

The ‘Anchoring vi Schema’ and its relation to phrase rhythm in popular music

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Abstract

In order to reveal normative prototypes undergirding various formal sections, this article introduces the ‘Anchoring vi Schema’: a medium length major-mode passage (typically eight or 16 bars) that initiates on an unambiguous hypermetric downbeat (for example, the beginning of a verse or chorus). The Anchoring vi Schema must begin with tonic harmony and deploy submediant harmony at its midpoint – the second most hypermetrically strong beat. The identification of the Anchoring vi Schema enables closer readings of phrase expansion and deletion in popular music. A comparison of the common harmonies used in eight- and 16-measure passages reveals some striking similarities, particularly in terms of where tonic and subdominant chords are likely to occur. Although the endings of formal sections can take a variety of paths – including arriving at various tonal goals within a range of possible times – hypermetrically accented beginnings and midpoints show greater consistency in their organisation.

Introduction

Broadly speaking, popular music organises into quadruple hypermetre more often than not (Stephenson 2002, p. 5; Temperley 2018, p. 143). It is not uncommon for quadruple hypermetre to persist with no alterations or disruptions throughout every section of a song’s form. Writing about rock in particular, Ken Stephenson points out that ‘the perception of [four-bar units] normally arises as a result of repetitive patterns in the instrumental accompaniment, for instance, the regular recurrence of tonic harmony or of an instrumental hook every four (or two or eight) measures’ (2002, p. 5).¹ Corpus studies by Burgoyne (2011, p. 173) and Summach (2012, p. 238) have shown that tonic is the most common harmony at the beginning of most formal sections in popular music; de Clercq (2017b, p. 164) has reported similar findings for rock. Consequently, stylistically competent listeners have probably developed expectations concerning the placement of tonic harmony relative to certain metric positions. What happens, however, when songs expand or contract formal sections? Rothstein (1989) demonstrated how expanded and contracted phrases in Western classical music may be related to prototypical models of normative lengths, such

¹ In a corpus study of rock songs, David Temperley found that nearly half (49.7%) of all harmonies starting on odd-numbered downbeats were tonic (2018, p. 37).

0:57 D:I V IV iii V

...now How do I live with - out you? I want to know.

3 I V IV iii

How do I breathe with - out you if you ev - er go?_

5 vi ii iii IV

How do I ev - er, ev - er sur - vive?_ How do I,

8 V^{II} I E: IV V

how do I, oh, how do I live?_ With-out you...

Example 1: The first chorus of Leann Rimes's 'How Do I Live' (1997).

as four or eight measures. Theorists of popular music do not agree about the viability of applying traditional tonal concepts (such as 'phrase') to popular music, though (Stephenson 2002, p. 7; Attas 2011, paragraph 2; Temperley 2018, p. 61). Without demanding that popular music fulfill certain cadential requirements, I nevertheless submit that it is possible to theorise about phrase expansion in popular music.

A brief example will furnish some motivating questions for this study. [Example 1](#) shows the first chorus of Leann Rimes's 'How Do I Live' (1997). The chorus begins with two similar two-bar melodic and harmonic ideas, totalling four measures of music that entrain the listener to expect four measures with a similar harmonic design to ensue. The second half of the chorus (from m. 5 onward), however, begins with submediant harmony instead of tonic harmony; furthermore, the second half of the chorus is not the same length as the first half. The bar of 2/4 (m. 6) adds a wrinkle to the hypermetrical interpretation of mm. 5–9. In quadruple metre contexts, Nicole Biamonte observes that 'Often, a melodic arrival on beat 3 is reinterpreted as the downbeat of a new unit to create [a] 2/4 bar' (2014, paragraph 7.6). The melodic arrival on the long D5 in the vocal melody ('-vive') justifies the reading of a 2/4 bar immediately after m. 5; although the harmonic rhythm slows temporarily, it nevertheless reinforces the strength of the downbeats of the seventh and eighth measures. Measure 6 is clearly not a partial-bar link at the end of a formal section, however. Should the bar of 2/4 (m. 6) group with the previous measure or the ensuing measure?

In order to reveal the normative eight-measure prototype undergirding the chorus of 'How Do I Live', this article will introduce the 'Anchoring vi Schema' and demonstrate how passages like that shown in [Example 1](#) relate to it.² Criteria

² Robert Gjerdingen defines a schema as a psychological entity residing in 'that portion of the entire perceptual cycle which is internal to the perceiver, modifiable by experience, and somehow specific to what is perceived' (1988, p. 4).

for the Anchoring vi Schema include style, length, metric accent, mode and harmony. The Anchoring vi Schema is a medium-length major-mode passage (typically eight or 16 bars) of popular music that initiates on an unambiguous hypermetric downbeat (for example, the beginning of a verse or chorus). The Anchoring vi Schema must begin with tonic harmony and deploy submediant harmony at its midpoint – the second-most hypermetrically strong beat (for example, the fifth downbeat of an eight-bar passage, or the ninth downbeat of a 16-bar passage). As shall be suggested below, normative expectations concerning the particular harmonies emphasised most within the Anchoring vi Schema may be even more specific. In this article, I will argue that the identification of the Anchoring vi Schema enables closer readings of phrase expansion in popular music. Furthermore, the schema provides a new vantage point on certain formal ambiguities as well as listener-based subjectivities. The findings presented below suggest new avenues for corpus-based research into harmony in popular music. The following sections will provide background on harmonic patterns and phrase rhythm in popular music, introduce a new phrase model, and analyse strategies for phrase expansion and deletion of increasing complexity.

Background and methods

My study of the Anchoring vi Schema has led to general observations about how harmony contributes to the structuring of time in popular music. By this statement, I refer to harmony's influence on phrase rhythm, as well as its interaction with rhythm and metre. In the following paragraphs, I intend to introduce terminology to be employed in my argument. Crucial to my purposes will be a consideration of the notion of a 'phrase' in popular music, as well as an assessment of the viability of observing cause-and-effect relationships in the domain of harmony.

Although many formal sections in popular music are either eight or 16 measures long, some are neither, often owing to the presence of phrase expansion, metrical reinterpretation or other related phenomena. In order to explain how non-normative passage lengths arise in popular music, this article will draw on William Rothstein's (1989) ideas on phrase rhythm and phrase expansion. The passages examined in this article may be compared with Rothstein's 'basic phrase', a passage of tonal classical music that typically has a well-defined hypermetre. Basic phrases may be expanded to create expanded phrases, but the expansion does not affect the entire basic phrase equally or proportionally. A specific portion of the basic phrase may be transformed by means of expansion. In some of the songs examined below, the 'basic phrase' never appears; the song may instead repeat the expanded 'phrase' throughout. Rothstein observes that 'Where no literal statement of the basic phrase appears – and this is true of many phrases that are expanded by parenthetical insertion – other factors may give clues to the presence of an expansion: a significant slowing of harmonic rhythm, a clear connection across a parenthetical gap, or . . . the disruption of an established hypermeter' (1989, pp. 92–93). In cases where an Anchoring vi Schema has undergone an expansion, the vi chord may not index the literal midpoint, but rather the midpoint of a conceptual unexpanded prototype.

In contradistinction to how some theorists of tonal music define a 'phrase', the Anchoring vi Schema does not require a half cadence or an authentic cadence at its conclusion. The medium-length passages of popular music examined herein show evidence of harmony's general capacity to influence phrase rhythm, and in that particular respect the Anchoring vi Schema resembles Rothstein's 'basic phrase'. It is not

my intention, however, to subject popular music to the phrase-analytical criteria typically applied to music of the common practice period. Robin Attas concurs, offering that 'Rothstein's strong emphasis on tonal motion may not be entirely suitable for popular music, where cyclic harmonic progressions, expanded harmonic vocabularies, and groove-based structures often result in a very different harmonic idiom' (2011, paragraph 5). Notably, some of my analytically minded predecessors assert the existence of a phenomenon similar to phrase rhythm in traditional tonal music operative in popular music. Richard Middleton argues for the recognition of 'large-scale continuities' between the two styles (1990, p. 119). In the context of rock music from the period 1955–1969, Walter Everett writes of measuring units (such as phrases) 'against normal, prototypical lengths that exist as abstract standard models' (2009, p. 328). Finally, Attas shows how a re-conception of the notion of 'phrase' may allow for discussion of phrase rhythm in popular music – demonstrated through the analysis of music by contemporary singer-songwriter Sarah McLachlan (2011).

Recent studies of harmony in popular music introduce new solutions to the problem of how to account for the differences between the syntax of common practice tonality and styles such as rock. Christopher Doll (2017) introduces a wealth of goal-oriented (i.e. tonic-oriented) harmonic schemas. Additionally, Doll divorces chord category from syntax in order to theorise about different harmonic functions. Particularly useful is Doll's notion of a functional 'anchor': 'a chord that is hierarchically superordinate [to chronologically adjacent chords] on some harmonic level' (p. 77). Doll also describes the 'phrasal effect', the bottom-up generation of musical coherence within a passage owing to its melody, lyrics, metre and harmonic schema(s) (among other factors) (p. 85). Drew Nobile (2020) also pursues the explication of rock harmony as goal-oriented trajectories, adopting (and adapting) a Schenkerian approach in order to do so. Nobile, however, doubts the value of analysing surface-level chord successions, favouring instead functional hierarchical analyses. My approach to identifying schemas will further the conversation surrounding surface-level and hierarchical views of harmony in popular music by emphasising the role of hypermetric accent.

