

How Jazz Artists Violate Our Anticipation

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I. INTRODUCTION

Expectancy has long been studied after Leonard Meyer (1956) sparked contemporary theorists' interest in the subject. The most expansive study of expectation in melody is Narmour's implication-realization theory (1990, 1992). The present study builds on existing theories of melodic expectation, especially those of Narmour, Larson (1993, 2004), and Lerdahl (2001). In this paper, for jazzy re-harmonization techniques, three rules based on Larson's musical forces are introduced. Then, a simple application of these rules is shown.

II. RELATED RESEARCH

Creating Surprise

In *Sweet Anticipation*, David Huron suggested four basic kinds of surprise.

Type	Name	Explanation
Unconscious Level	Schematic surprise	The music is constructed to violate some existing schema that listeners have brought to the listening experience.
	Dynamic surprise	The music is constructed to set up some work-specific expectation that is then violated.
	Veridical surprise	The music violates a listener's existing knowledge of a given musical work to evoke surprises.
Conscious Level	Conscious surprise	The music leads a knowledgeable listener to consciously form an expectation about a future event that is then thwarted.

Table 1. Four basic surprises

According to the author,

“Surprises are most reliably evoked when the musician establishes a context in which the surprises is framed. That is, surprises are best ensured when they are set up.”

In addition, he mentioned a lot of examples. For example, after a duple meter is established, if the music switched to a triple meter, it will evoke schematic surprise. He also analyzed Beethoven’s Symphony no.9, op.125, fourth movement for explanation of dynamic surprise.

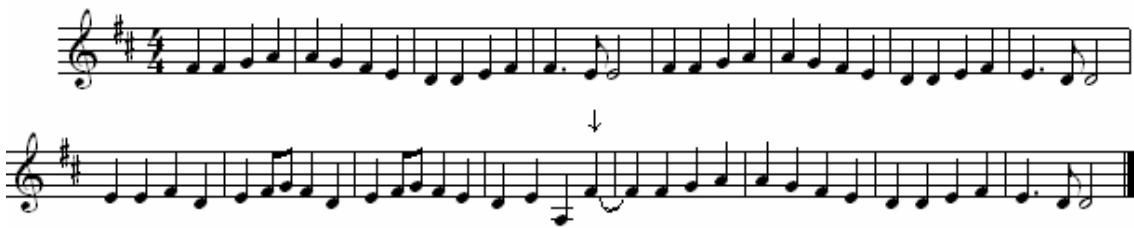


Figure 1. “Ode to Joy” in Ludwig van Beethoven’s Symphony no.9

The fourth measure at second systems (down arrow) shows single syncopated moment. Since Beethoven has already presented the phrase in its unsurprising form, this time he successfully evoked surprise.

In *This is your brain on music*, Daniel J. Levitin also suggested various example music that violate our expectation. He said,

In “Yesterday,” the main melodic phrase is seven measures long; the Beatles surprise us by violating one of the most basic assumptions of popular music, the four-or-eight-measure phrase unit(nearly all rock/pop songs have musical ideas that are organized into phrases of those lengths).

He even used gap fill theory to explain Beethoven’s Pathetique Sonata. According to him, we hear gap fill from this sonata. As Figure 2 shows, the main theme climbs up in this sequence : C–Eb–Ab–Bb. Now the note is an octave and a whole step higher than tonic key (Ab), there is only one way to go: back toward tonic key.



Figure 2. "Pathétique" in Ludwig van Beethoven's Sonata

However, Beethoven actually jumps down to Eb that is a fifth above the tonic. By delaying the resolution-down to the tonic, Beethoven evoked a kind of surprise. Levitin explained that to delay the resolution, Beethoven used the schema for gap fill to get to the mid point Eb at fourth measure, and when Beethoven finally brings us tonic two measures later, it is as sweet a resolution as we have ever heard.

Musical Force

Steve Larson introduced musical forces clarifying its musical meaning by comparing it to its analogous physical force. There are three musical forces. First, musical gravity is the tendency of a note above a reference platform to descend to the reference platform. He also said that musical gravity does not seem to be an important part of the theoretical or experimental literature on melodic expectation. Second, musical magnetism is the tendency of an unstable note to move to the closest stable pitch. And the tendency grows stronger as notes get closer to that goal. Third, musical inertia is the tendency of a pattern of motion to continue in the same fashion. According to his explanation, all sequences can be heard as giving us a feeling of inertia and Meyer called inertia "good continuation" and explained it in terms of the Gestalt principle.

III. LINK BETWEEN MUSICAL FORCE AND SURPRISE

The reason why I became to connect Larson's musical force with surprising effect is that I thought that Beethoven's "Ode to Joy" could be explained in terms of musical inertia. Let's see Figure 1 again. There exists a clear pattern in MM. 1~3 : The pitches are upward and downward and upward. I would like to say that Beethoven created up and down pattern similar to the movement of a pendulum. Thus, by musical inertia, it is quite natural to conceive that the next measure would be downward melodic sequence. And it seems like to happen at the next

measure. However, Beethoven violated our anticipation at the last note of fourth measure: instead of going down to D, the pitch stays E. In this case, Beethoven created a feeling of surprise by violating musical inertia. At that moment, it occurred to me that it could be possible to create a feeling of surprise by holding musical inertia contrarily in some context. This is how I became to relate these two notions together.

IV. HYPOTHESIS

I think that when jazz musicians play classical music in jazzy style, they are creating surprise. If the jazz musicians use the original melody, we would anticipate the original chord progression of the song. However, when they re-harmonize the chord progression, the surprise effect would be created. The important factor is how to re-harmonize the original chord progression “well”.

