"WHERE IS THE METER?:
AN INVESTIGATION OF RHYTHMIC PROCESS IN BJÖRK'S MUSIC

by

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Abstract

Björk uses many rhythmic techniques typically found in popular music, such as repetition and syncopation, and is a talented composer who carefully crafts the details in her compositions. This paper will describe and explore some rhythmic and metric innovations found in her songs “Where is the Line?” and “Undo.” In order to analyze her music, I must turn to primarily the theories and analyses of classical and art music. I will show how Björk uses techniques such as parallelism, hypermeter, metric shift, and projection of a late entry, to both create and destroy metric sensations in her music.
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Björk Gudmundsdóttir, a popular musician who goes simply by the name Björk, is a full-fledged multi-media artist. She incorporates costume, story, philosophy, and visual art into her albums, videos, and live performances. These non-musical aspects of her work complement the interesting and original musical content of her work. Björk is an accomplished composer who employs complex and innovative musical devices, both harmonic and rhythmic, that are not often found in pop music (and not often in art music, for that matter). To demonstrate her compositional skill, I will focus on her rhythmic and metric inventiveness within a repetitive (vamp-oriented) context and apply a variety of theories, commonly used to analyse classical and art music, to two of her recent songs.

Popular music is a fairly new and burgeoning field of study, and the theory and analysis of pop music is still finding its ground. The bulk of written work on pop music focuses on musicological aspects, such as society, gender, politics and race. For instance, there are three journals in current circulation that concentrate solely on pop music. Two of them, *Popular Music and Society* and *Popular Musicology Online*, limit their papers to the above-mentioned topics. In the third, *Popular Music*, only about ten percent of its articles are devoted to the theory and analysis of pop music.
Some professional journals of music theory publish papers on pop music. Recent articles include "Neo-Riemannian Theory and the Analysis of Pop-Rock Music" by Guy Capuzzo and "A Royal Scam: The Abstruse and Ironic Bop-Rock Harmony of Steely Dan" by Walter Everett, both published in *Music Theory Spectrum* 26/2 (2004). The former presents a transformational approach to neo-Riemannian operations in pop music, including analyses of harmonic movement from songs by artists ranging from Bob Dylan to Radiohead. The latter compares the music of Steely Dan to that of bop musicians, including Thelonious Monk, Oscar Peterson and Lennie Tristano. What both of these articles have in common is a strong emphasis on harmony (with a nod to Schenkerian analysis) and only a brief look at metric issues.

David Brackett's book *Interpreting Popular Music*, addresses its subject from a variety of angles.¹ There is an interesting theoretical discussion on rhythm in a section of his analysis of James Brown's "Superbad" (pages 137 – 144). Brackett describes how the groove of the song changes textures throughout, with varying rhythmic groupings appearing in each texture. Over all of this, Brown is singing even more complex rhythmic groupings, often inconsistent with the accompaniment's meter. This creates a "sense of disorientation, obscuring the relationship between the voice and the underlying pulse."² However, as the book has a sociological inclination, the discussion turns to questions of social factors that create the groove, such as the communication of performers.

²Ibid., 143.
Another book that discusses pop music from a mostly sociological stance is *Rhythm and Noise* by Theodore Gracyk. A chapter in this book devoted to rhythm, entitled "Jungle Rhythms and Big Beat," defines such terms as "backbeat" (the accent of beats 2 and 4 within a 4/4 meter) within a discussion of sexual intercourse and the 4/4 meter.

*Expression in Pop-Rock Music: A Collection of Critical and Analytical Essays* contains both musicological and theoretical papers. Two of the analytical essays describe voice-leading issues only. Four other essays treat a broader range of analytical issues, but only briefly describe rhythmic and metric matters. Instead, they pay more attention to harmonic, timbral, formal and social issues pertaining to their subjects.

This brief survey into the writings on popular music makes us question why so little has been written on rhythmic and metric issues. An instinctive – if insupportable – retort would be to claim that there is not much to write about. It is true that most pop music today is written in 4/4, with an emphasis on lyrics and

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4 Ibid., 125-147, especially 134-147.
melody rather than meter. Although some artists like Rush, Soundgarden and Tool regularly feature other meters, such as 7/4 and 11/4 in their music, the occurrence of these distinctive meters does not necessarily warrant in depth discussion, as their rhythmic structures are not very remarkable and are usually very repetitive. In 1998, Russell Potter wrote that repetition "... has almost never been used with any positive connotations by the critics of mass culture; the implicit elitism of their condescension lessens the value of their insights." However, lately, some scholars have explored positive aspects of repetition. Some scholarly work, such as Brackett's work on James Brown's "Superbad," focuses on sociological aspects of repetition, such as its roots in West African and African-American music. Richard Middleton's essay "Over and Over: Towards a Politics of Repetition" looks at theories concerning repetition from areas such as philosophy, psychoanalysis and semiotics and applies them to recent art and popular music. Recently published works have focused on the repetitive nature of groove, such as Tim Hughes's dissertation "Groove and Flow: Six Analytical Essays on the Music of Stevie Wonder." These studies have helped initiate the idea of writing about repetition in Björk's work; in particular, the idea of complex rhythmic groupings occurring over a static texture. However, they do not cover much theoretical ground regarding the topics that I will cover.

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9 Brackett, "James Brown's 'Superbad,'" in Interpreting Popular Music, 143.
While the notions of repetition and groove have been discussed more frequently as of late, there are still few authors who are concerned with comprehensive metric and rhythmic analyses of pop music that lacks a groove. One problem they cite is that the rhythm involved in pop music is just too simple. Gracyk writes “although the vocal melody of a rock song will have its own rhythm, it will coincide regularly with the distinct rhythms of the other parts, typically on the downbeat defining the start of each measure. At the same time, one or more contrasting instruments accent the weak beats while remaining synchronized with the basic beat and meter. Thus the backbeat stands out. Even when the drummer plays behind or in front of the beat, it is as a variation of the basic beat and not a separate one.” Generally, I agree that the vast majority of pop songs have very little rhythmic ingenuity. One must also consider that pop artists often improvise their music: how do we know whether the rhythmic innovation we hear is carefully composed or a happy accident in the studio (and if so, does it matter)? This is especially problematic in pop music, as there is very rarely a score involved to guide us to the composers’ intentions. However, Cynthia Folio has addressed this issue in an article about polyrhythm in jazz music. She reminds us that while many musicians argue against the analysis of jazz because of its spontaneity, “much jazz is ‘worked out,’ as is evidenced in the many examples of currently available alternate takes of jazz performances.” In other words, while there is some spontaneity involved, which is suggested by the alternate takes, the players know

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12 Gracyk, Rhythm and Noise, 144.
14 Ibid., 133.
what they are doing. Such an attitude validates a close look at music through transcription and analysis.

Similar to the music Folio studied, Björk's music is carefully composed; in a 2004 interview she reveals "I can be a total analytical, self-indulgent nerd when it comes to arrangements and production."\(^{15}\) Her craft is evident in the time spent working on her music. She composes, arranges, produces, and oversees the mixing of each album.\(^{16}\) In this whole process, Björk is not simply a figurehead. She knows what sound she wants, and works closely with the performers and production artists to get it. She uses devices such as diagrams and unusual metaphors ("a little Justin [Timberlake], a little Karlheinz [Stockhausen]") in order to get her point across.\(^{17}\) It also helps that she knows what she is talking about: Björk is well educated on classical music, having studied composers such as Beethoven, Bach, Messiaen, Cage, Gubaidulina, Reich and Stockhausen (with whom she has an acquaintance) both as a music student in Reykjavík, and privately as an adult.\(^{18}\) She has been interested in rhythm and meter since, as a child, "she made beats from a tape of her grandfather snoring and played drums with the accompaniment of a popcorn machine."\(^{19}\) Her interest in rhythm manifested itself more recently, when, recording choir parts for *Medúlla*, Björk was "very excited when the basses kicked in with Mephistophelian tones; she was depending on them to take the place of the

\(^{15}\) Callum McGeoch, "Voice From Within: Björk Inside Out," *Dazed and Confused* 2/17 (September 2004), 95.
\(^{16}\) Alex Ross, "Björk's Saga," *The New Yorker* 80/23 (August 23, 2004), 58.
\(^{17}\) Ibid., 59.
\(^{18}\) Ibid., 53.
\(^{19}\) Ibid., 53.
big, low electronic beats that had moored so many of her songs in the past.\textsuperscript{20} She has certainly had an education of sorts in the pop music world; Björk has been involved in at least one band or solo project since the age of 11.\textsuperscript{21}

Since, of the few theoretical writings about popular music, only a small number are concerned with the technicalities of rhythm and meter, I must therefore turn to the writings on classical and art music in my search to discover theories and analytical methodologies useful for studying Björk’s carefully composed metric and rhythmic innovations.