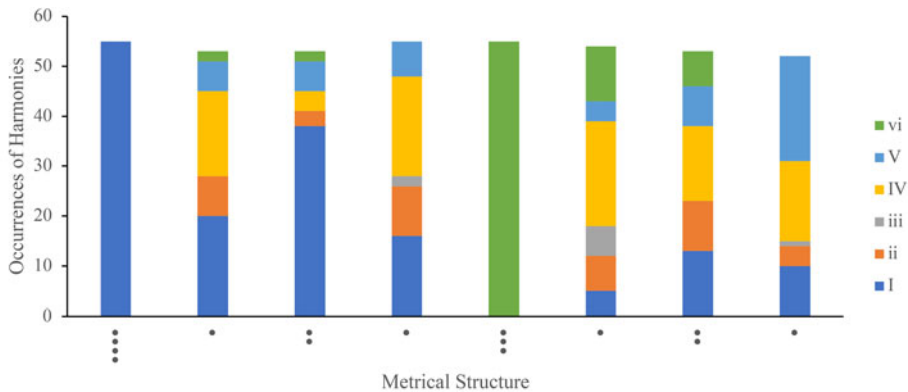
Two neoteric publications – de Clercq (2017b) and Temperley (2018) – report findings from a corpus study of rock music. The authors constructed their shared corpus by methodically selecting from *Rolling Stone* magazine's '500 Greatest Songs of All Time' list. In addition to research on the harmonic characteristics of formal section types (verse, chorus, bridge), de Clercq's article contributes insights on harmonic rhythm and proportional chord durations. Temperley's study examines a broader range of musical parameters, yielding both data and generalisations pertaining to rhythm and metre, instrumentation, form, and strategies for song construction.

Although de Clercq (2017b) investigated common harmonies at the beginning of formal sections, less attention has been paid to formal sections' midpoints. Many of the song excerpts discussed in this article may be divided into four smaller passages along the lines of Walter Everett's SRDC (Statement – Restatement – Departure – Conclusion) phrase structure, with the anchoring vi chord heralding the arrival of the Departure 'phrase' (2009). Nobile (2011) observes that, following a prolongation of tonic throughout the Statement and Restatement phrases, the submediant is a harmonic possibility for beginning the Departure phrase. Nobile, however, along with Summach (2011), show that the subdominant is a more common harmony in this position in the particular repertoire that they

study. The following section will supply further detail to the under-studied harmonic scenario of the submediant anchoring a section's midpoint.

A new phrase model

The Anchoring vi Schema is a medium-length major-mode passage of popular music that initiates on a hypermetric downbeat with tonic harmony and deploys submediant harmony at its midpoint. Both the initial tonic chord and the midpoint vi chord exhibit the anchoring effect – they are hierarchically superior to the chords in their vicinities on account of hypermetric accent and their inclusion of the tonic scale degree. The initial tonic chord is normative, however; the midpoint vi chord is the distinctive feature of the schema. Without specifying too strictly whether the passage in question comprises one – and only one – formal section (e.g. a verse), I will clarify that an accented beginning to the passage is all-important. As Carl Schachter observes, 'If only because of its novelty, the beginning of the new span attracts more attention than the end of the old one, and the emphasis accrues to the event that the new span brings to the listener' (1999, p. 82). Anchoring vi Schema prototypes are typically eight or 16 measures in duration. Passages that fulfill these requirements often share additional harmonic similarities. [Example 2](#) shows a bar chart of the most common harmonies on the downbeats of an eight-measure instance of the Anchoring vi Schema as found in a set of 55 instances of the schema. [Table 1](#) lists the song excerpts included in the set. The most common harmonies of the downbeats of odd-numbered measures in 16-measure instances of the Anchoring vi Schema are shown in [Example 3](#). The 32 songs of that set are listed in [Table 2](#). A comparison of [Examples 2](#) and [3](#) reveals some striking similarities between the eight-measure passages and the 16-measure passages. A quarter of the way through the passage (i.e. the third downbeat of an eight-measure passage or the



vi	0	2	2	0	55	11	7	0
V	0	6	6	7	0	4	8	21
IV	0	17	4	20	0	21	15	16
iii	0	0	0	2	0	6	0	1
ii	0	8	3	10	0	7	10	4
I	55	20	38	16	0	5	13	10

Example 2: The six most common harmonies on the eight downbeats of eight-measure Anchoring vi Schemas. The 55 song passages represented here are listed in [Table 1](#).

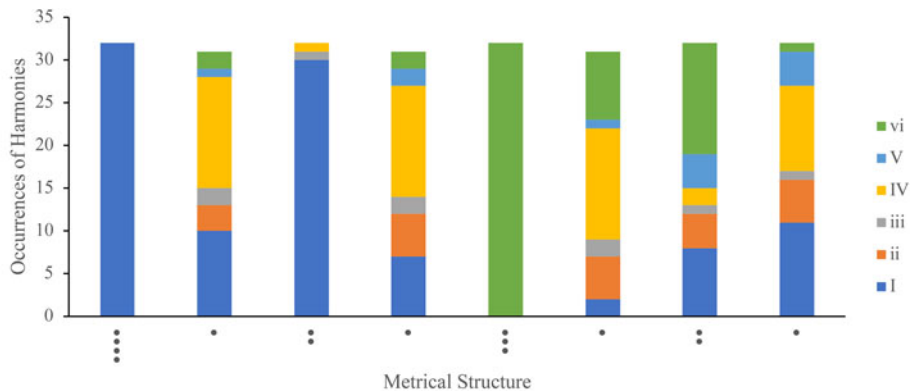
Table 1. Eight-measure Anchoring *vi* Schema passages in songs, 1963–2019. The tempo of each song is indicated in the column labelled 'BPM'.

Year	Song	Artist(s)	Section(s)	BPM	Meter
1963	All Alone Am I	Brenda Lee	Bridge	66	12/8
1967	Never My Love	Association	A section	92	4/4
1967	Dedicated to the One I Love	The Mamas and the Papas	Verse	69	12/8
1967	The Day That Love Began	Stevie Wonder	1st A section	69	12/8
1970	Without You	Badfinger	Verse	69	4/4
1972	Melissa	The Allman Brothers Band	Bridge	84	4/4
1972	You're So Vain	Carly Simon	Chorus	108	4/4
1974	Sometime	James Brown	Verse and Chorus	72	12/8
1976	Shannon	Henry Gross	Verse	88	4/4
1977	Here You Come Again	Dolly Parton	Verse	104	12/8
1979	Brass in Pocket	The Pretenders	Verse	100	4/4
1980	Keep on Loving You	REO Speedwagon	Chorus	88	4/4
1982	Comin' In and Out of Your Life	Barbra Streisand	Chorus	69	4/4
1984	I Miss You	Klymaxx	Verse	72	4/4
1985	We Are the World	U.S.A. for Africa	Verse, Chorus, Bridge	72	4/4
1986	Throwing It All Away	Genesis	Verse	80	4/4
1987	Meet Me Half Way	Kenny Loggins	Chorus	58	4/4
1988	Every Rose Has Its Thorn	Poison	Instrumental Bridge	69	4/4
1989	Lost in Your Eyes	Debbie Gibson	Verse	72	4/4
1990	Wind of Change	Scorpions	1st Chorus	76	4/4
1991	Beauty and the Beast	Céline Dion and Peabo Bryson	Instrumental Bridge	78	4/4
1991	The Motown Song	Rod Stewart & The Temptations	Chorus	116	12/8
1992	Hey Jealousy	Gin Blossoms	Chorus	152	4/4
1994	I Swear	All-4-One	Verses 2 and 4	84	4/4
1994	Buddy Holly	Weezer	Chorus	120	4/4
1995	Anything	3T	Verse	66	4/4
1996	Destin	Céline Dion	Verse	130	4/4
1996	Push	Matchbox 20	Chorus	88	4/4
1997	Bitch	Meredith Brooks	Verse	98	4/4
1997	Be the Man (On This Night)	Céline Dion	Verse 2	58	4/4
1997	The Reason	Céline Dion	Verse	73	4/4
1997	At the Beginning	Richard Marx and Donna Lewis	Verse	92	4/4
1997	Good Riddance (Time of Your Life)	Green Day	Verse	92	4/4
1997	Quit Playing Games (with My Heart)	Backstreet Boys	3rd Chorus	96	4/4
1998	The Arms of the One Who Loves You	Xscape	2nd Chorus	58	4/4
1999	Blue Eyes Blue	Eric Clapton	Chorus	70	4/4
2000	Easy Way Out	Elliott Smith	Verse and Refrain	50	12/8
2000	Stupidity Tries	Elliott Smith	3rd Verse	84	12/8

Continued

Table 1. Continued

Year	Song	Artist(s)	Section(s)	BPM	Meter
2000	Lucky	Britney Spears	2nd and 5th Chorus	96	4/4
2000	Shape of My Heart	Backstreet Boys	Chorus	92	4/4
2001	My Stupid Mouth	John Mayer	Verse	88	4/4
2002	Goodbye's (The Saddest Word)	Céline Dion	Chorus	69	4/4
2003	Hey Julie	Fountains of Wayne	Verse	138	4/4
2004	Bless the Broken Road	Rascal Flatts	Verse	66	4/4
2005	Bad Day	Daniel Powter	Verse	69	4/4
2008	Love Story	Taylor Swift	Chorus	120	4/4
2012	Ho Hey	The Lumineers	Verse	79	4/4
2013	Chasing the Sun	Sara Bareilles	Verse, Postchorus	84	4/4
2013	Almost Is Never Enough	Ariana Grande	Verse	42	12/8
2014	Central Park Serenade	Renée Fleming and Gregory Porter	Chorus	76	4/4
2016	I Don't Wanna Be Okay Without You	Charlie Burg	Verse	63	4/4
2016	They Don't Know	Ariana Grande	Chorus	96	4/4
2016	Fight Song	Rachel Platten	1st and 3rd Verse	88	4/4
2018	Come Back to Earth	Mac Miller	Chorus	72	4/4
2019	Another One Down	Richard Marx	Chorus	80	4/4



vi	0	2	0	2	32	8	13	1
V	0	1	0	2	0	1	4	4
IV	0	13	1	13	0	13	2	10
iii	0	2	1	2	0	2	1	1
ii	0	3	0	5	0	5	4	5
I	32	10	30	7	0	2	8	11

Example 3: The six most common harmonies on the eight strongest downbeats of sixteen-measure Anchoring vi Schemas (in other words, the downbeats of odd-numbered measures). The 32 song passages represented here are listed in Table 2.

fifth downbeat of a 16-measure passage), tonic harmony is often emphasised. The lowest-level downbeats on both charts (i.e. those labelled with a single dot) tend to emphasise subdominant harmony.

