

# *A New Lydian Theory for Frank Zappa's Modal Music*

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This article aims to demonstrate the importance of the Lydian scale in Frank Zappa's modal diatonic music by introducing the concept of a "Lydian system," loosely adapted from George Russell's seminal jazz theory known as the "Lydian chromatic concept." A Lydian system contains a limited series of diatonic modes linked through the Lydian scale. Through analysis of representative passages in Zappa's music, I examine different ways that the modes of the Lydian system reveal their indebtedness to Lydian, first in their musical realization as static "blocks" and later in the form of pedal substitutions, chord progressions, and modulations between different systems.

Keywords: Lydian scale, diatonicism, modality, Frank Zappa, George Russell

This article examines the modal music of the composer/guitarist Frank Zappa (1940–93). In particular, I will focus on what I term Zappa's "modal style," a style found throughout his career, though perhaps most representative of his diatonic instrumental music from the late 1960s through the early 1980s.<sup>1</sup> Though Zappa is well known for his admiration of composers who used the full chromatic arsenal (particularly Varèse and Webern), he also espoused diatonicism as a viable form of modernism, stating, "so many people . . . are dashing away from diatonic music in order to give the appearance of being modern—which I think is a waste of time."<sup>2</sup> As evidence of a forward-looking approach to diatonicism, the theory presented here holds that Zappa's modal music is best understood in reference to the Lydian scale. I will aim to demonstrate that Zappa's preference for the Lydian scale, and its special structural properties, had overarching repercussions for melodic and harmonic organization in his music. In contrast to the familiar major/minor system of tonality, I will propose an alternative Lydian system, which relies on the Lydian scale for the establishment of its functional relationships.

## ZAPPA AND TONALITY

Zappa's views on the tonal tradition are vital to understanding his techniques, as the Lydian aspect of this music is partly rooted in a reaction against particular tonal styles. Reviewing his statements in interviews and in his autobiography, one finds that he appears to have formed his opinions on the subject in his late teens/early twenties (ca. 1957–62), a crucial period in his development as a composer. During this time, he received his primary formal music theory education—consisting of two junior-college harmony courses—and he worked part-time as a guitarist in lounge bands. As a result, he naturally came into contact with tonality as practiced in the "classical" canon and in the Tin Pan Alley/jazz standards repertoire. Due to the hands-on nature of his guitar duties, he became relatively knowledgeable of the latter repertoire, whereas his understanding of classical tonality appears to have been gained largely by reading harmony textbooks.<sup>3</sup>

Two central (and interrelated) complaints are revealed in Zappa's comments. First we find an objection to the defining chord progression of tonal music (V–I), the sound of which he claims he is "against."<sup>4</sup> He expanded this aversion to include all progressions by descending fifth, particularly stock progressions incorporating the circle of fifths. In his autobiography, Zappa singles out II–V–I as a "hateful progression" and "the essence of bad 'white-person music.'"<sup>5</sup> Such progressions abound in many of his comedy-oriented songs, including the lounge-music parody "America Drinks" (*Absolutely Free*, 1967).<sup>6</sup> His

1 As this sentence suggests, not all of Zappa's output is directly relevant to this inquiry. Though space does not allow for a full explanation of the works not included, the largest number are among his parodistic songs, which borrow from preexisting harmonic norms, and his "freely atonal" music. The theory presented here is applicable to most of Zappa's diatonic instrumental music, as well as to certain songs that employ the modal style. Over one hundred titles by Zappa were analyzed for this study, primarily using transcriptions by the author alongside a small collection of scores/lead sheets released by Zappa during his life (which are no longer commercially available). The transcriptions are entirely my own and are not based on those of any other Zappa scholars.

2 Schneckloth (1978).

3 Zappa describes modern harmony textbooks as "the embodiment of those evils [i.e., rule-based voice leading, etc.], in catalog form." See Zappa and Occhiogrosso (1989, 187).