Christopher Hasty’s book \textit{Meter as Rhythm} gives a good description of both a theoretical and cognitive understanding of the subject.\textsuperscript{22} I am particularly indebted to Hasty’s section entitled “Meter as Projection,” which discusses our hearing of events that may not happen at an expected time.\textsuperscript{23} He defines projection as “a process in which a mensurally determinate duration provides a definite durational potential for the beginning of an immediately successive event.”\textsuperscript{24} To simplify a bit, a projection is the expectation that a duration $X$ will be followed consecutively by another duration $X$.\textsuperscript{25} By identifying projections, Hasty can analyze whether later events do or do not realize them, to characterize their rhythmic function. For instance, on pages 88 – 89, Hasty explains different ways to understand an event

\textsuperscript{20} Ibíd., 51.
\textsuperscript{21} Ibíd., 53.
\textsuperscript{22} Christopher Hasty, \textit{Meter and Rhythm} (New York: Oxford University Press, 1997).
\textsuperscript{23} Ibíd., 84-95.
\textsuperscript{24} Ibíd., 84.
\textsuperscript{25} Here, the term “duration” can more aptly be called “interonset duration.” Hasty is referring to the time span from the beginning of an event to the beginning of the next event, not necessarily the length of the note (or notes) in that time span.
that enters later than expected; I will take up one of his interpretations, the
"deceleration of the event," in section 3.2.

A Generative Theory of Tonal Music, co-written by Fred Lerdahl and Ray
Jackendoff, presents a kind of grammar of hierarchical musical structures.\textsuperscript{26} It
involves two types of rules, "well-formedness rules" and "preference rules;" the
former specify structural descriptions and the latter indicate which structure the
experienced listener will most likely hear. Chapters 2, 3, and 4 focus on rhythmic
structure, grouping structure, and metric structure, respectively. They describe
groupings as units such as motives, themes, periods, sections, etc., and show the
hierarchical nature of grouping structure: small units, when juxtaposed, can combine
to form larger units and so on.

Lerdahl and Jackendoff posit five grouping well-formedness rules, and insist
that for something to be called a group, all five rules must be satisfied. My analysis
of grouping structure follows these rules. The first rule, GWFR 1, maintains that
"any contiguous sequence of pitch-events, drum beats, or the like can constitute a
group, and only contiguous sequences can constitute a group."\textsuperscript{27} Basically, this
means a group cannot be interrupted. GWFR 2 reveals that "a piece constitutes a
group," GWFR 3 states "a group may contain smaller groups," GWFR 4 asserts that
"if a group $G_1$ contains a part of group $G_2$, it must contain all of $G_2$, and GWFR 5
insists "if a group $G_1$ contains a smaller group $G_2$, then $G_1$ must be exhaustively

\begin{footnotesize}
\begin{enumerate}
\item[27] Ibid., 37.
\end{enumerate}
\end{footnotesize}
partitioned into smaller groups.\textsuperscript{28} The latter three rules establish conditions for embedding, while the first two ensure that "a piece is heard as a whole rather than merely as a sequence of events."\textsuperscript{29}

There are seven grouping preference rules. The first three regard local details; Lerdahl and Jackendoff argue that we do not hear groups that are small (GPR 1), that we sometimes hear group boundaries in between groups of slurred notes or after notes of a longer duration than those before it (but only when followed by shorter durations) (GPR 2), and that we sometimes hear group boundaries when there is a change of register, dynamics, articulation, length, and possibly timbre or instrumentation (GPR 3).\textsuperscript{30} The final four grouping preference rules apply to larger-level groups. GPR 4 simply asserts "where the effects picked out by GPRs 2 and 3 are relatively more pronounced, a larger-level group boundary may be placed."\textsuperscript{31} GPR 5 maintains that we prefer to hear larger-level groups that contain symmetrical smaller-level groups, while GPR 6 states that if two parts of a piece are deemed as parallel, they should belong to parallel parts of groups.\textsuperscript{32} Finally, GPR 7 contends that we hear grouping structures that produce "more stable time-span and/or prolongational reductions."\textsuperscript{33}

\textsuperscript{28} Ibid., 38.  
\textsuperscript{29} Ibid., 37.  
\textsuperscript{30} Ibid., 43-46.  
\textsuperscript{31} Ibid., 49.  
\textsuperscript{32} Ibid., 49-51.  
\textsuperscript{33} Ibid., 52.
Lerdahl and Jackendoff describe meter as “the interaction of different levels of beats (or the regular alteration of strong and weak beats at a given level).”\textsuperscript{34} The metrical well-formedness rules state that every attack point must be related to beat of the smallest metrical level (MWFR 1), every beat must also be a beat at any smaller levels (MWFR 2), strong beats only occur every two or three beats (MWFR 3), and beats must be evenly spaced at any level (MWFR 4).\textsuperscript{35} The only metrical preference rule that I will be looking at is MPR 1: "where two or more groups or parts of groups can be construed parallel, they preferably receive parallel metrical structure."\textsuperscript{36} I will use this rule to aid in my determination of grouping structure and meter in “Where is the Line?” In very repetitive popular music, meter is created, and usually highly overdetermined, by parallelism. However, I will show how Björk cleverly uses parallelism to both create meter and to destroy it.

The article “Parallelism as a Factor in Metrical Analysis” by David Temperley and Christopher Bartlette gives a more detailed look into the parallel structures.\textsuperscript{37} They propose a different metrical preference rule for parallelism: “prefer beat intervals of a certain distance to the extent that repetition occurs at that distance in the vicinity.”\textsuperscript{38} In other words, the time span that separates the beginning of the first group and the beginning of its nearby repetition is preferred as the beat duration.\textsuperscript{39}

This definition works better than Lerdahl and Jackendoff’s in that it lets parallel

\textsuperscript{34} Ibid., 68.
\textsuperscript{35} Ibid., 69-72.
\textsuperscript{36} Ibid., 75.
\textsuperscript{37} David Temperley and Christopher Bartlette, “Parallelism as a Factor in Metrical Analysis,” \textit{Music Perception} 20/2 (Winter 2002), 117-149.
\textsuperscript{38} Ibid., 134.
\textsuperscript{39} In this context, the word “group” refers to short groups rather than repeated motives, grooves, vamps, etc.
structures supersede the notion of meter; it is especially useful when the meter has not been established, or is ambiguous, as we will see.

David Temperley’s book *The Cognition of Basic Musical Structures* takes the ideas of “preference rules” from Lerdahl and Jackendoff and uses them in a computational model of music perception.\(^4\) He states that “a metrical structure consists of a series of points in time, or ‘beats,’ which may or may not always coincide with events in the music, although they are certainly related to events in the music.”\(^41\) This is similar to Lerdahl and Jackendoff’s view that while the metric structures and grouping structures may interact, they can still be formally separate from each other.\(^42\) However, I prefer Temperley’s view, as it allows meter to exist independent of the musical events; in other words, we know that the meter exists, even if it is not emphasized by the music we hear. Further to this conception, his sections entitled “Syncopation in Rock” and “Applications and Extensions of the Syncopation Model” look at the way we hear syncopation in rock music. First, Temperley defines syncopation as a “conflict between accents and meter,” which corresponds to my theme of contradicting meter, as commonly occurs in pop music.\(^43\) Temperley goes on to explain that we often we associate the syncopation with an anticipation of the impending beats (i.e. we hear a melody sounding on the “and” of beat 1 and the “and” of beat 3, but we relate the attacks with beats 2 and 4.

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\(^41\) Ibid., 23.
\(^43\) Temperley, *Basic Musical Structures*, 239.
I agree that we can hear syncopation this way (although it is not always heard this way), and will describe the phenomenon in my analysis of “Undo.”