Table 2. 16-measure Anchoring *vi* Schema passages in songs, 1960–2022. The tempo of each song is indicated in the column labelled ‘BPM’.

Year	Song	Artist(s)	Section(s)	BPM	Meter
1960	Cathy’s Clown	The Everly Brothers	Chorus	116	4/4
1964	Eight Days a Week	The Beatles	A section	138	12/8
1964	I Don’t Want to Spoil the Party	The Beatles	A section	184	4/4
1965	Help Me, Rhonda	The Beach Boys	Verse	132	12/8
1965	In My Life	The Beatles	Verse	100	4/4
1965	The Night Before	The Beatles	A section	168	4/4
1968	Abraham, Martin and John	Dion	A section	144	4/4
1975	Sunrise	Eric Carmen	A section	126	4/4
1979	Let Go the Line	Max Webster	1st Verse	108	4/4
1983	China Girl	David Bowie	Verse	134	4/4
1983	Don’t Let It End	Styx	Chorus	112	4/4
1984	Drive	The Cars	Verse	84	4/4
1986	Big Man on Mulberry Street	Billy Joel	Verse	116	12/8
1987	Out of the Blue	Debbie Gibson	Verse	126	4/4
1987	Hungry Eyes	Eric Carmen	Verse	110	4/4
1987	Cherry Bomb	John Mellencamp	Verse	114	4/4
1991	Drawn to the Rhythm	Sarah McLachlan	Verse	96	4/4
1991	These Three Words	Stevie Wonder	Verse	76	4/4
1993	I’d Do Anything for Love (But I Won’t Do That)	Meatloaf	Intro	88	4/4
1996	Who Would Imagine a King	Whitney Houston	A Section	84	3/4
1998	I Do (Cherish You)	98 Degrees	Chorus	84	4/4
2001	Standing Still	Jewel	Chorus	122	4/4
2003	I Love This Bar	Toby Keith	A Section	116	4/4
2003	Beautiful Disaster	Kelly Clarkson	Verse	108	4/4
2008	Use Somebody	Kings of Leon	Verse	132	4/4
2010	Club Can’t Handle Me	Flo Rida	Chorus	126	4/4
2010	Dancing on My Own	Robyn	Chorus	116	4/4
2011	Skyscraper	Demi Lovato	Chorus	104	4/4
2012	Just Give Me a Reason	P!nk feat. Nate Ruess	Verse	96	4/4
2018	Happy and Sad	Kacey Musgraves	Chorus	88	4/4
2022	So Good	Halsey	Chorus	166	4/4
2022	Less Than Zero	The Weeknd	Verse and Chorus	144	4/4

Constructing the charts required some decision making, particularly with respect to chordal inversions. In compiling these data, I considered first-inversion chords to be equivalent to root-position chords (since they seemed to behave the same way; see, for instance, [Example 6](#) below). I classified second-inversion chords according to how they function. Mobile notes that tonic pedal points in the bass voice tend to produce the impression of a single harmony (2020, p. 14). Therefore, I considered pedal six-four chords over a tonic bass to be tonic chords, and furthermore considered cadential six-four chords to be dominant chords.³ These decisions applied to a small percentage

³ The corpus also includes a small number of passing six–four chords with scale-degree 5 in the bass, connecting *vi* and some kind of predominant with scale-degree 4 in the bass. I interpreted these chords as *vi*42 chords with omitted roots.

of the data; root-position was by far the most common position of chords in the set of songs, echoing findings from a corpus study of rock by de Clercq and Temperley (2011, p. 66). I considered seventh chords and all other extended tertian chords to be equivalent to triads of the same root.⁴ The six chords represented in Examples 2 and 3 – I, ii, iii, IV, V, and vi – were the most common chords used. Other chords (such as bVII and bVI) occasionally arose in the analysis; for the sake of an uncluttered presentation of data, I omitted them from the bar charts.

A closer look at one of the passages cited in Table 1 will show how the data points in Example 2 were generated and reveal some features common to the set of songs on the whole. Klymaxx's 'I Miss You' finished third on the year-end Billboard Hot 100 chart for 1986. Example 4 shows a transcription of the first verse of 'I Miss You'. As Temperley points out, sometimes the first verse-chorus unit has two verses instead of one (2018, p. 154). The verse harmony illustrated in Example 4 is quite representative of eight-bar Anchoing vi Schemas: the first half of the passage emphasises tonic, the passage's midpoint coincides with a harmonic change to the submediant and the section concludes with dominant harmony. Also idiomatic to the Anchoing vi Schema is the stepwise descending bass line from scale-degree 6 to scale-degree 4 in mm. 5–7.⁵ The pre- and post-anchor harmonies are clearly subsidiary to the anchor – vi.

The verse of 'I Miss You' may be thought of as an eight-measure 'basic phrase in popular style'. Tonic prolongation throughout mm. 1–4 reinforces the quadruple hypermetre, normative in popular music. In this case, shifting harmonies above the tonic pedal associate relative stability with hypermetric strength.⁶ An illustration of the anchor effect at the most local level may be seen in the secondary dominant in m. 4 that briefly tonicises the vi chord that ensues in m. 5. Middleton offers that 'All musical events relate forward (through expectation and implication) and back (through memory), and their function and meaning change as the processual dynamic unfolds' (1990, p. 219). The vi chord's appearance on the downbeat of the hypermetrically accented fifth measure telegraphs to the listener an expectation that the formal section presently unfolding will last a total of eight measures, an expectation that is later confirmed. In the following two sections, I will examine expansions and deletions of the Anchoing vi Schema. To be clear, however, unexpanded eight- or 16-measure passages are more common in popular music in general, on account of the general preference for consistent quadruple hypermetre. Passages like the verse of 'I Miss You' participate in establishing a norm from which other songs may make expressive departures.

The effect of the submediant harmony at the Anchoing vi Schema's midpoint bears some similarities to that of a deceptive cadence: the listener, expecting tonic during a specific moment of rhetorical significance, is surprised to apprehend the submediant instead. As David Huron points out about deceptive cadences, the feeling of surprise occasioned by the vi chord is likely to arise even if the listener is quite familiar with the song in question, since the I chord remains a more likely outcome in that temporal position (2006, p. 226). The process by which songs

⁴ With the exception of my treatment of pedal six–four chords, these representations take an approach similar to how Christopher White and Ian Quinn represented the harmonies of the Kostka-Payne corpus in their application of Hidden Markov Models (2018, p. 320). My classifications bear some resemblance to how de Clercq and Temperley classified the chords of their 'RS 5 × 20' corpus (2011, pp. 47–70).

⁵ See also the similar progression in 98°s 'I Do' (1998), shown in Example 13: vi–(42)–#iv^{o7}–ii–V.

⁶ As Stein and Spillman observe, 'structural harmonies usually occur in metrically stressed positions' (1996, p. 107).

0:26 F: I³ 8 9 10 9 V⁶/vi

Thought I heard your voice yes - ter - day, when I turned a - round to say that I loved you, then I re -

5 vi 4 #iv° ii⁶ V⁹

- al - ized. that it was just my mind play - ing tricks on me. It seems...

Example 4: The first verse of Klymaxx's 'I Miss You' (1984).

entrain their listeners to expect certain events in specific temporal locations is a complex and multi-faceted one. The criteria introduced above – in particular, excluding passages that *begin* with anything other than tonic – filtered out any song passages that use the submediant as the first chord of every hypermetrical unit. Many of the songs listed in Tables 1 and 2 clearly establish two- or four-measure harmonic patterns that begin with tonic (often with corresponding melodic patterning). Because of the prevalence of repeated chord progressions in popular music, it is likely that listeners would expect an additional pattern repetition at the midpoint of a formal section (among other places). The Anchoring vi Schema surprises the listener through the violation of schematic expectations. Indeed, David Lewin speaks of the expectation of the tonic chord in an authentic cadence as something that only occurs within a 'broader mental construct' that includes the musical context leading up to the cadence (1986, p. 333). Although occasionally the submediant harmony at the schema's midpoint immediately follows a dominant chord and harmonically resembles a deceptive cadence closely – such as in Example 12, below – the main violation of schematic expectations concerns the presence of the submediant in a hypermetric location more commonly occupied by tonic.

The proportional similarities in the use of particular harmonies between eight-measure and 16-measure passages demonstrated by the comparison of Examples 2 and 3 call to mind William Caplin's notion of 'real' *vs.* 'notated' measures (1998, p. 35). If the 16-measure passages are conceptually twice as fast as the eight-measure passages, then one could express the relationship as $R = 2N$ (a real measure, R , equals two notated measures, N). Thus, it may be the case that the 16-measure passages in Table 2 have eight 'real' measures. Given that the songs listed in Tables 1 and 2 were all released as recordings – not published scores – the distinction between eight- and 16-measure passages may also be illusory.