4 Dan Forte (1979).

5 Zappa and Occhiogrosso (1989, 187).

6 Zappa describes this song as "an exercise in II–V–I stupidity" (Zappa 1989, 187). See also his comments on "America Drinks" in Kofsky (1967).

second complaint is in reference to properties of consonance and dissonance, particularly the status of melodic pitches sounding against functional chord progressions. As Zappa indicates, he finds traditional strictures—such as the embellishing role of non-chord tones—stifling for melodic invention, both in his roles as a composer and as an improviser:

Some people like to play on II–V–I changes and can be-bop themselves into a frenzy; and there are other people who even like to listen to that sort of thing. I can't stand it myself. I pretty much loathe chord progressions. Look at Indian musical culture: they don't have too much in the way of progressions, and that's some of the most interesting, beautiful music ever. You don't need changes to play great lines.<sup>7</sup>

At a fundamental level, the modal style forged by Zappa may be viewed as a response to these critiques. Not surprisingly, there is a general avoidance of descending-fifths progressions (particularly V–I), which are replaced by modal progressions to be outlined below. More conspicuously, his music often exhibits an opposing approach to the interaction of chord and melody, one based on a synthesis of chord and scale. Zappa describes chords as “harmonic climates,” akin to “establishing shot(s) in a movie,” and melodies as agents of “action” within the harmonic climate supplied by the chord(s).<sup>8</sup> Such a relationship privileges harmonic stasis and freely progressing, improvisatory melody. But in tandem with these considerations is a more fundamental overthrow of musical resources, as the major scale—usually acknowledged as the source of functional relationships in tonal music—is replaced by the Lydian scale.

#### GEORGE RUSSELL AND THE LYDIAN CHROMATIC CONCEPT

Many will have recognized the resonance between Zappa's comments and trends in jazz during the late 1950s/early 1960s, particularly with the style known as “modal jazz.” The idea of strategically placing the Lydian scale at the apex of a musical hierarchy also holds association with the genesis of modal jazz, specifically with the theories of George Russell (1923–2009). Russell published his *Lydian Chromatic Concept of Tonal Organization* (hereafter LCC) in 1953, several years before the first widely recognized modal jazz albums.<sup>9</sup> The LCC is often credited with providing inspiration to key modal-jazz pioneers (such as Miles Davis and John Coltrane) and is cited as the first “chord-scale theory” in jazz.<sup>10</sup>

Several aspects of the LCC mark it as an important precursor to the theory I will develop in this article.<sup>11</sup> In practice, it

addresses the dichotomy between the traditional chord/melody relationship and that described above by Zappa. Russell frames this distinction through the terms “horizontal” and “vertical,” respectively. The horizontal approach is associated with functional tonality and, more importantly, with the major scale. That is, the major scale emerges from particular chord successions that unfold “horizontally”:

The major scale probably emerged as the predominating scale of Western music because within its seven tones lies the most fundamental progression of the classical era—[I–IV–V<sup>7</sup>]<sup>12</sup>—thus, the major scale represents a crystallization of the fundamental harmonic progression of the classical era.<sup>12</sup>

The horizontal method of improvisation, according to Russell, is a type of “arpeggiated playing” that emphasizes chord tones through common means of embellishment. Russell also observes that harmonic rhythm plays an important role in the implementation of the horizontal approach, as horizontal scales are most useful “when rapidly moving chord progressions make improvising difficult.”<sup>13</sup>

The LCC is directed toward the vertical conception (Russell's “vertical polymodality”), as it seeks to demonstrate the various melodic possibilities that are open to the improviser when faced with a chord symbol. This is achieved through the process of converting a chord symbol into “the scale which best conveys the *sound* of the chord,” thereby “greatly free[ing] the improviser from the vertical limitation of arpeggiated playing.”<sup>14</sup> Therefore, once the correct scale has been determined, any note within the chosen scale may be applied “freely” over the given chord.