Temperley’s consideration of accent relates to earlier significant theorizing on that topic. One of the best treatments is Joel Lester’s chapter on “Accent” in The Rhythms of Tonal Music. He defines accents as “points of initiation,” and goes on to describe many different types of accents, such as dynamic and articulation accents. A durational accent occurs on any pitch that is longer than the previous pitch. A new event, such as pitch change, harmonic change, and textural change can also give rise to an accent. The entrance of a voice, the addition of a new register, and contour changes are different kinds of textural accents. Finally, the repetition of a pattern can also produce an accent of beginning. He also discusses an aspect of meter that is widely understood in treatments of tonal music, but rarely appears in discussions of pop music. “Hypermeter” is “metric organization above the level of the notated measure.” A hypermetric beat can be established by many of the same factors that produce accent within a meter: harmonic change, durational accents and textural accents. 

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44 Ibid., 244-245.
46 Ibid., 16.
48 Ibid., 160. Prior to Lester, hypermeter was discussed in Lerdahl and Jackendoff, A Generative Theory, 99-104, among others.
Finally, the article "The Craft of Hybrid Composition" by John Roeder provides ample groundwork for this paper. Roeder addresses issues of art versus popular music, defining popularity as "a variable property of music from all genres, not just those of a particular social class or market." He then comes to the conclusion that in the context of hybrid music "a re-conception of 'popular' makes it possible to articulate the challenges that a composer must confront." Björk employs commonly used pop music devices, such as 4/4 meter and modal melodies, while "overcom[ing] the constraints they normally impose." I believe Björk to be a hybrid musician; she uses common pop music language, such as repetitious vamps, but manages to employ complex rhythmic structures to keep the educated (and non-educated) listener interested. While this does not relate to the analytical aspect of my thesis, it helps justify my subject matter; this description helps me see Björk as an artist, not just an artisan.

An important analytic substance that I draw from Roeder's article is the notion of an underlying pulse occurring at the same time as a changing rhythmic grouping that not only does not interact with the pulse, but undermines it. Also, Roeder describes how changes in grouping and structure can "shift" meter, that is, change where we understand strong beats to occur.

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49 John Roeder, "The Craft of Hybrid Composition: Meter, Tonality, and Grouping in Michael Torke's Adjustable Wrench," Perspectives of New Music 41/2 (Summer 2003), 122-158.
50 Ibid., 123.
51 Ibid., 124.
52 Ibid., 124.
53 Ibid., 129.
54 Ibid., 135-136.
These metric and rhythmic theories and analyses aid in the following discussion of two of Björk's songs. The chapter on "Where is the Line?" from her 2004 album *Medúlla* deals with grouping, meter, parallelism, accent structure, hypermeter, and metric shift. The chapter on "Undo" from her 2001 album *Vespertine* discusses meter, grouping, parallelism, and projection of a late entry.
2.1 “Where Is The Line With You?” – Introduction

Björk’s rhythmically oriented song “Where Is The Line With You?” was released on her 2004 album Medúlla. All sounds on this album are produced by the human voice, manipulated or digitally altered in many cases.

The main aspect of this piece that I will focus on is metric ambiguity. From the very beginning of the song, the meter itself is in question. After the meter has been established, the hypermeter is confounded by a large-scale hemiola, then the meter “shifts” in a way to be described in the following discussion.

2.2: Grouping Structure of the Vocal Line

This section will discuss possible grouping and metric interpretations of the opening four statements of “Where Is The Line With You?” The statements project a significant metric ambiguity. By examining grouping and meter using the concepts in chapter 1, the analysis uncovers some carefully composed rhythmic effects that express the text.

The piece begins with Björk taking an audible breath and then singing “where is the line with you?” At the word “line,” a second, deep, electronically mutated voice joins in and continues on to double (or nearly double) Björk’s voice. Its entrance produces a phenomenal accent, while the length of the word “line” (twice
that of each previous word) produces a durational accent. Because of these
accents, I hear the attack of the word “line” at the beginning of a measure, or at
least as a strong beat.\footnote{This second voice continues on until the end of the opening passage and also shows up later in the
piece. While it is of timbral and harmonic interest, it does not factor into any more of my metrical analyses,
and I will not mention it again in this paper.}

Despite this clear, strong beat, more than one meter can be interpreted from
the accent structure of this opening phrase. I will concentrate on two options that
both interpret the word “line” as metrically strong. The first option, depicted in
Figure 1a, shows a regular accent and groups the eighth beats in three. It begins
by showing “where” (m.1) as the most stressed word of the “where is the” eighth-
note succession, reflecting the phenomenal accent it takes as the initial word, and
the interrogative pronoun. However, there is not complete silence before this word;
the sound of Björk’s intake of breath occurs one quarter note before the word
“where.” Because the breath intake is so prominent and preparatory, it acts as an
anacrusis, enhancing the downbeat feeling of “where.” The quarter-note interonset

\begin{figure}[h]
\centering
\includegraphics[width=0.8\textwidth]{figure1a.png}
\caption{First vocal statement analyzed in 3/8 meter}
\end{figure}
duration between the breath and "where," as an incipient pulse-stream, is overridden by word accents on "line" and "you" (m. 2 and m. 3 respectively), which give their onsets durational accents; Figure 1a takes these as cues for downbeats in 3/8. One virtue of this reading is the placement of important structural words of the sentence on the first beat of each measure: the question ("where"), followed by the subject ("line"), followed by the object ("you"). Its main weakness, as we shall see, is that it is not supported by subsequent accent and grouping structures.

Another metrical interpretation, presented in Figure 1b, is not supported so clearly by regular phenomenal accent. Like 1a, it places the accented word "line" on beat 1, but interprets the first three eighth notes as an anacrusis in 4/4 rather than as a 3/8 measure, so that the first note ("where" on C#) is not placed on a "strong" metric position (although it can still carry an onset accent). With only this much music, the 4/4 meter is tenuous. The beginning of a quarter-note pulse-stream can

Figure 1b: First vocal statement analyzed in 4/4 meter
be heard with a contour accent on the word “is,” followed by the durational accent on “line” and a change of harmony on “with.” However, we do not know how many quarter notes belong to a group, and therefore cannot impose a meter.

Subsequent events enrich both of these metrical interpretations. Since the first three words of the second statement of “where is the line with you?” are set exactly the same as were those of the first, a parallelism obtains between (at least) the beginning of the two declarations, which encourages the listener either to attribute the same metrical structure to the two groups, or to interpret alternative and contrasting metrical structures, casing the same words in two varied ways. The 4/4 interpretation supports the former option, because the second “where” is eight eighth notes after the first.

The parallelism is threatened, however, by two marked differences in the rhythmic treatment of the second statement of the word “line,” which receives a lengthy melisma instead of a single-pitched quarter note. It is also attacked a quarter note later than is expected, ten eighth notes after the first “line” (see figure 2a). This is not consistent with the eighth-note duration from the first to the second “where,” which we had heard as determining a 4/4 meter.

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56 The contour accent on E4 is only realized after it moves to D4. The onset of E4 is accented by the leap up as well as the vowel shift to [i]. The change of harmony on “with” refers to the sense of resolution from D4 to C#4; while there is no underlying harmony to substantiate this claim, the D4 (“line”) seems as if it has a dominant function moving to a tonic function at C#4 (“with”).
There is a related problem with both readings of the first statement. They interpret “line” as a downbeat, and the parallelism of the beginning of the statements prepares the listener to expect it in the same position. However, this does not happen, as the second “line” does not occur on a strong beat of either 4/4 meter (it would sound on beat two) or 3/8 meter (it would also sound on beat two).

Figure 2b shows a way of reconciling the initial triple meter, analyzed in 1a, with the apparently contradictory timing of parallel moments. Starting at the beginning of the piece, it shows quintuple meter alternating 3/8 and 2/8 sub measures, following the timing of phenomenal accent at the beginning of each group. In m. 2 of this reading, there is a durational accent followed three eighths later by another durational accent. Two eighths later, at the onset of m. 3, textual parallelism suggests a strong beat. Three eighths later, no pitch is heard, but the moment is accented by Björk’s sharp intake of breath.
Where is the line with you? Where is the line with you?