Where possible, I assumed simple quadruple metre as a norm and treated the backbeat (as provided by drum set or other percussion) as an authoritative guide to the tempo and passage lengths (following Doll 2017, p. 286). A small number of songs include pulses grouped in threes at a relatively low metric level; such songs may be heard as a slow compound quadruple metre by some listeners, or a fast simple triple metre by other listeners. The BPM and metre columns of Tables 1 and 2 provide the necessary clarification. Trevor de Clercq has raised questions concerning the reliability of determining a song's tempo from the drummer's backbeat pattern – for example, a drummer may make extensive use of a half-time feel, or a double-time feel (2016, paragraph 3.5). Richard Marx's song 'Another One Down' (2019) presents an ambiguous case in this regard. For this reason, I have not ruled out the possibility of shorter (four-bar) and longer (32-bar) Anchoring vi Schemas, although my focus here is primarily eight- and 16-bar passages. The average

tempo of the eight-measure passages listed in [Table 1](#) (~84 bpm) is slower than the average tempo of the 16-measure passages listed in [Table 2](#) (~117 bpm). It is possible that a number of songs in [Table 1](#) have half-time feel backbeat patterns, and perhaps belong in [Table 2](#) instead. [Examples 2](#) and [3](#) demonstrate that Anchoring vi Schemas tend to share certain structural similarities, regardless of the perceived tempo. In this view, hypermetric accent – relative to the length of a passage – accompanies hierarchical strength in the domain of harmony.

I have avoided prescribing too strictly whether or not an Anchoring vi Schema should be equated with a formal section. There are two notable areas of what de Clercq terms *verse ambiguity* (2017a, paragraph 3.1) worth mentioning here. Especially with older popular music, it is not always clear whether a refrain that follows a verse should be considered as its own formal section (i.e. a chorus) or not. Also, it is not always easy to tell the difference between a 16-measure verse and an eight-measure verse followed by an eight-measure prechorus. I have conceived of the Anchoring vi Schema in such a way as to be inclusive of all the aforementioned scenarios. Given the schema's prevalence throughout the last six decades, it may have bolstered formal coherence during periods in which formal approaches underwent transition.⁷

Finally, [Table 3](#) presents a list of expanded and contracted Anchoring vi Schemas based on eight-measure prototypes. [Table 4](#) presents a similar list for 16-measure prototypes. As the passages listed in these tables vary greatly in total length, it is impractical to compare structural harmonies in bar chart form (such as in [Examples 2](#) and [3](#)). Nevertheless, meaningful comparisons between individual song passages and their prototypes may be made. The following two sections categorise common strategies for expansions and contractions of the model.

The anchoring vi schema and single-strategy hypermetrical disruptions

The first type of hypermetrical disruption explored in this section is the most straightforward and prevalent: elision. [Example 5](#) shows analysis of the phrase rhythm in the first chorus of Samantha Mumba's 'Don't Need You To (Tell Me I'm Pretty)' (2001). The chorus is based on an eight-measure Anchoring vi Schema. The eight-measure prototype never appears in the song, however, owing to the song's consistent use of a technique that Rothstein refers to as 'metrical reinterpretation': 'when the last bar of one hypermeasure is treated simultaneously as the first bar of a new hypermeasure' (1989, p. 52). Part of the effectiveness of this song's use of hypermetric reinterpretation is due to the fact that the verses and bridge consistently avoid root-position tonic harmony, reinforcing the association between tonic stability and the accented beginning of the chorus.⁸ Harmonically, the eighth measure of the first chorus supplies the resolution of the dominant in m. 7. Melodically and lyrically, however, the eighth measure sounds almost exactly the same as the first measure. Mm. 8–9 initially sound as if they may be the first two measures of a repeat of the chorus that has arrived one bar early on account of the elision of the first chorus's eighth and final bar. As the vocals trail off, however, these measures become what Christopher Endrinal has termed a link (2008, p. 68), providing the necessary

⁷ For example, on the rise of the prechorus, see Summach (2011).

⁸ The bridge of 'Don't Need You To' features a prominent anchoring vi chord as anchor in its fifth bar, on the way to an expansion and ultimately a T2 pump-up modulation. As the bridge does not begin with tonic harmony, however, I did not include the formal section in [Table 3](#).

Table 3. A supplemental list of expanded or contracted *Anchoring vi* Schemas based on eight-measure prototypes, 1963–2012. The tempo of each song is indicated in the column labelled 'BPM'.

Year	Song	Artist(s)	Section(s)	BPM	Meter
1963	P.S. I Love You	The Beatles	Verse	132	4/4
1971	Rainy Days and Mondays	The Carpenters	Verse	76	4/4
1973	Goodbye Yellow Brick Road	Elton John	Chorus	63	4/4
1975	I Write the Songs	Barry Manilow	Chorus	69	4/4
1977	Give a Little Bit	Supertramp	Verse	88	4/4
1979	Message in a Bottle	The Police	Chorus	146	4/4
1984	If You Leave Me Now	Chicago	Verse	106	4/4
1984	God Bless the USA	Lee Greenwood	Chorus	69	4/4
1984	The Search Is Over	Survivor	Verse	63	4/4
1985	Secret Lovers	Atlantic Starr	Verse	80	4/4
1985	Saving All My Love for You	Whitney Houston	Verse	69	12/8
1986	Glory of Love	Peter Cetera	Chorus	72	4/4
1988	Eternal Flame	The Bangles	Chorus	79	4/4
1989	Don't Know Much	Linda Ronstadt and Aaron Neville	Verse	66	4/4
1990	I Didn't Want to Need You	Heart	Chorus	88	4/4
1993	Next Plane Out	Céline Dion	Final Chorus	69	4/4
1993	Completely	Michael Bolton	Chorus	58	4/4
1994	I Swear	All-4-one	Verses 1 and 3	84	4/4
1995	Words Without Meaning	3T	Verse	76	4/4
1995	The Letter	Natalie Merchant	Verse	54	4/4
1996	I Believe I Can Fly	R Kelly	Chorus	63	4/4
1996	Hang	Matchbox 20	Chorus	77	4/4
1997	The Reason	Céline Dion	Chorus	73	4/4
1997	How Do I Live	Leann Rimes	Chorus	64	4/4
1998	I Do (Cherish You)	98°	Final Chorus	84	4/4
1998	I'm Your Angel	Céline Dion and R Kelly	Bridge	56	4/4
2000	It's True	Backstreet Boys	Chorus	82	4/4
2001	Don't Need You To (Tell Me I'm Pretty)	Samantha Mumba	Chorus	84	4/4
2003	A Moment Like This	Kelly Clarkson	Chorus	72	4/4
2005	Bad Day	Daniel Powter	Chorus	69	4/4
2005	Bring It on Home	Little Big Town	Chorus	69	4/4
2012	That's Why God Made the Radio	The Beach Boys	Verse	76	12/8

space (and more) for the three-eighth-note melodic pickup to the second verse.⁹ At some point during mm. 8–9, the illusion of a chorus repetition is broken – for this reason, [Example 5](#) labels the hypermetric counting numbers for these measures with quotation marks.

The second chorus of 'Don't Need You To' (at 1:55) terminates after its seventh measure, leading directly to the bridge. The third chorus (at 2:43) follows through

⁹ Janet Schmalfeldt explains the musical concept of becoming as 'the special case whereby the formal function initially suggested by a musical idea, phrase, or section invites retrospective reinterpretation within the larger formal context' (2011, p. 9).

Table 4. A supplemental list of expanded or contracted Anchoring vi Schemas based on 16-measure prototypes, 1963–2018. The tempo of each song is indicated in the column labelled 'BPM'.

Year	Song	Artist(s)	Section(s)	BPM	Meter
1963	Do You Hear What I Hear?	Harry Simeon Chorale	Verse	86	4/4
1965	Mrs. Brown, You've Got a Lovely Daughter	Herman's Hermits	Verse	152	12/8
1970	Handbags and Gladrags	Rod Stewart	Verse	77	4/4
1975	Philadelphia Freedom	Elton John	Chorus	124	4/4
1977	Sheena is a Punk Rocker	The Ramones	Verse	176	4/4
1977	Come Sail Away	Styx	Verse	60	4/4
1977	Give a Little Bit	Supertramp	Verse	88	4/4
1979	Do That to Me One More Time	Captain and Tennille	Verse	88	4/4
1981	Better Things	The Kinks	Verse	138	4/4
1990	More Than Words	Extreme	Verse	92	4/4
1992	Tears In Heaven	Eric Clapton	Verse	76	4/4
2001	The Luckiest	Ben Folds	Verse	60	4/4
2012	Home	Phillip Phillips	Verse	122	4/4
2018	Consequences	Camila Cabello	Chorus	106	3/4

with the compositional idea proposed at the end of the first chorus: a metrical reinterpretation happens during the eighth measure that leads to a fully realised repetition of the chorus (8 = 1). Mumba's vocal solo at this moment sustains the chorus's final syllable ('soul') for several extra beats, making the overlapping phrases particularly clear. The fourth and final chorus (at 3:02) precedes a three-bar coda that repurposes the chorus's first two measures of material one last time and appends a tonic to achieve closure. Many of the song passages listed in Tables 3 and 4 were very nearly Anchoring vi Schema prototypes eight or 16 full measures in duration, respectively, but for the elision that occurs at their conclusion.

The second type of hypermetrical disruption explored here concerns disruptions internal to the Anchoring vi Schema that are therefore only fully understood in retrospect. The verse and refrain of Linda Ronstadt and Aaron Neville's 'Don't Know Much' (1989) is based on an eight-measure prototype. Example 6 demonstrates that the phrase expansion begins in the sixth measure of the basic phrase as the harmonic rhythm stalls on a IV chord.¹⁰ Neither the harmony nor the melody is particularly active in m. 7, although a recomposed version of the refrain that omits this measure would likely come across as hurried. 'Don't Know Much' presents an instance of a composed-out fermata. In the case of the first verse and refrain, the quality of restfulness in the vocals and accompaniment is especially suggestive of a fermata.¹¹ The choice of harmony on which to dwell for the most extensive period during the verse and refrain – IV – is notable, as de Clercq has shown that non-tonic chords last on average half as long as tonic chords (2017b, p. 160). Given the song's heavy reliance on functional harmony, the expansion of the predominant IV chord is clearly internal to the 'basic phrase' of the song's verse and refrain.