The theoretical foundation of the LCC rests on the contention that the Lydian scale best represents the sound of the major triad. According to Russell, the major scale—customarily considered the scalar manifestation of major tonality—“does not completely fulfill, agree with or satisfy the tonality of its tonic major triad.”<sup>15</sup> He supports this assertion through several demonstrations. First, he compares the tetrachordal structure of the major scale and the Lydian scale. Of interest to Russell is the placement of T–T–S (tone–tone–semitone) tetrachords within these two scales, which he apparently views as having the effect of tonicizing the top note of the tetrachord. As Example 1(a) shows, the major scale's T–T–S tetrachords emphasize the tonic and subdominant while those of the Lydian scale in Example 1(b) emphasize the tonic and dominant. According to Russell, the different “tonalities” embodied by these tetrachords

7 Resnicoff (1991).

8 Schneckloth (1978).

9 The most widely read and influential version of the LCC was published in 1959. It has been continuously revised, with the most recent publication occurring in 2001. All quotations in this article are from the 1959 edition. See Heining (2010) for a history of the LCC's publication.

10 See Nisenson (2000). Unfortunately, it is unknown if Zappa ever read the LCC.

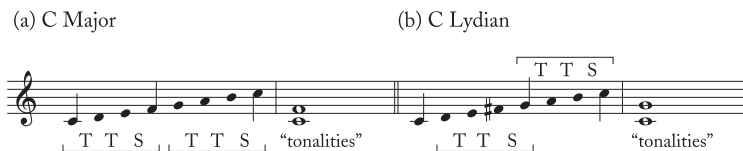
11 Space does not allow for a full explanation of Russell's theories (particularly the “chromatic” aspects). For a more comprehensive summary, see Bert (2002).

12 Russell (1959, iii–iv). Such views, in which the major scale is conceptualized as a resource from which tonality was fashioned, are commonplace in discussions of tonal practices. One notable example is François-Joseph Fétis (1784–1871), whose “ordre transitonique” was made possible by the discovery of the dominant-seventh chord within the major scale; see Fétis (1994).

13 Russell (1959, 35). Russell was likely referring to bebop music in this context.

14 Ibid. (1 and 22).

15 Ibid. (i).

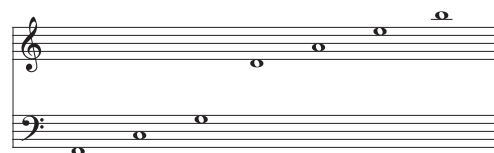


EXAMPLE 1. *Tetrachordal structure of major and Lydian scales, after Russell.*

favor the Lydian scale as major-chord representative.<sup>16</sup> Additionally, he finds justification for the Lydian scale in the overtone series. Noting the strength of the perfect fifth interval in the overtone series, he observes that the Lydian scale can be generated in ascending perfect fifths from the tonic pitch (Example 2), whereas applying the same method to the major scale would require the alteration of the final perfect fifth to a diminished fifth.

Although Russell claimed that the major scale is not “based on any big law,” it is better to view major and Lydian scales as representing different tonal laws.<sup>17</sup> Russell best summarizes the distinction as follows: “The major scale *resolves* to its tonic major chord. The Lydian scale *is* the sound of its tonic chord.”<sup>18</sup> That is, the major scale gives rise to progressions that tonicize the tonic triad (e.g.,  $V^7-I$ ), whereas the Lydian scale represents a static, unified structure. Because conventional Western music and music theory have been oriented toward “horizontal matters,” Russell believes that the Lydian scale has been judged as “unfulfilling because it *stayed there*,” without “having to digress from the tonic chord.”<sup>19</sup>

Having established the Lydian scale as representative of major tonality, Russell proceeds to create an expansive tonal system (though we will currently focus on the diatonic portion). He does so by deriving all remaining diatonic chord/scale assignments from within the Lydian scale, thereby creating “modes” of the scale. Example 3 presents Russell’s diatonic system, which is intended to identify appropriate chord/scale pairings. Here, the modes/scale degrees of the Lydian scale are represented by Roman numerals, and the chords associated with each mode are given above.<sup>20</sup> At first glance, the information contained in Example 3 appears unremarkable, and in many respects the chord assignments merely provide a practical accounting of jazz chords that can be built upon diatonic scale steps. However, Russell’s commentary implies that all such chords/modes relate back to the “parent” Lydian scale, a term that has “the same meaning as what is traditionally termed ‘the key of the music.’”<sup>21</sup> For example, readers are instructed to find



EXAMPLE 2. *Generation of the Lydian scale through a cycle of perfect fifths.*

a given chord type in the chart and respond with the Lydian scale in which the chord belongs.