Based on Larson’s three musical forces, I tried to derive rules for jazzy re-harmonization techniques. The resultant rules are listed below.

Musical Force	Derived Rule	Explanation
Musical Gravity	Rule 1	II-V-I progression
Musical Magnetism	Rule 2	Prior chord which is half tone higher than original chord
Musical Inertia	Rule 3	Successive diatonic or chromatic chord progression

Table 2. Rules derived from musical force

Rule 1 is about II-V-I progression which is famous in jazz music. Basically, this progression is a kind of fifth interval progression. For example, if one represents C, then two represents D and five represents G and D-G-C sequence has fifth intervals.

Rule 2 is about approach chord. As Larson said, “musical magnetism” is the tendency of unstable notes to move to the closest stable pitch. Thus, I thought that if we play the chord which is half tone higher than the original chord, then there may be strong magnetism to go to the original chord.

Rule 3 is about movement. “musical inertia” is the tendency of melodic motion to continue in the pattern perceived. I thought that by successive diatonic or chromatic chord progression, it would be possible to evoke a kind of mobility.

V. EXPERIMENT

In this experiment, I chose Haydn's String Quartet No.77 in C Major op.76-3 "Kaiser" second movement as a test music. Then, I tried to elucidate how the jazz band named Tim Hardin Trio re-harmonized the original music by applying the three derived rules. Since I wanted to focus on their re-harmonized chord progression, I selected this band music which doesn't show a lot of rhythmical variations.

VI. RESULT

F Bb/F Em7 A7 Dm7 Bm7 Bb7 A7 Dm7 G7 C7

The musical score for measures 1-8 of "Kaiser" is shown. The key signature has two flats (B-flat major). The time signature is 4/4. The melody is in the treble clef, and the accompaniment is in the bass clef. The chords are: F (m1), Bb/F (m2), Em7 A7 (m3), Dm7 (m4), Bm7 Bb7 A7 (m5), Dm7 G7 (m6), C7 (m7), and C7 (m8).

Figure 3. Re-harmonized "Kaiser" MM. 1~8

This is the first 8 measures of the re-harmonized jazz music. As you can see, they used successive descending chromatic chord progression in MM. 5~6 (Rule 3). I think this chord progression has nothing to do with the original chord pattern. However, by successive chromatic chord progression, this part obtained a kind of mobility and seems to go well with the melody. A thing to remark is that they've placed II-V-I progression before and after the chromatic chord progression.

Bm7 Bbm Eb7 Dm7 G7 Gm7 Am7 Bb Bm7 GM/C Bm7 Bbm Eb7

The musical score for measures 9-16 of "Kaiser" is shown. The key signature has two flats (B-flat major). The time signature is 4/4. The melody is in the treble clef, and the accompaniment is in the bass clef. The chords are: Bm7 (m9), Bbm (m10), Eb7 (m11), Dm7 G7 (m12), Gm7 Am7 Bb (m13), Bm7 (m14), GM/C Bm7 Bbm Eb7 (m15), and Bbm Eb7 (m16).

Figure 4. Re-harmonized "Kaiser" MM. 9~16

Melodies at Figure 4 have the same melodic progression as Figure 3. However, they used another chord progression at this time. First, we can see that they used successive diatonic or chromatic chord progression in MM. 13~16 (Rule 3), and the direction is changed in the middle.

The other thing to note is Eb 7 chord in 11th measure. This chord can be explained in terms of the following chord Dm 7: The un-stability of Eb 7 can be resolved by stable Dm7 chord.



Figure 5. Re-harmonized “Kaiser” MM. 25~32

A similar explanation can be applied to the red-colored notes in second measure at Figure 5. These notes make very unstable sound. But these Eb and Ab are half tone above D and G which are the G chord tones (Rule 2). We can also notice that two II-V-I progression were used in MM. 26~29. And G-F#-F at the left hand part in MM. 28~29 shows successive chromatic progression.

A very interesting sound is generated in 28th measure. If the red-colored F note is removed, the sound is somewhat plain. However, because of this F note, this part makes very unstable sound due to the conflict of F with F#.

VII. APPLICATION

As an application of three rules derived in this paper, I re-harmonized first 8 measures of ‘Silent night’.



Figure 6. Silent night MM.1~8

As Figure 6 shows, the three rules are all used for re-harmonization. First, I used Rule 3 in MM. 1~3. It is easy to see that G-Ab-A sequence at left hand obtained a kind of mobility, and quite goes well with the melody. In MM. 4~5, I used Rule 1 to get II-V-I progression. I think this choice is not random. Since there was “less strong” progression (Rule 3) compared to fifth interval before these measures, it is opportune to place II-V-I progression (Rule 1) there. At the last note of the 8th measure, we can hear a very unstable but pleasing chord F#7. The hint for this chord is to look at the following chord. The next measure starts with F chord. Thus, it makes sense to put F#7 chord prior to F chord by Rule 2. In this way, I re-harmonized first 8 measures of ‘Silent night’ in jazzy style.

VIII. CONCLUSION

Techniques for jazzy re-harmonization of Hayden’s String Quartet "Kaiser" were roughly explained by three rules derived from Larson’s Musical Force. Also, by the derived rules, ‘Silent night’ was re-harmonized. However, there would be some parts to which these rules could not be applied. Thus, more complete explanation of re-harmonization would need other rules also. Thus, the next step would be to find and refine the rules for jazzy re-harmonization.

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