¹⁰ There may be other potential metric realisations of the verse and refrain for 'Don't Know Much'. The song's introduction comprises the last 10 beats of the refrain played on solo piano, suggesting that what I have transcribed as beat 3 of m. 7 may be heard as a downbeat.

¹¹ During later verses of the song, the rhythm section does in fact play through the sixth and seventh measures.

0:50 I IV V 2

Don't need you to tell me I'm pret-ty to make me feel beau-ti-ful, no.

3 I IV V 4

Don't need you to make me strong, 'cause I'm strong on my own. Does't

5 vi ii 5 V/vi 6 ii 7 V

come from out-side, this beau-ty I know (I know) comes from in-side my soul.

Repeat of Chorus? 8="1" ⇒ link "2"

8 I IV V 4 3

Don't need you to tell me I'm pret-ty. I don't need...

Example 5: The first chorus of Samantha Mumba's 'Don't Need You To (Tell Me I'm Pretty)' (2001). *Mm.* 8–9 initially sound like a repetition of the chorus; in short order, the passage becomes a link to the second verse.

Verse 0:09 D♭:I

1 6 IV⁶ 2 V⁶

Look at this face, I know the years are show-ing.

3 I 3 6 IV 4 6 V

Look at this life, I still don't know where it's go-ing.

Refrain 5 vi IV⁷ 5 V iii⁷ 6 IV

I don't know much, but I know I love you,

7 6 V⁶ I 7 IV V I⁴ 8 3

and that may be all I need to know.

Example 6: The verse of Linda Ronstadt and Aaron Neville's 'Don't Know Much' (1989), with analysis of the phrase rhythm shown in red numbers. The phrase expansion begins in *m.* 6 as the harmony stalls on a IV chord.

0:20 Verse 1 V I 2 IV I 3 vi⁷ 4 \flat VII 5 V 6 $\frac{6}{5}$ I 7 IV I 8 vi iii V 9 vi 9 IV vi 10 V/V V 11 iii 12 IV 13 $\frac{V6-5}{4-3}$ 14 V vi iii IV $\frac{V6-5}{4-3}$ I V Link I V I V

I don't get many things right the first time in fact I am told that a lot. Now I know
all the wrong turns the stumble and falls brought me here.
And where was I before the day that I first saw your lovely face? Now I see it every day and I
know that I am, I am, I am the luckiest. What if I...

Example 7: The first verse, refrain, and link of Ben Folds's 'The Luckiest' (2001). The harmonic rhythm and rate of vocal syllable delivery slow considerably in mm. 12–13.

'The Luckiest', a song from singer-songwriter and pianist Ben Folds's 2001 album *Rockin' the Suburbs*, features an example of the Anchoring vi Schema in a 16-measure basic phrase, although as Example 7 shows, the verse and refrain actually total 17 measures. Analysis of the phrase expansion involved here reveals that melody, harmony, form and hypermetre sometimes interact in complex ways.

The first 12 measures of the passage maintain a consistent quadruple hypermetre. The harmonic rhythm slows in mm. 12–13 to one harmony per measure, while the rate at which Folds delivers vocal syllables slows considerably. The cadential six-four chord that Folds plays on the downbeat of m. 13 seems at first to reinforce the established hypermetre. Measure 14 resolves the previous measure's dominant harmony to tonic harmony, although the vocal melody does not cadence in the expected register. Rather, the combination of the melodic leap up to a high point and the energetic bass notes of the piano accompaniment signal the beginning of the song's refrain. The refrain coheres on the strength of its resemblance to a descending thirds sequence. At the conclusion of m. 16, Folds revisits the harmony and vocal register of m. 13. In fact, in melodic and harmonic content, m. 16 presents what an unexpanded version of mm. 12–13 might have sounded like, and the ensuing measure (m. 17) supplies the expected resolution to D3 in the vocal part. Although the internal expansion in mm. 12–13 appears superfluous in hindsight, the semantic content of the lyrics justifies the extra time taken on the harmonies of those measures.

Anchoring vi schemas expanded and/or contracted in multiple ways

This section will build on previous techniques (elision and internal expansion) and introduce some new techniques (reroute, extension and parenthetical insertion). The song passages examined below combine multiple techniques. In some cases, intra-opus comparison of song passages provides clarification. Groupings of measures suggested by rhyme schemes and texture occasionally are at odds with those suggested by harmony.

Example 8: The first verse of Céline Dion's 'The Reason' (1997). Tonic is prolonged via neighbor motion in the upper voices during m. 2. The upper-voice neighbor note figures are repeated in m. 4, resolving into an Anchoring vi^7 chord in m. 5.

A straightforward example of an eight-measure Anchoring vi Schema may be found in the verses of Céline Dion's 'The Reason' (1997). Example 8 shows a transcription of the first verse's melody – as well as its harmonisation.¹² The choruses also feature an Anchoring vi Schema, although the first, second and fourth choruses expand the prototype (to different extents) and the third chorus deletes measures from the prototype.¹³ Example 9 displays a transcription of the first chorus's melody, annotated with analysis of the basic phrase. During this chorus, the startling applied dominant to vi and introduction of a new melodic idea that occur in the seventh measure cause a revision of the phrase's trajectory. Part of the surprise of this V^7/vi chord owes to how rare the chord is in this particular location – not a single song passage analysed in the bar chart shown in Example 2 deploys V^7/vi on its seventh downbeat. Drawing on Brian Jarvis and John Peterson's approach to phrase expansion, one could describe m. 7 as a marked diversion that reroutes the expected trajectory of the chorus (2019, pp. 190–92). Example 9 interprets this moment as a 'do-over' of the hypermetrically strong fifth measure (expanding the section by two measures). Temperley points out the capacity of a drum fill to clarify an ensuing hypermetric downbeat (2018, p. 123); the drum fill in m. 6 therefore supports the analytical interpretation in Example 9. At the end of the chorus, a composed-out fermata in mm. 10–11 extends the section by one more bar, bringing

¹² In 'The Reason', the harmonisation for the second and third verses, at 0:40 and 1:43, respectively, differs slightly from that of the first verse.

¹³ That all four choruses of 'The Reason' are different lengths is highly atypical. Here, the variant length of the choruses contrasts with the invariant length of the normative verses.

1:05

You are the rea - son, you are the rea - son I wake

3 4

up ev - 'ry day and sleep through the night. You are the rea -

5 6—" 5

son, the rea - son. In the mid-dle of the night, (In the mid-dle of the

8 7

night) I'm go - ing down 'cause I a - dore you.

10 8

I want to floor you. I'm giv - ing it up...

Example 9: The first chorus of Céline Dion's 'The Reason' (1997), with phrase expansion analysis shown in red numbers. The applied chord to *vi* in m. 7 causes a revision of the phrase's trajectory. The chorus concludes with a composed-out fermata in mm. 10–11.

the total length of the first chorus up to 11 measures.¹⁴ During mm. 10–11, rhyming syllables obscure the composed-out fermata in a subtle – but not insignificant – way. 'The Reason' does not have a regular rhyme scheme, although the verses employ rhymed syllables at a distance of two measures (e.g. 'between' and 'I mean' in Example 8). At the end of the first chorus, 'adore you' is answered two measures later with 'floor you', causing the moment to sound timely, rather than superfluous.

The second chorus of 'The Reason' (at 2:09) appends both an interrupted Aeolian cadence and an uninterrupted Aeolian cadence to the music of the first chorus – bringing the total length up to 16 measures, although the 16th measure is elided as the chorus gives way to an instrumental bridge.¹⁵ The third chorus (at 3:24) aborts after its sixth measure, immediately giving way to the fourth

¹⁴ Following Mark Spicer, I have interpreted the chord in mm. 10–11 of Example 9 as a substitute 'soul dominant' borrowed from the Aeolian mode – hence, $bVII^{11}$ (2017, paragraph 3).

¹⁵ The Aeolian progression, or bVI – $bVII$ – I , is a common cadential progression in rock music (Biamonte 2010, p. 101). Mark Granroth-Wilding applies the term 'coordination' to situations where an unresolved cadence is 'interrupted by a further cadence, ... creating the same expectation, whereupon both expectations/tensions will be resolved by the same tonic' (2013, p. 30).

Time	0:00	0:12	0:39	1:05	1:43	2:09	2:59	3:24	3:45	4:21
Formal Section	Intro	V1	V2	C1	V3	C2	B	C3	C4	Outro
Length in measures	4	8	8	11	8	16*	8	6	11	9
Anchoring vi schema?		Yes	Yes	Yes	Yes	Yes		Yes		Yes

*The sixteenth measure of the second chorus is elided.

Example 10: Formal diagram of Céline Dion's 'The Reason' (1997). V = verse; C = chorus; B = bridge.

chorus at 3:45. Another composed-out fermata extends the fourth chorus, this time holding the subdominant chord in the sixth measure for six total measures. Example 10 diagrams the form of 'The Reason'. In sum, it is possible to place the verses and choruses of 'The Reason' in opposition to each other with regards to their treatment of the Anchoring vi Schema – the verses establishing expectations of eight-bar formal sections through normative treatment, and the choruses thwarting said expectations in various ways.