Figure 2b: The first two vocal statements of analyzed in 5/8 meter

exactly one eighth note after the onset of the word “the,” when we expect to hear “line.” Two eighths later we can hear accent on the word “line,” parallel to that of its first appearance, and Björk gives it some dynamic emphasis. It is followed three eighths later by a durational accent. The accents during m. 5 of this reading are also both durational. In this reading both statements of the word “line” occur on downbeats, and both statements of the words “with” and “you” appear on beats 3 and 4, respectively, encouraging us to hear mm. 4 and 5 as an expansion of m. 2. Specifically, the span of the word “line” has expanded to encompass seven eighth notes rather than two, adding a 5/8 measure, while maintaining a similar accent structure (and therefore meter) for the text.
Despite its good account of accent, Figure 2b accommodates the parallelism of the "where is the" statements somewhat awkwardly. For brevity, I will refer to the "where is the" figure (<C#, E, D>) as WIT. The second WIT is a 3 sub-grouping embedded within a 5/8 measure, but the first WIT is not followed by a 2 sub-grouping to form a 5/8 measure. Therefore these two melodically and rhythmically identical statements are not metrically identical.

As an alternative, Figure 2c attempts to continue the 4/4 meter suggested by the analysis of the opening in Figure 1b. It overcomes the lack of parallelism, explained above, by reading as metrically strong two marked moments when Björk sharply breathes. To be sure, Björk's first breath would be syncopated against the quarter-note pulse and 4/4 meter shown in this reading. Rather, Figure 2c shows 4/4 as gradually emerging.

\[
\begin{align*}
\text{Where is the line with you?} & \quad \text{Where is the line with you?} \\
\text{(breath)} & \quad \text{(breath)}
\end{align*}
\]

\textit{Figure 2c: The first two vocal statements analyzed in 4/4 meter}
The reading is supported by an important, 'figural' aspect of meter that is not much discussed in theories of classical-style rhythm. It is widely recognized that 4/4 is the most common meter in pop or rock music. However, unlike in classical-style meter, where the strongest regular phenomenal accents signal strong beats, the 4/4 of pop music is signified by strong phenomenal accent on weak beats, which are called the "backbeats." In this reading, the important textual accents (except the crucial word "line") do not articulate the significant beats, rather, the pitch accents do. Beat 4 of the opening anacrusis has a contour accent at the pitch E4. Beat 2 of the following measure bears an accent of harmonic change: there may not be any other instruments providing a harmonic basis at this point, but there is a strong sense of a C# Phrygian mode, so the C#4 at beat two sounds like a resolution of the D4 at beat 1. Another accent of contour occurs at beat 4 of the same measure.

Thereafter, the accent pattern changes, but initially it still supports a backbeat 4/4 meter. At the word "line" at beat 2, there is a word-durational and dynamic accent. At the last beat 2 of the figure there is also a durational accent. However, there is no accent at beat 4; instead, there is a syncopated figure that is tied over the beat (the same rhythmic figure also ties over beat 1 of the next measure). Even though syncopation is also a common procedure in pop music, the change from straight to syncopated rhythm weakens the quarter-note beat.

---

The next two statements of the text help to select between the alternative readings presented in Figures 2b and 2c. The third statement of “where is the line” begins 24 eighth notes after the first attack, and it is exactly the same as the first statement. This suggests a parallel structure but excludes the possibility of a continuous 5/8 meter, since 24 is not an integral multiple of five. The parallelism sets up an expectation for the following statement to be similar to the second. The fourth statement does begin eight eighth notes after the third statement, it presents a lengthy melisma on the word “line,” and its pitches and syncopations are similar to those of the second statement. However, there are three notable differences. First, in the fourth statement, the onset of the word “line” begins one quarter note, rather than a dotted quarter note, after the onset of the word “the.” Second, the word “line” has a longer duration and in the fourth statement. Finally, the longer melisma in the fourth statement creates a higher pitch pattern and results in an ending one diatonic step higher than the second statement.

These changes, especially the first two, exert a strong influence in the uncertain metric environment. One way of hearing, shown in Figure 3a, consolidates a trend towards regular durational accent, every three eighth notes, into a 3/8 meter that persists for seven measures. However, this reading is somewhat unsatisfactory because it forces a metrical stress on the word “is” in the fourth statement, which is different from the stress in the second statement to which we expect it to be parallel.
3rd statement:  
Bjork

4th statement:

Where is the line with you? Where is the line

( ) 3

D 3 + 3 = 6 = 2 + 2 + 2???

D 3

Figure 3a: The third and fourth vocal statements analyzed in 3/8 meter

Figure 3b shows another reading that better preserves the parallelism of the fourth and second statements, but involves a striking metric surprise. It shows the third statement and the beginning "where is the" of the fourth statement in 4/4, exactly parallel to the first and second statements (Figure 2c). Then, however, it shows that all metrical projection and counting are suspended during the eighth-note breath, and the 4/4 meter restarts an eighth note later. I will refer to this effect, which recurs significantly later on, as a "shift" in the meter one eighth note "to the right" (i.e. later). At first listen, the word "line" in the fourth statement may sound like it has arrived early. However, the following durational accents so clearly cast "line" as the downbeat of 4/4 that a shift of meter is the best explanation.
Obviously this reading does not exactly preserve a metrical parallelism between the second and fourth statements; “line” attacks on beat 2 of the former and beat 1 of the latter. But because both “lines” are on beats of the same 4/4 (allowing for shifting), these readings are the most parallel of any of the alternatives we have considered. However, the shift is so subtle that the words “with” and “you” really do feel as if they are a beat in a parallel (not shifted) grouping to that of the third statement (and therefore, first and beginning of the second). This is not the case, as will be discussed shortly.

It is evident from this analysis that the meter of the vocal line does change often, and is often ambiguous. There seems to be some direct text painting on Bjork’s part: she is asking the question “where is the line with you,” while
creating such confusion in the meter that the listener asks, “where is the downbeat?” In the next section of the song, however, the 4/4 that is suggested by the hearing of Figure 2b prevails, due to a vamp in the percussion and some of the vocal line’s accents (as will be discussed next). For that reason, I will be discussing this piece as if it were notated in that 4/4 meter, and hear the subsequent vocal groups as superimposing conflicting meters over it.

2.3 The Vamp

A new timbral series of sounds, repeating every three measures, begins on the downbeat of m. 7 (according to my transcription), following four statements of “where is the line with you.” It is comprised of a voice that is altered to sound like a synthesizer, and of drum sounds that reinforces a particular recurring rhythmic motive. The term vamp (an ostinato played “before or between solos, and, by extension, during or after solos”) seems like the best description of the repeated group that these sounds produce, considering Björk’s vocal line as the “solo.” This section will discuss the vamp in detail and how it interacts metrically and hypermetrically with other voices while reinforcing a 4/4 meter.

The vamp takes its material from Björk’s first two statements of “where is the line with you.” Figure 4a shows mm. 7-9 of the two voices that comprise the vamp,

while Figure 4b reiterates Björk’s vocal line at mm. 1-3. Comparing the examples, one can see that beats 1 and 2 of the first measures, beats 2, 3 and 4 of the second measures, and all of the third measures are essentially identical in pitch class and rhythm.

![Vamp](Mel.)

![Vamp](Perc.)

Figure 4a: The vamp at measures 7 – 9

![Björk](Measures 1 – 3)

Figure 4b: The vocal line at measures 1 – 3

Beats 3 and 4 of the first measure of Figure 4a replace the eighth notes of WIT with a new rhythm that is three triplet sixteenth-notes followed by an eighth-note. Its repetition reinforces the quarter-note pulse. This substitution occurs exactly where metrical ambiguity was at its highest in the vocal line, and it therefore hinders any straying from the 4/4 meter. The new drum sounds that accompany
this new rhythmic figure add articulation and textural (entrance of a voice) accents. This places an emphasis on beat 3 of this measure, which reinforces the half-note pulse.

The vamp projects a longer timespan than the vocal line, in part due to expectations created by the vocal line heard earlier. Previous vocal statements established that WIT is an anacrusis to the metrically strong quarter note D4. Therefore, WIT acts as a beginning (see Figure 4a). Unlike the vocal line, however, the vamp presents WIT only every three measures. In m. 7, for instance, when it could appear that the vamp is exactly repeating the m. 1 vocal line, it is replaced by the triplet sixteenth-note motive. This omission of one of the WIT figures strengthens the continuity of the vamp at this moment, and it is not until the reappearance of the figure in m. 9 that one hears the vamp group ending.