Beyond the intended practical application of the chart’s contents, Russell’s chord assignments have significant theoretical implications. The modes receiving greatest status within the system are modes I (Lydian), II (Mixolydian), and VI (Dorian). These three modes furnish three of the five fundamental “chord families,” specifically those which permit complete tertian extensions (seventh, ninth, eleventh, thirteenth): major (Mode I), minor (Mode VI), and (dominant) seventh (Mode II).<sup>22</sup> It can be surmised that their privileged placement in the system results from each mode’s “vertical” potential, as the ability to form full tertian extensions implies the permitted usage of all diatonic pitches for improvisation. On the opposite end of the spectrum are those modes identified elsewhere as “horizontal” scales: Mode III (Aeolian) and Mode V (Ionian), which receive substantial demotions in the “vertical” system. In Example 3, Russell curiously permits in these modes only chords that function as “inversions” of the Lydian tonic chord.

#### THEORETICAL FUNDAMENTALS

In adapting Russell’s ideas for a new theory, we must first determine the relevance of certain core concepts to Zappa’s tonal practices. One essential principle linking the repertoire under study with the LCC is the concept of chord-scale equivalence (Russell’s “vertical” approach). Zappa facilitates this correspondence through a slowing of harmonic rhythm—as occurs in modal jazz—which allows a given chord to assert a potential tonality by means of an associated scale. Also, the ubiquity of the Lydian scale in Zappa’s music would suggest another, more

<sup>16</sup> Ibid. Russell also cites Paul Hindemith’s *Craft* (1937), concluding that “the tonic of an interval of a fourth is the upper note, while the tonic of an interval of a fifth is the lower note” (iii).

<sup>17</sup> Jones (1974, 70–71).

<sup>18</sup> Russell (1959, iv).

<sup>19</sup> Jones (1974, 71–72).

<sup>20</sup> Current jazz theories similarly represent the diatonic modes. However, most are constructed in reference to the major scale.

<sup>21</sup> Russell (1959, 43).

<sup>22</sup> The two remaining chord families—augmented and diminished—are achieved in modes within altered Lydian scales. Interestingly, Russell never uses the term “dominant seventh,” preferring the less “prejudicial” term “seventh” to denote the major-minor-seventh chord. See Heining (2010, 299).

**LYDIAN SCALE AND CHORDS PRODUCED ON ITS SCALE DEGREES**

MAJ. TRIAD MAJ. SIXTH MAJ. SEVENTH MAJ. SEV. + 11	SEVENTH NINTH ELEVENTH THIRTEENTH	MINOR + 5 (MAJ. 3B) INVERSIONS OF MODAL TONIC I CHORDS	MIN. SEV. b5 (MIN. 6B) SEV. b9 + 11 (MAJ. b5B)	INVERSIONS OF MODAL TONIC I CHORDS	MIN. TRIAD MIN. SIXTH MIN. SEV. MIN. NINTH	ELEVENTH b9 (MIN. 9B) SEV. b9 <sup>th</sup>
I	II	III	+IV	V	VI	VII

EXAMPLE 3. *George Russell's diatonic modal system (Russell [1959, 1]).*

obvious relevance for the LCC.<sup>23</sup> That is, context alone advises that a theory of Zappa's diatonicism should strongly feature the Lydian scale. But what of Russell's attempt to place other diatonic chords/modes under the umbrella of Lydian tonality? Since my theory will attempt to demonstrate a type of Lydian hierarchy in Zappa's music, this apparently problematic aspect of the LCC will require substantial refinement.