At this point, I return to Leann Rimes's 'How Do I Live' to address some of the questions raised during this article's introduction. As demonstrated in Example 11, I assert that the 2/4 bar (m. 6) groups with the previous measure and not the ensuing measure.¹⁶ The repetition of text ('ever') suggests continuation of the previous measure's content. In the vocal part, the syncopated arrival on D5 recalls the syncopations leading into the previous even-numbered measures (mm. 2 and 4). And, as the bar chart in Example 2 shows, there is a relatively strong expectation that IV will arrive on the sixth downbeat of an eight-measure Anchoring vi Schema.¹⁷ Although the 'pushed' harmony in m. 6 is more characteristic of odd-numbered measures in this chorus, Schachter points out that 'the avoidance ... of bass repetitions from a weak beat to a strong beat' is a general feature of many styles of music (1999, p. 40). In 'How Do I Live', the chorus dramatises the melodic ascent to D5 in order to convey the extraordinary difficulty that the song's protagonist imagines life apart from the song's addressee to be.

The additional complication in 'How Do I Live' concerns how the chorus ends. In the song's three statements of its chorus, the ninth measure (labelled as the eighth measure of the basic phrase in Example 11) is elided each time. As shown, the first chorus is followed by a brief modulatory transition, which serves as the site of a subtle connection between the lyrics at the end of the chorus and the beginning of the second verse. The second chorus gives way to an instrumental bridge, however, and an outro ensues after the third and final chorus.

The sprawling first verse of Extreme's 'More Than Words' from 1990 is 23 measures long. Example 12 reveals how the verse expands its 16-measure basic phrase.¹⁸ The expansion is motivated by the elided resolution of the dominant in mm. 15–16: V

¹⁶ Similarly, Carl Schachter speaks of '4/4 unit[s] extended by half a measure' in Schubert's 'Wanderers Nachtlied', D. 768 (1999, p. 91).

¹⁷ A subtle connection reveals the IV chord in mm. 6–7 to be an important intermediate harmonic goal in this chorus in particular: the root motion in mm. 5–7 (<P4↑, M2↑, m2↑>) inverts the root motion between the first four chords of the chorus (<P4↓, M2↓, m2↓>).

¹⁸ Listeners may hear a type of 'phrase' structure on a lower level in this example. In my analysis of this verse, I take a holistic view of the 16-measure basic phrase, as I am principally interested in the role expansion plays in the formal section's overall length.



0:57 D:I V 1 IV 2 iii V

...now How do I live with - out you? I want to know.

3 I V 3 IV 4 iii

How do I breathe with - out you if you ev - er go?

5 vi ii 5 iii IV 6

How do I ev - er, ev - er sur - vive? How do I,

8 V^{II} 7 I V 8 E: IV V

how do I, oh, how do I live? With-out you...

Example 11: The first chorus of Leann Rimes's 'How Do I Live' (1997). Red numbers interpret the expansion of the eight-measure basic phrase.

proceeds not to I, but rather to V^7/IV . In order to finally conclude the verse, the harmony must make one final pass at the cadence, an undertaking that takes another seven measures, owing to the slow harmonic rhythm of the song. Melodic parallelisms between mm. 13–15 and mm. 20–22 reveal that mm. 14–20 may be thought of as a parenthetical insertion that expands the phrase internally. The harmony supports this reading as well. Just as the harmonic progression of hypermeasure 1 (mm. 1–4) repeats in hypermeasure 2 (mm. 5–8), the harmonic progression of hypermeasure 3 (mm. 9–12) repeats in the unexpanded hypermeasure 4 (mm. 13 and 21–23). The end result, however, is somewhat more complicated. The second rhyming couplet of the verse concludes at the end of m. 16; no further rhymes are formed throughout the rest of the verse. If the parenthetical insertion were to be removed, the text would somehow have to be reduced so that the final rhyming syllable is coordinated with the return to tonic harmony in m. 16. Adding to the complication is the entry of the second vocal part in m. 13, an event that causes that vocal phrase to sound like the beginning of a new section – possibly a refrain of atypical duration, although the second rhyming couplet has yet to reach its conclusion. Thus, both the rhyme scheme and the vocal texture smooth over the parenthetical gap in the basic phrase. The final measure of the verse is also elided: the downbeat of m. 23 supplies melodic and harmonic resolution to the preceding verse, while also serving as the first measure of the chorus that ensues.

So far, I have equated song passages that are both eight and 16 measures long, since a bird's-eye view of Anchoring vi Schemas of both lengths reveals some common features (for example, marking the passage's midpoint with a striking move to the submediant). 'I Do (Cherish You)' (1998), by 98°, offers an example of a song that plays with formal section lengths and their relation to the Anchoring

0:20 F#: I 1 6 IV 2 ii 3 IV V⁷ 4 I

Say-ing I love you is not the words I want to hear from you.

5 I⁶ IV 6 ii 7 IV V⁷ 8 vi

It's not that I want you not to say but if you on-ly knew.

9 ii 10 V⁷ 11 I V⁶ 12 vi

how eas-y it would be to show me how you feel.

13 ii V⁷ V⁷/IV 6/5 IV

More than words is all you have to do to make it real.

17 iv I vi

then you would - n't have to say that you love.

20 ii 14 V⁷ 15 I 16=1

me 'cause I'd al-read-y know. What...

Example 12: The first verse of Extreme's 'More Than Words' (1990), with elided resolution of the cadential dominant in m. 16. Red numbers reveal the 16-measure prototype. The parentheses indicate a parenthetical insertion.

vi Schema. Example 13 shows the first chorus. This chorus is 16 measures long, rounded out by a four-measure turnaround; the vi chord in m. 9 serves as an anchor. Example 14 reveals that the final chorus omits the material from mm. 3–6 of the first chorus. Here, the anchoring vi chord in m. 5 clarifies the conceptual midpoint of the chorus. The eighth and ninth measures of the final chorus feature a composed-out fermata that heightens the feeling of anticipation associated with dominant harmony (on this effect, see Stephenson 2002, p. 20). A four-measure coda concludes the song. It is rare for a song to have a single formal section seemingly based on more than one prototype (i.e. an eight-measure prototype and a 16-measure prototype). To borrow from Doll's terminology, the first chorus serves as a precedent, the music of which is later transformed into the music of the last chorus (2017, pp. 191–92). The choruses of 'I Do' suggest the significance of the proportional similarities between eight- and 16-measure formal sections, especially with respect to the submediant's deployment at the sections' midpoints.

0:48
I do cher-ish you for the rest of my life, you don't have to think twice. I will
love you still from the depths of my soul, it's be-yond my con-trol. I've wait-ed so
long to say this to you. If you're ask-ing do I love you this much, I do.
Turnaround
Oh, ba-by, oh. In my world...

Example 13: A four-measure turnaround rounds out the 16-measure first chorus of 'I Do (Cherish You)' by 98° (1998).

2:58
Ba-by, I do. I'll cher-ish you this much I know is true. from the depths of my soul, it's be-yond my con-trol. I've wait-ed so
long to say this to you. If you're ask-ing do I love you this much, ba-by, I do.
Coda
Oh, do.

Example 14: The final chorus of 'I Do (Cherish You)' by 98° (1998) omits the material from mm. 3–6 of the first chorus, expands the phrase internally through composed-out deceleration, omits the turnaround, and appends a four-bar coda.

Conclusion

This article suggests that although harmony has received significant attention from analysts of popular music, one overlooked aspect of the topic concerns the interaction between particular harmonies and hypermetrical organisation. The fine details of songs' musical surfaces may conceal underlying similarities in their structural harmonies. The article focused on one pattern, termed the Anchoring vi Schema: a medium-length passage in the major mode with particular harmonies in its two most metrically accented locations. Specifically, the schema has tonic harmony at its beginning and submediant harmony at its midpoint. The submediant's capacity to substitute for – and, generally, prolong – tonic is well-known. A common example of such substitution may be found in the deceptive cadence of classical music. The existence and legitimacy of cadences in popular music remain contested, but I argue that a similar substitutional effect may be achieved when a song entrains the listener to expect tonic harmony in a specific hypermetrical location (i.e. a

Verse

0:21 B^b:IVsus2 I

We built sand - cas-tles _____ that washed a - way. I made you

3 cry _____ when I walked a - way. Oh, _____ and al-though I

5 prom-ised _____ that I could-n't stay, _____ ba - by, _____ E-ve-ry

Refrain

7 ii⁷ v¹¹ I V⁶ vi P⁶₄

prom-ise _____ don't work out that way. Oh, _____ babe, E-ve-ry

Tag

9 #iv⁷ v¹¹ I v⁶

prom-ise _____ don't work out that way. Dish-es smashed on the...

Example 15: The first verse and refrain of Beyoncé's 'Sandcastles' (2016).

hypermetric downbeat).¹⁹ The identification of Anchoring vi Schema prototypes of normative lengths (e.g. exactly eight or 16 measures) enables comparisons with passages of non-normative lengths. Familiar techniques of phrase expansion and deletion may then be analysed in popular music.

One question that remains is whether there are any other pairs of harmonies that can create the same type of 'fake-out' effect when substituted for one another on hypermetric downbeats. Some formal sections, after all, begin off-tonic. Consider the first verse and refrain of Beyoncé's 'Sandcastles' (2016), shown in Example 15. Despite the fact that the verse begins off-tonic with a IVsus2 chord, the passage otherwise bears many similarities to other passages analysed herein.²⁰ The first four measures prolong tonic harmony. The vocal melody approaches the downbeat of m. 5 similarly to the downbeat of m. 1. Strikingly, the piano supplies submediant harmony on the downbeat of m. 5, leading eventually to the phrase's

¹⁹ In this article, I have restricted the application of my new schema to tonal popular music. Tonal classical music's goal-oriented phrase structures organise musical time in significantly different ways, of course.