Another difference between the vamp and the opening two vocal statements of “where is the line with you” occurs in m. 2 of Figure 4a. Here, the D4 is stated on beat 1, beat 2, the second eighth-note of beat 2, and beat 3, whereas before the D4 was delayed until beat 2. This places a durational accent on beat 1 of m. 2 and draws the ear to the eighth-note, quarter-note and half-note pulses. In light of the syncopated figures that occur at the end of the second and beginning of the third measures, the addition of the accent at the beginning of the second measure of the vamp greatly stabilizes the 4/4 meter.
At m. 9, just before the vamp starts to repeat, a choir joins in with new, also repeated material (see Figure 5). Since it repeats itself every two measures, it forms a hemiola with the three-measure vamp. The hemiola continues until m. 21, where there is a noticeable change in the rhythm of the choir (to be discussed later). While the complex vocal line at the beginning of the piece presented an ambiguous meter on a small scale (as was discussed in chapter 1.3), this hemiola presents an ambiguity of meter on a large scale; the meter is now relatively clear, but the hypermeter is not.

![Figure 5: Measures 9 – 10 of the choir](image)

At this point (m. 9), the vamp begins to enforce the meter in preparation for the next stage of the song. The choir places a durational accent on beat 1 of its first measure, followed by the entrance of a new voice (the male section of the choir) at beat 1 of the second measure, which creates a textural accent. At beat 3 – 4 of its second measure, the soprano section of the choir repeats the pitches of the
tenor voice at beats 1 – 2 of the same measure, but with additional harmony. This creates an accent of textural change on beat 3, so the choral pattern strongly reinforces the whole-note, half-note and quarter-note pulse-streams of the prevailing 4/4 meter. The accents on beats 1 and 3 in the choir help to fill in the missing accents of beats 1 and 3 at the end of the vamp statements. This is especially important in enforcing the meter, as the end of the vamp changes slightly during the second and fourth statements (measures 12 and 18 of my transcription). So, at this point it seems that meter is finally clear. However, this moment of clarity is deceptive in the larger scheme of things.

Subsequent events quickly complicate the meter again. From the anacrusis to m. 9 to m. 18, after the 4/4 meter has been firmly established by the vamp, Björk sings what sounds to be an improvised melody over the vamp. She takes material from WIT and adds new melody and text (i.e. “my purse wide open”). From mm. 8 – 13, she sings three statements beginning with WIT at the expected spot of each measure (as a three eighth note anacrusis to a downbeat). However, at m. 14, Björk begins the fourth WIT as leading into beat 3, instead of beat 1. Cleverly, the first two statements are only eight eighth notes long, while the third, beginning on measure 10, is the longest vocal phrase yet, at 27 eighth notes, ending on “everywhere,” a sort of pun. This length of time between the beginnings of the third and fourth statements causes the listener (who might be focusing on Björk’s voice instead of the 4/4 meter created by the vamp) to possibly lose track of the original meter, and hear a shift of downbeat to beat 3 of the vamp. At the same moment,
the female section of the choir starts its repetition, where beat 3 in the soprano
sounds like beat 1 in the tenor, which may cause further disorientation. This shift
foreshadows more metrical shifting later on, after a transition.

Beginning at the downbeat of m. 9 in the transcription, Björk's solo, the vamp
and the choir interact metrically in rich ways. Up to this point, there has been a
hypermetric downbeat every three measures, created by the parallelism of the first
and third vocal statements (measures 1 and 4) and the beginning of the vamp (m.
7). Therefore, we expect the next hypermetric downbeat to appear at m. 10.
Instead, there is what seems to be a downbeat at measure 9; Björk sings WIT
leading into the measure, and the soprano choir sounds for the first time on beat 1,
creating an early, "false" hyperdownbeat. At m. 10, the anacrusis of the vamp
matches up to that of the vocal line, creating a clear hypermetric downbeat, but it is
somewhat weakened by the choir, which lands on a relatively weak hyperbeat. This
inconsistency of hypermeter will be referred to as hypermetric polyphony.

Any hopes that the various strata with present coordinated hypermetric beats
are further confounded by the metric shift of Björk's vocal line. Before the shift,
there is a hypermetric downbeat created by a WIT vocal anacrusis leading into the
downbeat of m. 11 coupled with the repetition and durational accent in the soprano
choir at that point. At m. 13, the vamp and soprano choir match up for the first time.
But, the metric shift of Björk's voice at m. 14 causes a hyperbeat in the middle of her
measure. From this point until the end of Björk's vocal statement at m. 18, no two
voices produce a strong beat at the same time, negating the feeling of a single, consistent hypermeter, and reinforcing the impression of hypermetric polyphony.

2.4 Preparation for Change

The song maintains a 4/4 meter, a large-scale hypermetric hemiola, and a sense of shifted meter in Björk’s lead vocals, until m. 21. Suddenly, at 1:03, changes in timbre and rhythm, also still supporting a 4/4 meter, provoke an even greater sense of metric displacement. Figure 6 exhibits mm. 20 – 21, when the final measure of a repetition of the vamp is followed by a change in timbre. The vertical dotted line represents where the change in timbre takes place.

Many voices contribute to the change. A new drum kit voice, which attacks every sixteenth note with a soft high-hat, enters, although at this point it provides no discernable accents that would affect meter. While multiple voices contribute to the drum kit sound throughout mm. 21 – 31, they are all gathered under the designation of the drum kit voice because of their rhythmic function. At the same time as the drum kit voice enters, the female choir attacks a new, very different chord: rather than the long consonant chord (G#4, C#5, G#5) and the arpeggiated C# minor triad, the choir sustains a much lower, more dissonant sonority (B3, C#4, D4). Balancing these new events, the synthesized vamp voice becomes more subdued in timbre, muting its previously punchy timbre and constraining its dynamic range.
All of these timbral changes begin at an unexpected metrical position, between beats 2 and 3, which is neither a strong nor a weak beat of the 4/4 meter. The sudden changes off the beat are not only surprising; they also initiate a process that resets the downbeat. Previously, beat one has been defined strongly by the onsets of the only choir chords longer than a quarter note. Indeed, the choir only sounds on beats 1, 3 or 4 up until this point, never on the "and" of a beat. When the choir begins its new low cluster, even with the change in pitch content, the listener prefers, according to the parallelism rule, to hear the onset as metrically strong.
The different lengths of the following choral chords, shown in Figure 7, further confuses meter. No duration repeats, so no pulse-streams are obvious. But there is a latent sense of a whole-note pulse, beginning with the onset of the first chord, which, as discussed before, begins on the “and” of beat two of the 4/4 meter that was previously established. Let us remember that Lester defines accents as “points of initiation.”\textsuperscript{59} I will suggest that we then determine meter, in part, by phenomenal accents, as described by Lester, especially when the meter is unclear.\textsuperscript{60} We can go on to say that the third chord uses new, and higher chord tones that create an accent of harmonic change, which suggests that the third chord falls on some kind of beat. It appears eight quarter notes after the first chord in the example, and the fourth chord appears four quarter notes after the third.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure7.png}
\caption{Durations of choral chords beginning at measure 21}
\end{figure}

Meter is further complicated by the changes in the vamp that affect its metrical interpretation. Previously, the melody of the vamp voice helped in determining beat, meter and grouping, and the percussive motive, shown in Figure

\textsuperscript{59} Lester, \textit{The Rhythms of Tonal Music}, 16.
\textsuperscript{60} Ibid., 13-44.
8, took metrical accent on its first onset, despite our inclination to hear longer
durational values as being metrically strong. However, after 1:03, the melodic vamp
voice is more subdued (as mentioned earlier), but the percussive vamp voice is as
strong as before. The first time it is heard mixed into the new timbre, at m. 22, its
durationally long notes do not sound metrically strong, since they have not before.
However, with the other timbral and metrical changes happening during this time,
the percussive voice is no longer simply a part of the vamp as it was during previous
repetitions. Instead, it has a more elevated responsibility; now it helps the listener
orient herself in an otherwise disintegrating meter.