To begin, Example 4 presents the tonal fundamentals of Lydian tonality, which the reader will observe as being partly inspired by Russell's discussion. All structures shown are conceptualized as ascending patterns that commence from the Lydian tonic pitch. In its form as a stepwise scale (Example 4 [a]), Lydian offers two important melodic leading tones in  $\hat{7}$  and  $\hat{4}$ , which have the tendency to resolve by ascending semitone to 1 and 5, respectively. These leading tones contrast with the "tendency tones" associated with the major scale (typically identified as the tritone-related pitches  $\hat{4}$  and  $\hat{7}$ ), as they do not resolve in contrary motion; in fact, they do not even form a dissonance when sounded together. Instead, both leading tones are involved in motions that reinforce the most stable pitches in the scale ( $\hat{1}$  and  $\hat{5}$ ). A model for pitch stability is given in Example 4(b), which represents Lydian as a series of perfect fifths. For ease of reference, the pitches of a diatonic scale's "Lydian fifth-stack" will be labeled with pitch numbers (from  $\hat{1}$  to  $\hat{7}$ ) according to their ordered placement within the generative cycle of fifths (i.e., F = 1, C = 2, etc.). The fifth-stack representation finds the most stable pitches on the bottom ( $\hat{1}$  and  $\hat{5}$ ) and the most unstable pitches on the top (the leading tones). Finally, Example 4(c) envisions the scale as a stack of thirds. This structure maximizes consonance, as only major and minor triads are formed from adjacent three-note segments of the third-stack. The unitary nature of all three representations of the scale clearly differentiates Lydian pitch structures from

23 Indeed, it is quite likely that Zappa's use of the Lydian scale surpasses that of any composer in music history. To date, I have found the Lydian scale in over sixty titles by Zappa. Kasper Sloots, who maintains a website of analyses and short transcriptions of Zappa's music ([zappa-analysis.com](http://zappa-analysis.com)), disputes the importance of the Lydian scale in Zappa's music. In the fourth edition of his study, Sloots attempts a rejoinder to my Lydian theory, claiming that only twenty-eight pieces use this scale. Clearly, I disagree with his findings. See Sloots (2012, 554–63).

(a) Lydian scale and leading tones



(b) Lydian fifth stack and order of pitch stability

F C G D A E B  
# 1 2 3 4 5 6 7

(c) Lydian third stack



EXAMPLE 4. *Lydian fundamentals.*

those of the major scale. Recalling George Russell's distinction cited above, major-scale tonality offers a stable tonic triad, whereas Lydian tonality presents a stable scale. This fact alone suggests that the idea of a Lydian "tonic scale" is not as far-fetched as it might initially seem.

The central hypothesis of this theory is that the simple structures of Example 4 define both Zappa's Lydian music and (more controversially) his modal uses of non-Lydian scales. That is, Zappa's modal style is based on a certain view of diatonicism, one founded on acoustic consonance, fifth generation, and the contextual instability of the Lydian leading tones. This view privileges the Lydian scale as a generative point of reference, given its ideal realization of all such structures. Other diatonic modes are consequently put into a consistent relation with the referential Lydian scale. These relations determine the importance and usage of any given mode in Zappa's music, as well as the types of chords and melodic configurations associated with the modes. I also contend that they influence the manner in which modes interact in Zappa's music. To differentiate this system of interrelated modes from the familiar major/minor system, I use the term Lydian system (hereafter LS).