²⁰ As the passage from 'Sandcastles' does not begin with a tonic chord, I did not include it in Table 3.

resolution on the downbeat of m. 8. The tagged refrain expands the basic phrase from eight measures to 10 measures. The IV chord, like the I chord, shares two common tones with the vi chord. Further research is needed to determine whether or not there are other schemas that exploit such relationships between pairs of chords.²¹ And, though the endings of formal sections can take a variety of paths – including arriving at various tonal goals within a range of possible times – hypermetrically accented beginnings and midpoints show greater consistency in their organisation.

References

- Attas, R. 2011. 'Sarah setting the terms: defining phrase in popular music', *Music Theory Online* 17/3
- Biamonte, N. 2010. 'Triadic modal and pentatonic patterns in rock music', *Music Theory Spectrum* 32/2, pp. 95–110
- Biamonte, N. 2014. 'Formal functions of metric dissonance in rock music', *Music Theory Online* 20/2
- Burgoynne, J. 2011. 'Stochastic processes and database-driven musicology', PhD dissertation, McGill University
- Caplin, W. 1998. *Classical Form: a Theory of Formal Functions for the Music of Haydn, Mozart, and Beethoven* (New York, Oxford University Press)
- de Clercq, T. 2016. 'Measuring a measure: absolute time as a factor for determining bar lengths and meter in pop/rock music', *Music Theory Online* 22/3
- de Clercq, T. 2017a. 'Embracing ambiguity in the analysis of form in pop/rock music, 1982–1991', *Music Theory Online* 23/3
- de Clercq, T. 2017b. 'Interactions between harmony and form in a corpus of rock music', *Journal of Music Theory* 61/2, pp. 143–70
- de Clercq, T., and Temperley, D. 2011. 'A corpus analysis of rock harmony', *Popular Music* 30/1, pp. 47–70
- Doll, C. 2017. *Hearing Harmony: Toward a Tonal Theory for the Rock Era* (Ann Arbor, MI, University of Michigan Press)
- Endrinal, C. 2008. 'Form and style in the music of U2', PhD dissertation, Florida State University
- Everett, W. 2009. *The Foundations of Rock* (New York, Oxford University Press)
- Gjerdingen, R. 1988. *A Classic Turn of Phrase: Music and the Psychology of Convention* (Philadelphia, PA, University of Pennsylvania Press)
- Granroth-Wilding, M. 2013. 'Harmonic analysis of music using combinatory categorial grammar', PhD dissertation, University of Edinburgh
- Huron, D. 2006. *Sweet Anticipation: Music and the Psychology of Expectation* (Cambridge, MA, MIT Press)
- Jarvis, B., and Peterson, J. 2019. 'Alternative paths, phrase expansion, and the music of Felix Mendelssohn', *Music Theory Spectrum* 41/2, pp. 187–217
- Lewin, D. 1986. 'Music Theory, Phenomenology, and Modes of Perception', *Music Perception* 3/4, pp. 329–92
- Middleton, R. 1990. *Studying Popular Music* (Philadelphia, PA, Open University Press)
- Nobile, D. 2011. 'Form and voice leading in early Beatles songs', *Music Theory Online* 17/3
- Nobile, D. 2020. *Form as Harmony in Rock Music* (New York, Oxford University Press)
- Rothstein, W. 1989. *Phrase Rhythm in Tonal Music* (New York, Schirmer Books)
- Schachter, C. 1999. *Unfoldings: Essays in Schenkerian Theory and Analysis* (New York, Oxford University Press)
- Schmalfeldt, J. 2011. *In the Process of Becoming: Analytical and Philosophical Perspectives on Form in Early Nineteenth-Century Music* (New York, Oxford University Press)
- Spicer, M. 2017. 'Fragile, emergent, and absent tonics in pop and rock songs', *Music Theory Online* 23/2
- Stein, D., and Spillman, R. 1996. *Poetry into Song: Performance and Analysis of Lieder* (New York, Oxford University Press)
- Stephenson, K. 2002. *What to Listen for in Rock: A Stylistic Analysis* (New Haven, CT, Yale University Press)
- Summach, J. 2011. 'The structure, function, and genesis of the prechorus', *Music Theory Online* 17/3
- Summach, J. 2012. 'Form in top-20 rock music, 1955–89', PhD dissertation, Yale University
- Temperley, D. 2018. *The Musical Language of Rock* (New York, Oxford University Press)
- White, C., and Quinn, I. 2018. 'Chord context and harmonic function in tonal music', *Music Theory Spectrum* 40/2, pp. 314–37

Discography

- 3T, 'Anything'. *Brotherhood*. MJJ Music BK 57450. 1995
- 3T, 'Words Without Meaning'. *Brotherhood*. MJJ Music BK 57450. 1995
- 98°, 'I Do (Cherish You)'. *98° and Rising*. Motown 314530956-2. 1998
- All-4-One, 'I Swear'. *All-4-One*. Atlantic 82588-2. 1994
- Allman Brothers Band, 'Melissa'. *Eat a Peach*. Capricorn Records 2CP 0102. 1972

²¹ Further research is also needed to evaluate the potential of the minor mode for related schemas.

- Association, 'Never My Love'. *Never My Love*. Warner Bros. Records 7074. 1967
- Atlantic Starr, 'Secret Lovers'. *As the Band Turns*. A&M SP-5019. 1985
- Backstreet Boys, 'It's True'. *For the Fans (CD 3)*. Jive. 2000
- Backstreet Boys, 'Quit Playing Games (with My Heart)'. *Backstreet Boys*. Jive 01241-41589-2. 1997
- Backstreet Boys, 'Shape of My Heart'. *Black & Blue*. Jive 01241-41743-2. 2000
- Badfinger, 'Without You'. *No Dice*. Apple Records SKAO-3367. 1970
- Bangles, 'Eternal Flame'. *Everything*. Columbia OC 44056. 1988
- Bareilles, Sara, 'Chasing the Sun'. *The Blessed Unrest*. Epic 88883 735612. 2013
- Beach Boys, 'Help Me, Rhonda'. *The Beach Boys Today!* Capitol T2269. 1965
- Beach Boys, 'That's Why God Made the Radio'. *That's Why God Made the Radio*. Capitol 509996 02824 2 2. 2012
- Beatles, 'Eight Days a Week'. *Beatles For Sale*. Parlophone PMC 1240. 1964
- Beatles, 'I Don't Want to Spoil the Party'. *Beatles For Sale*. Parlophone PMC 1240. 1964
- Beatles, 'In My Life'. *Rubber Soul*. Capitol ST 2442. 1965
- Beatles, 'P.S. I Love You'. *Please Please Me*. Parlophone PMC 1202. 1963
- Beatles, 'The Night Before'. *Help!* Parlophone PCS 3071. 1965
- Beyoncé, 'Sandcastles'. *Lemonade*. Columbia 88985 33682 2. 2016
- Bolton, Michael, 'Completely'. *The One Thing*. Columbia CK 53567. 1993
- Bowie, David, 'China Girl'. *Let's Dance*. EMI America SO-17093. 1983
- Brooks, Meredith, 'Bitch'. *Blurring the Edges*. Capitol 7243 8 36919 2 0. 1997
- Brown, James, 'Sometime'. *Hell*. Polydor PD 2-9001. 1974
- Burg, Charlie, 'I Don't Wanna Be Okay Without You'. *Live In Peter's Attic*. 2016
- Cabello, Camila, 'Consequences'. *Camila*. Epic 88985472222. 2018
- Captain and Tennille, 'Do That to Me One More Time'. *Make Your Move*. Casablanca NBLP 7188. 1979
- Carmen, Eric, 'Hungry Eyes'. *Dirty Dancing Original Soundtrack*. RCA 88875121011. 1987
- Carmen, Eric, 'Sunrise'. *Eric Carmen*. Arista AL 4057. 1975
- Carpenters, 'Rainy Days and Mondays'. *Carpenters*. A&M SP-3502. 1971
- Cars, 'Drive'. *Heartbeat City*. Elektra 60296-1. 1984
- Cetera, Peter, 'Glory of Love'. *Solitude/Solitaire*. Warner Bros. Records 4-25474. 1986
- Chicago, 'If You Leave Me Now'. *Chicago X*. Columbia PC 34200. 1976
- Clapton, Eric, 'Blue Eyes Blue'. *Clapton Chronicles – The Best of Eric Clapton*. Reprise Records 9 47553-2. 1999
- Clapton, Eric, 'Tears in Heaven'. *Rush: Music from the Motion Picture Soundtrack*. Reprise Records 9 26794-4. 1992
- Clarkson, Kelly, 'A Moment Like This'. *Thankful*. RCA 07863 68159-2. 2003
- Clarkson, Kelly, 'Beautiful Disaster'. *Thankful*. RCA 07863 68159-2. 2003
- Dion, 'Abraham, Martin and John'. *Dion*. Laurie Records SLP 2047. 1968
- Dion, Céline, 'Be the Man (On This Night)'. *Let's Talk About Love*. Epic BK 68861. 1997
- Dion, Céline, 'Destin'. *The French Album*. Epic BK 67107. 1995
- Dion, Céline, 'Goodbye's (The Saddest Word)'. *A New Day Has Come*. Epic EK 86400. 2002
- Dion, Céline, 'Next Plane Out'. *The Colour of My Love*. Epic BK 57555. 1993
- Dion, Céline, 'The Reason'. *Let's Talk About Love*. Epic BK 68861. 1997
- Dion, Céline and Bryson, Peabo, 'Beauty and the Beast'. *Beauty and the Beast*. Epic ESK 74090. 1991
- Dion, Céline and R Kelly, 'I'm Your Angel'. *These Are Special Times*. Epic BK 69523. 1998
- Everly Brothers, 'Cathy's Clown'. *A Date with the Everly Brothers*. Warner Bros. Records W 1395. 1960
- Extreme, 'More Than Words'. *Pornograffiti*. A&M Records 75021 5313 4. 1990
- Fleming, Renée, 'Central Park Serenade'. *Christmas in New York*. Decca B0021104-02. 2014
- Flo Rida, 'Club Can't Handle Me'. *Only One Flo (Part 1)*. Atlantic 526415-2. 2010
- Folds, Ben, 'The Luckiest'. *Rockin' the Suburbs*. Epic EK 61610. 2001
- Fountains of Wayne, 'Hey Julie'. *Welcome Interstate Managers*. Virgin 7243 5 90875 2 8. 2003
- Genesis, 'Throwing It All Away'. *Invisible Touch*. Atlantic 81641-1-E. 1986
- Gibson, Debbie, 'Lost in Your Eyes'. *Electric Youth*. Atlantic 7 81932-1. 1989
- Gibson, Debbie, 'Out of the Blue'. *Out of the Blue*. Atlantic A2 81780. 1987
- Gin Blossoms, 'Hey Jealousy'. *New Miserable Experience*. A&M Records 75021 5403 2. 1992
- Grande, Ariana, 'Almost Is Never Enough'. *Yours Truly*. Republic Records B0018929-02. 2013
- Grande, Ariana, 'They Don't Know'. *Trolls (Original Motion Picture Soundtrack)*. RCA 88985-34162-2. 2016
- Green Day, 'Good Riddance (Time of Your Life)'. *Nimrod*. Reprise Records 9 46794-2. 1997
- Greenwood, Lee, 'God Bless the U.S.A.'. *You've Got a Good Love Comin'*. MCA 5488. 1984
- Gross, Henry, 'Shannon'. *Release*. Lifesong 6002. 1976
- Halsey, 'So Good'. Capitol. 2022
- Harry Simeon Chorale 'Do You Hear What I Hear?'. *Do You Hear What I Hear?* Mercury 72065. 1963
- Heart, 'I Didn't Want to Need You'. *Brigade*. Capitol C1-91820. 1990
- Herman's Hermits, 'Mrs. Brown, You've Got a Lovely Daughter'. *Herman's Hermits*. Columbia C 83 994. 1965
- Houston, Whitney, 'Saving All My Love for You'. *Whitney Houston*. Arista AL8-8212. 1985
- Houston, Whitney, 'Who Would Imagine a King'. *The Preacher's Wife (Original Soundtrack Album)*. Arista 07822-18951-2. 1996
- Jewel, 'Standing Still'. *This Way*. Atlantic 83519-1. 2001
- Joel, Billy, 'Big Man on Mulberry Street'. *The Bridge*. Columbia OC 40402. 1986