Vamp Percussion

\begin{figure}
\centering
\includegraphics[width=\textwidth]{percussive_vamp_motive_unshifted_meter.png}
\caption{Percussive vamp motive in the un-shifted meter}
\end{figure}

2.5 Metrical Shift at Measure 25

The metrical ambiguity in mm. 21 – 24 leads to a metric shift by one eighth
note at m. 25. In the new meter, the initial new downbeat is one eighth later than
expected in the preceding metric alignment. In other words, the meter has shifted
one eighth note later. Let us examine how the shift takes place.
Despite all the changes in measure 21, the vamp voice continues its established pattern for a while. One might thus hear the previous meter to persist even though the muting of its timbre lessens its influence on what we hear as accents. By measure 23, the melody of the vamp is hard to discern, while rhythmic voices are fairly prominent. The rhythm strongly promotes an alternative accentual regularity; what used to be syncopations now sound like accented beats. Figures 9a and 9b compare the original vamp (beginning at its anacrusis and completing approximately one and a half cycles), with its version at mm. 23 – 25. The latter has been renotated with respect to the complete transcription to show that the durational accents now occur regularly on different quarter-note beats than the former in its respective meter. This change of tactus is especially striking at m. 25, where it reinterprets the percussive vamp figure such that its durational accents fall on beats 3 and 4.
Also, note the exchange of syncopation and accented beat between the two statements that is illustrated in Figures 9a and 9b. In the original vamp, durational accents arise on beat 1 of the first two measures, while syncopation continues through the second and third measures. In the shifted meter, syncopation occurs during the first two bars while durational accents occur throughout the second and third measures.

In retrospect, after the meter has shifted, we understand Björk’s vocal line at measure 6 more fully. Recall that the end of her fourth statement of “where is
the line with you” (mm. 5 – 6) sounds as if it has been shifted one eighth later (Figure 3b). The grouping of the notes and accent structure create this shifted 4/4 meter, but the song slips back into the original meter immediately after the statement is over. It seems now that measure 6 foreshadows the shift of meter, the section we are currently discussing, since at measure 25, the shifted meter persists without reverting to the original meter. Figures 10a and 10b are crucial moments in the earlier and later vocal statements. Figure 10a renotates the vocal statement of m. 6; it shows the meter of the shifted line rather than the original meter. Figure 10b shows that m. 25 is an expanded version of m. 6. That is, the pitch and accent structures are similar, but m. 25 continues further.

![Figure 10a: The vocal line at measure 6 renotated in the shifted meter](image)

![Figure 10b: The vocal line at measure 25 in the shifted meter](image)
The final repetition of the vamp melody in this section is almost unrecognizable due to both the shift of meter and a change of harmony. At m. 26, the basic pitch series of the vamp voice changes for the first time, shifting down one tone diatonically within the C# Phrygian scale. That is, \(<D_3, B_3, G#_3, F#_3>\) becomes \(<C#_3, D_3, F#_3, E_3>\) and so on.\(^6\) The one exception is the final tone of m. 27, which does not step down to C# as expected, but rather stays on D, the final pitch of the original series. Figures 11a and 11b compare mm. 26 – 27 to the same section of the original vamp, with both examples occurring in the original meter. Figure 11c shows measures 26 – 27 in its shifted meter. Here, the syncopation has disappeared and the accent structure is completely different. For instance, whereas beat 2 has previously been accented in the final measure of the vamp cycle, at m. 27, beat 1 is accented.

\(^6\)This is not true for every pitch of measure 26. Rather, the metrically important ones (those occurring on the quarter- or eighth-note pulse) follow this diatonic shift.
At measure 27, when Björk sings four more statements of "where is the line with you," the timbre continues to change, prompting the attentive listener to expect another shift in meter. At this point the texture is much sparser than before. The melodic vamp voice has dropped out, the percussive vamp voice is accenting the
new beats 3 and 4, the choir is holding its long chord, and the drum kit is playing continuous sixteenth notes, emphasizing the backbeat of the new meter.

Björk's vocal line at mm. 27 – 31 produces a new metrical interpretation of previously-heard vocal statements. The four statements (which are each 8 eighth notes long) are repeats of, respectively, her first, third, first and third statements of the piece. However, Björk times her entrances so that they correspond to the old, unshifted meter. Figure 12 illustrates the accent and grouping structure of mm. 27 – 29. It shows that the repetitions of the first statement, within the new meter, place durational accents on beat 2 and accents of harmonic change on beat 4. Similarly, the repetition of the third statement places durational accents on beat four and accents of harmonic change on beat 2.

![Figure 12: Vocal line at measure 27 – 29 in the shifted meter](image-url)
At the opening of the piece we had no basis for hearing the vocal statements as accenting backbeats, because there were no clues for such a metric interpretation. Such a reading entails hearing syncopation over a timbrally accented moment that seems to act as a downbeat. By m. 27, however, the shifted meter is clear, and we can hear the vocal statements with this new metrical interpretation, especially because of the emphasis of the backbeat by other voices.

2.6 The Shift Back

In the next phase of the piece, the various groups return to their original meter. This time the meter is shifted back an eighth note.

One important agent in this shift is the collection of voices we have called the "drum kit." When it enters at m. 21, the voice is very soft and buried beneath the action surrounding it. First its sixteenth-note pulse simply thickens the texture, but around m. 26 it introduces dynamic accents that provide a prominent backbeat. It sounds like a person is beatboxing with a "ch" quality to the accented backbeats. At the end of m. 31, it morphs into a breathy sound that is only attacking every eighth note, rather than every sixteenth note. It still accents some of its attacks, but they have a more closed (less resonant) sound, and are restricted to the left channel on a stereo.

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62 Beatboxing is the vocal emulation of percussion, primarily found in hip-hop music.
The timbral and rhythmic changes coincide with a metric transition that results from changed timing of the accents in the percussive vamp voice. We expect an accent at beat 4 of m. 31, but it is not delivered. The next accent we hear is on a beat that we expect to be the "and" of beat 1. However, thereafter the accents are very regular, attacking every half note, so we want to hear them again as backbeats. Therefore, the meter has shifted back an eighth note.

A new whistling voice in measures 32 - 34 adds yet another layer of metrical confusion. Figure 13 reproduces it without metrical interpretation. It begins after the shifted-back meter has been established by the first backbeat, so it is firmly rooted in the new meter. However, a closer look reveals that the grouping of the line does not match with the meter; the whistling voice commences on beat 3 of the new meter, but it sounds like it is beginning on beat 1 due to a contour accent on the A5. This is further supported by the suspension created in the second half of the line by the F#, as it would cause a tie over beat 1 in the original meter. One possible explanation is that the first accent in m. 32 is backbeat 4, rather than 2. However, a new section of the song begins at beat 1 of measure 35, which asserts that beat 2 is the first accented beat of the new meter.

Figure 13: Grouping structure of whistling voice at measure 32 – 35
(in non-metrical format)
2.7 Conclusions

There are many different kinds of metric ambivalences and disruptions that occur in the first few minutes of "Where is the Line?" The vocal line at the beginning of the piece proves to be ambiguous. Next, the vamp voice helps to establish a 4/4 meter, but also produces an ambiguous hypermeter. After all of this, there is a metric shift by one eighth note, followed later by a compensating shift back by one eighth. Throughout these disruptions and ambiguities, however, there is a strong sense of compositional connection. For instance, the vocal line at m. 6 predicts the shift at m. 25. Also, the half-note shift of Björk's vocal line at m. 14 foreshadows the unclear downbeat of the whistling voice at m. 32. In these ways – and others – "Where is The Line?" exhibit's Björk's ability as a skilled composer, intent upon using rhythm and metric sensation to produce instabilities that correspond meaningfully with the protagonist's attempt to determine and negotiate boundaries.
3.1 “Undo” – Introduction

Björk’s song “Undo” from the album *Vespertine*, released in 2001, provides another example of conflicting meters between a repeated vamp voice and a solo line. First and foremost, the vamp conflicts metrically with itself, because it incorporates a half-note pulse-stream intersecting with a dotted eighth-note pulse-stream. Secondly, the vocal line consists of two lyrical groups, which are not metrically parallel to each other and do little to confirm a meter. Finally, a harp and a drum machine enter later, further confounding sensations of meter; the former by repeating triplet sixteenths and the latter by constantly changing rhythm.

3.2 The Vamp

In “Undo,” a synthesizer repeats a motive throughout the piece. This vamp voice presents several grouping structures, each supporting a different metric sensation of meter. This section will present the grouping structures and determine a meter.