Example 5 offers an overview of the contents of the LS. Here, the diatonic system of F Lydian is shown, with its related modes numbered in order along the Lydian fifth-stack. In the



Fifth-stack #	Center	Mode	Chord
7	B	N/A	
6	E	N/A	vii
5	A	Aeolian (?)	iii
4	D	Dorian	vi
3	G	Mixolydian	II
2	C	Ionian (?)	V
1	F	Lydian	I

EXAMPLE 5. *The Lydian system (shown in F Lydian).*

right column, each mode is also given a Roman numeral representing the scale degree that its tonic triad would take in the Lydian scale. This information will prove useful below, as the hierarchical position of each mode in the system is often determined by the function that its “triad” holds in the Lydian scale. Only five modes are available in a LS: those built from pitch centers within the stable lower pentachord of the Lydian fifth-stack (numbers 1–5). Modes are not permitted on fifth-stack notes (numbers 6 and 7), given the status of these pitches as unstable leading tones in the system.<sup>24</sup> The reader will likely observe strong similarities between Example 5 and Russell’s modal system (Example 3). Russell’s three basic “chord families” are here manifest as Zappa’s most commonly employed modes: Lydian, Mixolydian, and Dorian. The Ionian and Aeolian modes—for which Russell found little use—have a tenuous status in Zappa’s modal music. For this reason, question marks are applied to them in Example 5.

What is the theoretical and analytical utility of the LS concept? Most generally, it will allow us to describe Zappa’s modal preferences, with the goal of understanding the possibilities and limitations pertaining to each mode. The contents of the LS will also have predictive power, permitting us to forecast with high certainty how Zappa will respond melodically to certain accompanying chords (as both a composer “on the page” and as an improvising guitarist). In a more concrete capacity, the LS will be conceptualized as a set of options Zappa may use for composing “modally” within a single diatonic scale, while achieving tonal variety. Finally, the LS may act akin to the familiar notion of “key,” with other modes implied in the form of functional chords within the Lydian scale. The discussion below will explain all of these possibilities in turn.

A final preliminary matter is what could be described as Zappa’s characteristic “modal texture,” which typically consists of three texturally stratified areas reserved for bass, chord, and melody.<sup>25</sup> I refer to these three zones of activity as the *pedal*,

*chordal*, and *melodic* zones, respectively. Each of these zones performs specific tasks in the music, and, given the correct context, any of the three may be conceptualized as primary. The melodic zone, usually having the largest pitch-class content, is responsible for establishing the diatonic collection of the LS. Given Zappa’s adherence to a chord-scale conception, the chordal zone is often represented by only a single chord within a modal segment, allowing association between the found chord-type and the scale used in the melodic zone. Finally, the pedal zone takes its name in reference to the sustained, dronelike nature of Zappa’s bass lines. However, even when not set as a drone, as in ostinato accompaniments, the pedal is identified as the lowest and/or most emphasized pitch in the lower register of the music. The pitch set as the pedal most often carries the function of modal pitch center, as Zappa’s stated intention for his bass players was that they should “tell me what key I’m in” and “play the roots once in a while.”<sup>26</sup> Of course, “tonic” and “root” are not synonymous concepts in traditional tonal theory, but within the “vertically” oriented Lydian theory there is better reason to view these terms as roughly equal, at least on the most local level. The remaining zones, chordal and melodic, are thereby tonally defined by the “harmonic climate” associated with the given pedal. However, as will be shown, these zones may also assert competing pitch centers, some of which will have important tonal repercussions.

#### THE MODES OF THE LYDIAN SYSTEM

This section focuses on the structures and functions characteristic of the modes of the LS. Example 6 offers an overview of the basic pitch sonorities of the LS (shown in F Lydian), with each mode represented by the content of its pedal, melodic, and chordal zones (as typically realized by Zappa).<sup>27</sup> The chordal zone will be my primary (but not only) focus in this section, as the use of certain chords is often predictive of particular modes.

<sup>24</sup> However, a consonant vii triad is included in the chord column, even though its mode, Phrygian, is not stable enough in the Lydian system to be asserted as a pitch center.

<sup>25</sup> Such stratified textures are common in many different repertoires, including Impressionist classical music, jazz, and rock. For discussions of

stratified textures in rock, see Moore (2001), Spicer (2004), Temperley (2007), and Covach (2008).

<sup>26</sup> Zappa (1983).

<sup>27</sup> The list of chords in Example 6 does not take into account Zappa’s “Chord Bible” as described in Clement (2009).

