that covers contemporary music too, and to deploy corresponding studies to test the theory as well. As understanding and analyzing contemporary music require a different mindset and tools, so does the theory of melodic expectation for contemporary music.

Concluding remarks

Over the fifty years, the melodic expectation has been playing a central role in understanding of the music cognition and perception. The topic still inspires many scholars and yields numerous studies in diverse areas. In spite of that, there are

undiscovered parts left to be examined; some of them have difficulties to be empirically tested, and some of them should be theoretically set forth. Interestingly, the topic corresponds to both the areas of the music study viz. music theory and music psychology. It is because an expectation has a process in that it arouses from the musical notes, and consequently listeners feel or cognize it. Thus, an ideal study consists of both the theory and the corresponding experiment, but in reality, there is a disjunction between the duo that can never be filled. Hence, the theory and experiment should be combined acknowledging the difference, and they should compensate each other with every advantage they can offer. In this way, the full-fledged comprehension of melodic expectation unveils the mechanism of perception and cognition as well as listening experience a step further.

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선율의 기대 이론:

마이어, 나무어, 휴론, 마르켈레스의 비교 연구

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본 논문은 네 명의 학자들(레너드 마이어, 유진 나무어, 데이비드 휴론, 엘리자베스 마르켈레스)의 이론을 토대로 한 선율의 기대감에 관한 연구이다. 1950년대부터 2000년까지 이루어진 선율의 기대감에 대한 이론들을 통시적으로 살펴보고, 세가지 쟁점(긴장, 놀람, 깎필 패턴)을 바탕으로 이론들이 가지고 있는 차이점 및 한계성을 밝힘으로써 선율의 기대에 대한 심층적인 이해를 도모한다.

먼저 네 명의 학자들의 이론들이 시대순으로 소개된다. 논문은 (1) 마이어의 개념에서 이해되는 선율의 기대감이 무엇인지를 살핀 후, (2) 이를 구체화한 나무어의 함축-실현 이론을 다섯 가지 선율의 기본구조를 통해 설명한다. (3) 기대 자체에 초점을 두어 생물학적인 배경을 통해 선율의 기대감을 설명하는 휴론의 입장을 연구한다. 그의 통계학적인 방법론으로 인해 선율의 기대에 대한 궁극증은 과학적인 방식으로 해결된다. (4)

마르퀴레스는 선율의 기대와 실제 악곡 사이에서의 밀접한 관련성을 중시하여 기대를 분류하기도 하고, 악곡안에서 나타나는 기대감을 측정하기도 하며, 또한 악곡에서 나타나는 복잡한 관계로 인한 기대감을 다양한 방식으로 설명하는 데에 중점을 둔다.

위의 통시적인 고찰을 바탕으로 하여 선율을 기대하는 과정에서 나타나는 반응 및 인지 방식을 대표하는 세가지 쟁점들(긴장, 놀람, 깎뿔 패턴)을 중점적으로 살펴본다. 네 사람의 이론가들이 이들 세 가지 쟁점에서 보이는 입장의 공통점과 상이점을 통해 선율의 기대감을 다각도에서 조명할 수 있을 뿐 아니라, 이론들 안에서 나타나는 상호관련성 역시 발견할 수 있다.

선율의 기대이론은 시간 차원을 배제한 구조 분석과는 달리 음악이 통시적 예술이라는 점에 주안점을 두고 있기에 우리가 실제로 음악을 듣는 행위를 가장 유사하게 묘사하고 음악과 음악 감상자 사이의 밀접한 관계를 밝히는데 목적을 둔다. 본 논문은 20세기 후반 음악이론에 나타난 이러한 변화의 양상을 다양한 이론들을 통해 고찰하며, 나아가 기대이론의 한계점을 제기하고 앞으로 나아가야 할 방향을 제시하고자 한다.

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주요어 : 선율의 기대감, 긴장, 놀람, 음악 청취, 재청취

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