The first sound is a synthesizer playing a low, resonant Bb1 underneath a brief melodic fragment. Figure 14 reproduces the melodic fragment alone, in a non-metrical format. At first the listener hears a steady pulse, created by the first three onsets, and continued by the fifth and sixth notes. In the transcription of Figure 14,
the pulse occurs every dotted eighth note. Although the choice to notate the pulse duration as a dotted eighth seems counterintuitive (since there is not yet any other referential pulse duration, and in particular no sixteenth-note pulse), it is justified by later events as I will explain below. The main problem with reading a stable dotted-eighth pulse-stream here is that it places the strongest durational accent of the fragment – at the onset of the final, whole-note Bb2 – off the beat. One way to resolve the problem is to regard this onset as metrically strong, but delayed. Christopher Hasty calls such an effect "deceleration" of the event. That is, a series of repeated (interonset) durations induces the listener to project another repetition of the same timespan. When the next onset occurs slightly later than projected, the listener still hears it as realizing the projection, but cognizes the lengthened interonset duration as a deceleration, rather than as a syncopation or other sort of metric disruption.

\[ \text{Synthesizer} \]

\[ \text{Figure 14: Non-metrical transcription of synthesizer voice at the beginning of the piece} \]

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63 At this point the listener just hears a steady pulse without knowing whether it is subdivided (or grouped), and if so, whether it is subdivided (or grouped) duply or triply. When the second Bb sounds two thirds of the way through the pulse duration, the pulse can then be defined as sounding every three sixteenth notes (in my transcription).

The dotted-eighth pulse at the vamp’s beginning has an interesting harmonic property that affects perception of its meter. Figure 15 shows that consistent pitch-class change by ic5, represented by the notes with upward stems, strengthens the dotted-eighth pulses, and helps us to hear the final Bb as belonging to the pulse, even though it is a sixteenth-note late. In this hearing, the first Bb2 sounds as a reminder of tonic rather than a member of the circle of fifths cycle. The final G3 is only a sixteenth note long, and is acting as an anacrusis to the Bb2 (and an echo of the earlier G3). A resultant of any ic5 sequence of pitches is the anhemitonic pentatonic scale. Here, the scale consists of the pitches Bb, C, D, F, and G, with Bb as the tonic (it is sounded on beats 1 and 3 of the first measure of the vamp, and is the goal at beat 1 of the second measure).

\[
D \rightarrow G \rightarrow C \rightarrow F \rightarrow Bb
\]

\begin{figure}
\centering
\includegraphics[width=\textwidth]{vamp_voicewithfig15}
\caption{The circle of fifth progression in the vamp voice}
\end{figure}

This synthesizer vamp, lasting eight quarter notes in total, repeats throughout most of the first half of the piece. This repetition, coupled with the durationally
accented Bb2 sounding a whole note after each beginning, reinforces a whole-note pulse-stream and suggests a 4/4 meter. However, the pulse in the first half of each vamp suggests a 3/16 meter. I prefer to hear the repeated synthesizer vamp in terms of a 4/4 meter, as there are strong accents every whole note, and because the other voices also coordinate with a 4/4 meter. However, I also understand that a 3/16 pulse-stream is indicated within each vamp statement. A deceleration of the 3/16 pulse leads into the Bb2 sustained at the second half of the vamp, during which sensations of 4/4 meter are reinforced by other events. Figure 16 shows my interpretation of the meter and grouping structure of the vamp.  

\[
\begin{array}{cccccc}
3 & 3 & 3 & 3 & 4 \\
\end{array}
\]

Figure 16: Deceleration of pulse in the vamp voice

After four repetitions, the second measure of the vamp changes. The new second measure is similar to the first measure, except that it omits the offbeat sixteenth-note Bb2 in the middle of the measure (see Figure 17). This reinforces the feeling of 3/16 pulse (with deceleration) within the 4/4 meter. The 4/4 meter

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Another possibility is hearing this vamp as having two alternating time signatures: 5/X and 4/4 (where the "X" stands for both the dotted eighth note and its decelerated version). However, the second measure of the vamp, which would be represented by 4/4 meter, does not generally have a clear pulse on its own; it depends on accents from the first measure of the vamp to define its meter. Therefore I prefer to hear the vamp as a dotted-eighth pulse-stream occurring over a 4/4 meter.
itself is not very clear in the new version of the vamp, but because it was established at the beginning of the piece, the listener is still able to perceive it by drawing metric parallelisms between the two statements of the vamp and by responding to rhythms in the other voices (to be described below).

Beneath the pentatonic vamp, with Bb2 as its busiest note, repeated Bb1s produce an underlying half-note pulse for the first half of the vamp, as shown in Figure 18. Here we now observe that the sixteenth-note Bb2 in the middle of the fixed vamp measure coincides with a Bb1 on the second half-note in 4/4. The Bbt sixteenth note on beat 3 is immediately followed by a C4 that has a longer interonset duration. This creates a durational accent on the pitch C4. However, the Bb, supported by the coincident Bb1, effectively sounds through the complete half note, and creates, in a sense, a second pulse stream. So, even within the melodic vamp fragment, there is a dotted-eighth pulse-stream (with a deceleration of the sixth pulse) and also a half-note pulse-stream, created by entries of D3 and Bb2, and reinforced by the repeating low Bb1s.
3.3 The Vocal Line

At the beginning of the piece, coinciding with the beginning of the vamp, Björk sings “It’s not meant to be a strife / It’s not meant to be a struggle uphill.” The line is composed of two recordings of Björk’s voice, performed very nearly in rhythmic and pitch unison, and is restated many times throughout the piece. Like the vamp, Björk’s vocal line produces metric continuities that conflict with the supposed 4/4 meter. Here, I will discuss the metrical projections created by phenomenal accents and the interaction of the vocal line with the vamp line.

Even disregarding the vamp for the moment, we can hear the vocal line interacting in metrically complex ways with itself. Its first five measures are composed of two statements with many similarities, but also with fundamental metric differences. The second group, shown in Figure 19b, is similar to the first group, shown in Figure 19a, in that the words “it’s,” “meant,” “to,” “be,” and “a” of each statement sound on the same respective pitch (i.e. both of the words “it’s” are
sung on the pitch A4, while both of the words “to” are sung on F4, etc.\textsuperscript{66} However, the rhythmic (and metric) aspects of the two groups are very different. The second group begins with the same pitch as the first, but the onset is moved one eighth note earlier. In other words, the second group begins 15 eighth notes after the onset of the first group, rather than the expected 16. This is especially apparent when listening to the groups in close connection with the vamp; the first group begins one eighth note after the onset of the vamp, while the second group begins at the same time as the vamp. This immediately reduces any sense of parallelism between the two lines. Also, the onset of the words “not” and “meant” arrive earlier than expected in the second group – indeed, “meant” is much earlier than expected, much longer in total duration, and elaborated melismatically by double neighbour figuration – while the word “to” happens at the same metrical position in both groups as is evident when comparing Figures 19a and 19b.

\textsuperscript{66} The brackets around the notes representing the words “strife” and “meant” simply denote that there are two voices sounding each word at slightly different times. In both cases, the bracketed note is the first attack, while the second is approximately one sixteenth note later (at the beginning of the subsequent “tied” note).
It's not meant to be a strife.

Figure 19a: The first vocal group

It's not meant to be a struggle uphill.

Figure 19b: The second vocal group

Metrically, the first vocal group has little in common with the vamp. Figure 20 presents the vocal line from "It's not meant to be a strife" along with the vamp line. "It's" begins one eighth note after the synthesizer plays its first note. Four eighth notes after "it's," Björk sings the word "not." Because of the 3/16 pulse in the vamp line, and the contradictory attack points between the voices, the meter at this point is still unclear. However, the attacks of beats 1, 3 and 4 in the vamp (including the low Bb1s), coupled with the attacks four eighth notes apart in Björk's vocal line suggest some a quarter-note or half-note pulse. One can easily hear the first two words in the vocal line as an anticipation or syncopation of the backbeat, or as a syncopated response to the Bb1 half notes in the bass of the synthesizer. Then,
when the vamp line has its decelerated downbeat on Bb2 (in relation to a dotted eighth pulse), Björk has a simultaneous attack on the word “meant” (although there is no phenomenal accent to speak of in the vocal line at this point). However, this coincidence of attacks (at beat 1 of m. 2) helps to establish a set of attacks (the beginning of the piece and beat 1 of m. 2) that support a reading of a 4/4 meter, a meter that will be further reinforced in the coming measures.67

![Figure 20: The vamp and the vocal line at measures 1 - 2](image)

The vocal line then continues downwards out of sync with the 4/4 meter that I have already asserted; then “a strife” sounds syncopated against that pulse and against the quarter note pulse. At the word “strife,” the two recordings of Björk’s voice attack at different points: the first voice attacks about one sixteenth before

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67 It could be argued that a 2/2 meter is being established, not 4/4, because of the half-note pulse just described. However, I justify a 4/4 reading in two ways. First, I see the vocal line at m. 1 as anticipating beats 2 and 4, not simply as late entries to beats 1 and 3. This confirms a 4/4 meter right away, setting the tone for the rest of the song. Second, the first measure of the vamp always attacks beat 4, further setting up a quarter-note pulse.
beat three (continuing the syncopation), while the second voice attacks at about beat 3, more or less, reinforcing the half-note pulse.