- John, Elton, 'Goodbye Yellow Brick Road'. *Goodbye Yellow Brick Road*. MCA2-10003. 1973
- John, Elton, 'Philadelphia Freedom'. *Philadelphia Freedom/I Saw Her Standing There*. MCA 40364. 1975
- Keith, Toby, 'I Love This Bar'. *Shock'n Y'all*. DreamWorks Records B0003266-36. 2003
- Kings of Leon, 'Use Somebody'. *Only by the Night*. RCA 88697-32712-2. 2008
- Kinks, 'Better Things'. *Give the People What They Want*. Arista AL 9567. 1981
- Klymaxx, 'I Miss You'. *Meeting in the Ladies Room*. MCA 5529. 1984
- Lee, Brenda, 'All Alone Am I'. *All Alone Am I*. Decca DL 4370. 1963
- Little Big Town, 'Bring it on Home'. *The Road to Here*. Equity Music Group 3010. 2005
- Loggins, Kenny, 'Meet Me Half Way'. *Over the Top (Original Motion Picture Soundtrack)*. Columbia C 40655. 1987
- Lovato, Demi, 'Skyscraper'. *Unbroken*. Hollywood Records D000462392. 2011
- Lumineers, 'Ho Hey'. *The Lumineers*. Dualtone 80302-016082-8. 2012
- Mamas and the Papas, 'Dedicated to the One I Love'. *The Mamas and the Papas Deliver*. RCA 1576. 1967
- Mayer, John, 'My Stupid Mouth'. *Room for Squares*. Columbia 85293. 2001
- Manilow, Barry, 'I Write the Songs'. *Tryin' to Get the Feeling*. Arista AL 4060. 1975
- Marx, Richard, 'Another One Down'. *Limitless*. BMG 538505892. 2020
- Marx, Richard, and Lewis, Donna, 'At the Beginning'. *Anastasia (Music from the Motion Picture)*. Atlantic 83053-2. 1997
- Matchbox 20, 'Hang'. *Yourself or Someone Like You*. Atlantic 92721-2. 1996
- Matchbox 20, 'Push'. *Yourself or Someone Like You*. Atlantic 92721-2. 1996
- McLachlan, Sarah, 'Drawn to the Rhythm'. *Solace*. Arista 07822-18631-2. 1991
- Meatloaf, 'I'd Do Anything for Love (But I Won't Do That)'. *Bat Out of Hell II: Back into Hell*. Virgin TCV 2710. 1993
- Lovato, Demi, 'Cherry Bomb'. *The Lonesome Jubilee*. Mercury 832 465-1 Q-1. 1987
- Merchant, Natalie, 'The Letter'. *Tigerlily*. Elektra 61745-2. 1995
- Miller, Mac, 'Come Back to Earth'. *Swimming*. Warner Bros. Records 571455-2. 2018
- Mumba, Samantha, 'Don't Need You To (Tell Me I'm Pretty)'. *Gotta Tell You*. Polydor 589 250-2. 2001
- Musgraves, Kacey, 'Happy and Sad'. *Golden Hour*. MCA Nashville B0027921-02. 2018
- P!nk feat. Nate Ruess, 'Just Give Me a Reason'. *The Truth About Love*. RCA 88725 46932 1. 2012
- Parton, Dolly, 'Here You Come Again'. *Here You Come Again*. RCA Victor APL1-2544. 1977
- Phillips, Phillip, 'Home'. *The World from the Side of the Moon*. Interscope Records B0017765-02. 2012
- Platten, Rachel, 'Fight Song'. *Wildfire*. Columbia 88875 18753 2. 2016
- Poison, 'Every Rose Has Its Thorn'. *Open Up and Say...Ahh!* Capitol 548493. 1988
- Police, 'Message in a Bottle'. *Reggatta de Blanc*. A&M 64792. 1979
- Powter, Daniel, 'Bad Day'. *Daniel Powter*. Warner Bros. Records 12260. 2005
- Pretenders, 'Brass in Pocket (I'm Special)'. *Pretenders*. Sire 49181. 1979
- Ramones, 'Sheena is a Punk Rocker'. *Rocket to Russia*. Sire SR 6042. 1977
- Rascal Flatts, 'Bless the Broken Road'. *Feels Like Today*. Lyric Street Records 2061-65049-2. 2004
- Rimes, Leann, 'How Do I Live'. *You Light Up My Life (Inspirational Songs)*. Curb Records D2-77885. 1997
- R Kelly, 'I Believe I Can Fly'. *Space Jam (Music from and Inspired by the Motion Picture)*. Warner Sunset Records 82961-2. 1996
- REO Speedwagon, 'Keep on Loving You'. *Hi Infidelity*. Epic FE 36844. 1980
- Robyn, 'Dancing on My Own'. *Body Talk Pt. 1*. Interscope Records B0014413-02. 2010
- Ronstadt, Linda and Neville, Aaron, 'Don't Know Much'. *Cry Like a Rainstorm – Howl Like the Wind*. Elektra 60872-1. 1989
- Scorpions, 'Wind of Change'. *Crazy World*. Mercury 846 908-2. 1990
- Simon, Carly, 'You're So Vain'. *No Secrets*. Elektra EKS-75049. 1972
- Smith, Elliott, 'Easy Way Out'. *Figure 8*. DreamWorks Records 0044-50225-2. 2000
- Smith, Elliott, 'Stupidity Tries'. *Figure 8*. DreamWorks Records 0044-50225-2. 2000
- Spears, Britney, 'Lucky'. *Oops!...I Did It Again*. Jive 01241-41704-2. 2000
- Stewart, Rod, 'Handbags and Gladrags'. *An Old Raincoat Won't Ever Let You Down*. Vertigo 847 200 VTY. 1970
- Stewart, Rod and The Temptations, 'The Motown Song'. *Vagabond Heart*. Warner Bros. Records 9 26300-2. 1991
- Streisand, Barbra, 'Comin' In and Out of Your Life'. *Memories*. Columbia TC 37678. 1981
- Styx, 'Come Sail Away'. *The Grand Illusion*. A&M SP-4637. 1977
- Styx, 'Don't Let It End'. *Kilroy Was Here*. A&M SP-3734. 1983
- Supertramp, 'Give a Little Bit'. *Even in the Quietest Moments... A&M SP-4634*. 1977
- Survivor, 'The Search is Over'. *Vital Signs*. Scotti Bros. Records FZ 39578. 1984
- Swift, Taylor, 'Love Story'. *Fearless*. Big Machine Records BMRATS0200. 2008
- U.S.A. for Africa, 'We Are the World'. *We Are the World*. Columbia UST 40043. 1985
- Webster, Max, 'Let Go the Line'. *A Million Vacations*. Capitol ST-11937. 1979
- Weeknd, 'Less Than Zero'. *Dawn FM*. Republic Records B0035125-02. 2022
- Weezer, 'Buddy Holly'. *Weezer*. DGC 24629. 1994
- Wonder, Stevie, 'The Day That Love Began'. *Someday at Christmas*. Tamla TS 281. 1967
- Wonder, Stevie, 'These Three Words'. *Music from the Movie 'Jungle Fever'*. Motown MOT-6291. 1991
- Xscape, 'The Arms of the One Who Loves You'. *Traces of My Lipstick*. So So Def CK 68042. 1998