Because no other voices are attacking any notes after beat 1 of m. 2, the grouping structure of the line stands out as rhythmically important, although it does not provide a strong sensation of 4/4 meter. The two attack points on "strife" suggest two different ways to group the sixteenth-note pulse of "meant to be a strife": 2 + 1 + 2 + 2 + 9, shown in Figure 21a, and 2 + 1 + 2 + 3 + 8, shown in Figure 21b. Both readings accent the same words, and are virtually identical up until the last word. I can see merits of both renditions. The first reading rhythmically fits the text more aptly; more specifically, the word "a" is of a shorter duration, and sounds more rhythmically natural than the second. However, I prefer the second reading for three reasons. First, the final attack lands on a strong beat, which substantiates the 4/4 meter. Second, the deceleration of attack points (which, if beginning at the word "to" is 1 + 2 + 3 + many) echoes the deceleration of meter previously discussed in the vamp (see Figure 14). Finally, the meaning of the word strife is described by the music: the word "a" is too long, which delays "strife," creating a disagreement (a synonym of "strife").
The second group, "It's not meant to be a struggle" (see Figure 19b) begins by briefly reinforcing the 4/4 meter, but ends by asserting a different meter than either the previous vocal statements or the vamp statements. "It's not" falls on beats 1 and 2 of m. 3. This is the first time we have heard any voice clearly accent beat 2, and it further confirms the 4/4. The word "meant" is sung in a melismatic style. A similar anomaly occurs here as with the word "strife": here, the final pitch of the melisma, A4, is attacked approximately a sixteenth note apart by the two different voices that are singing the line. Once again, I prefer to hear the later attack, this time because it simply reinforces an eighth-note pulse. It also
contributes to the reading of a dotted-quarter pulse-stream, as will be described.

Figures 22a and 22b illustrate the two versions of the vocal line at m. 3.

**Figure 22a: First interpretation of “It’s not meant”**

**Figure 22b: Second (and preferred) interpretation of “It’s not meant”**

A new dotted quarter-note pulse, substantiated by durational accents, occurs in the vocal line beginning on the final pitch of the melisma “meant.” The beginning of this grouping structure is not supported metrically by the vamp, while the rest of the statement sounds over a held whole note, so that it feels less metrically constrained by the accompaniment. Figure 23 illustrates the pulse of the vocal line accompanied by the vamp in mm. 3 and 4. At m. 3, there are two pulse-streams (dotted-eighth and half-note) occurring at the same time in the vamp, while
a third pulse-stream in the vocal line (dotted-quarter) begins to emerge at the end of
the measure. A savvy listener might realize that the dotted-quarter pulse is twice
the duration of the dotted-eighth (although the two streams overlap, or in other
words, they never share a beginning). Regardless of ratios, it is straightforward to
at least hear that the dotted-quarter pulse-stream is of shorter duration than the half-
note and longer duration than the dotted-eighth. So, while there has been some
groundwork made to justify the analysis of this piece in 4/4, two of the three pulse-
streams at mm. 3 – 4 facilitate in the destruction of this meter.

\[ \text{Figure 23: Dotted-quarter pulse of vocal line at m. 4} \]

3.4 Other Rhythmic Conflicts

The harp that enters about halfway through m. 6 further confounds the
meter. It begins very softly and gradually crescendos to about mezzo piano, playing
triplet sixteenth notes consisting of a constant stream of alternating D5s and C5s. Its entrance occurs about three quarters of the way through the third repetition of the vamp. There are many ways in which this new voice hinders the meter. For one, it is playing a rhythm that we have not yet heard. Also, it is not accenting the beats of the 4/4 meter in any way; each note of the triplet is attacked equally, causing the alternating pitches to sound like they should belong in duple meter, not a triplet rhythm. Finally, it enters during a period of no other attack points in the second measure of the vamp. Therefore the listener does not have another pulse in which to compare the harp’s fast moving pairs of triplets. In other words, the listener is not sure whether these are triplets, thirty-second notes, or some other rhythmic denomination; beat 1 of m. 7 consequently comes as a surprise.

Finally, the entrance of the drum machine at m. 9 raises more questions of metric accent. I will not transcribe the voice, as it deals with sixty-fourth notes and is constantly changing; it is best to gain an understanding of it by listening to it. The drum machine begins right on beat 1 of measure 9, causing a sense of accent that further confirms the 4/4 meter. However, this soon changes, as the rhythm seem to constantly change its focus; if a quarter note beat within the 4/4 meter is accented by the drum machine it is fleeting and unsupported by any accents before and after.
3.5 Conclusions

"Undo" presents metric ambiguity in a different way than "Where is the Line?" Here, there are two conflicting pulse streams in the vamp voice that confuse the comprehension of meter. Also, the highly unparallel features of the vocal groups coupled with yet another contrasting pulse at m. 4 do not readily assist the listener's quest for a meter. Finally, the entrance of new voices, the harp and the drum machine, do little to confirm a 4/4 meter. Once again, Björk's compositional skill shines through. Devices such as the highlighting of two pulse streams in the vamp by two different methods (the circle of fifths accenting the dotted eighth pulse and the repeated Bb1 accenting the half-note pulse) demonstrate her style and sophistication. Even though there are improvisatory elements to the vocal line, it too is cleverly composed. The words "strife" and "meant," which are each attacked twice (about a sixteenth note apart each time) are not just ad-libbing; the former can be heard as following a syncopation pattern or as "decelerating" in a similar way as the vamp line, while the latter can be heard as either syncopation or the (unsupported) beginning of a new pulse-stream. Meter is deemed ambiguous in this song by having more than one rhythmic reading in both the vamp line and the vocal line, among other factors.
4 General Conclusions

Björk's music does not follow the path that most popular music does. It is true that she incorporates common pop music ingredients, such as repetition and syncopation, into her songs. However, she also takes care to craft highly intricate rhythmic elements, such as metric shift and conflicting pulse streams, into these compositions. This act of “hybrid” composing is something that is becoming more common in pop music as of late, and warrants more in-depth discussion. I, personally, look forward to Björk’s next album to see what new rhythmic innovation she will create.
Where is the Line

Björk

Transcribed by Kristine Eggertson

Björk

Where is the line with you? Where is the line

(breath) (breath) (breath)

---

Björk

Where is the line with you? Where is the line

(breath) (breath)

---

Björk

Where is the line with you? Where is the line

(breath)

---

Björk

Where is the line with you?
My purse wide open. You ask a-
Björk

I see you try and cash in

Vamp (Mel.)

Vamp (Perc.)

Soprano

Tenor
Björk

--- to accounts everywhere.

Vamp (Mel.)

Vamp (Perc.)

Soprano

Tenor

---
Where is the line with you?

Björk

Vamp (Mel.)

Soprano

Tenor
you? Where is the line with you? Where is the line with

Björk

Vamp (Mel.)

Vamp (Perc.)

Soprano

Tenor
you?
Björk

Vamp (Mel.)

Drum-kit

Soprano

I want to be
flexible. I want to go
out of my way for you
Björk

but enough is enough.

Where is the line

Vamp (Mel.)

Drum-kit

Soprano

Björk

with you? Where is the line with you? Where is the line

Vamp (Perc.)

Drum-kit

Soprano
Björk

with you? Where is the line with you?

Vamp (Perc.)

Drum-kit

Soprano

Drum-kit

Whistle
I am elastic. I want to go.
Undo

Björk

Transcribed by Kristine Eggertson

It's not meant to be a strife.

It's not meant to be a struggle up-
Björk

h.i.l.  A-oo-ah.

It's not meant to be a strife.

(drum machine starts)
Bibliography