(a) Mode I: Lydian

Melodic zone

Chordal zone

Pedal zone

I V II quintal sus2

pitches #1-#3

(b) Mode II: Ionian

(c) Mode III: Mixolydian

sus2 #1-#3 sus2 #2-#4 quartal #1-#3 sus2 #2-#4 sus2 #3-#5

(d) Mode IV: Dorian

(e) Mode V: Aeolian

"So What" #1-#5 quartal #2-#4 sus4 #3-#5 ? ? #5-#7

LT LT

EXAMPLE 6. *Modal pitch structures within the Lydian system.*

These chords typically fall into one of two general categories: (1) tertian chords; or (2) chords created through the cycle of fifths. The choice between these two types often proves significant in light of the theory. When triads (or sevenths, etc.) are employed, we can ask ourselves how the given chord would function in a Lydian key. As will be shown, the hierarchical position of each triad in the Lydian key is largely maintained when the triad is asserted as the local tonic of a mode in the LS. Therefore, it will be necessary at times to follow references to the triad of a given mode with a Lydian Roman numeral (e.g., "the Aeolian triad [iii]").

Cyclic chords have a different function in the LS. Most often these are 3-9[027] sonorities realized as "sus2" and "sus4" chords. Zappa likely became familiar with such cyclic chords by studying Stravinsky (and other early post-tonal composers) and modal jazz.<sup>28</sup> He viewed them as a significant breakthrough in his diatonic style:

I started writing my own music in which the thirds were omitted from the chords. That seemed to give me more latitude with the melody because if there's no third in the chord then you're not

locked into an exact statement that your *harmonic climate* is major or minor [emphasis mine]. If you have a root, a fourth and a fifth, or a root, a second and fifth, your ability to create atmosphere and imply harmony by having a variety of bass notes that will *argue* with the suspended chord gives you, for my taste, more opportunities. Then the melody line can go back and forth between major or minor and Lydian or whatever else you want with ease. You have more flexibility.<sup>29</sup>

In a separate interview, he characterized the sus2 chord as a "neutral piece of canvas that you can paint on, and consequently, the bass notes that support that chord (a lot of different bass notes can be used) [create] another set of mathematical possibilities for the melody notes that are happening on top of it."<sup>30</sup> These quotes suggest that cyclic chords are exploited by Zappa because of their inherent tonal ambiguity, allowing the chordal zone to defer tonal responsibility to the pedal (in tandem with the melody). Additionally, as will be shown, these chords create the potential for modal flexibility and progression.

<sup>28</sup> See, for example, the discussions in Tymoczko (2011) and Waters (2011).

<sup>29</sup> Zollo (1987).

<sup>30</sup> Anonymous (1984).

In Example 6, cyclic chords are labeled according to their fifth-stack content.

Although I will comment upon the significance of some of the chords in Example 6, the contents shown are quite predictable when we proceed from the hypothesis that Zappa's chord types should uphold Lydian properties of consonance and dissonance. Two general rules may be formulated, the first regarding cyclic chords and the second pertaining to tertian chords: (1) cyclic chords should generally restrict their pitch content to adjacent segments of the lower pentachord of the Lydian fifth-stack (pitches 1–5);<sup>31</sup> and (2) tertian chords are subject to a tritone restriction, whereby the interval can only appear with Lydian  $\hat{1}$  sounding below  $\hat{4}$ . Adherence to the first rule, which essentially involves avoidance of the leading tones, allows one to experience cyclic chords as generally stable and therefore not in need of resolution. The second rule is necessary to maintain the melodic trajectories associated with the most stable ( $\hat{1}$ ) and the least stable ( $\hat{4}$ ) Lydian pitches. That is,  $\hat{1}$  should remain melodically inactive, as its stability implies no motion in itself, whereas  $\hat{4}$  is strongly suggestive of ascending melodic resolution. Reversing the registral configuration of the tritone, with  $\hat{1}$  above  $\hat{4}$ , would activate  $\hat{1}$  as a dissonant pitch in need of downward resolution.

Turning now to the modes of the LS, the generative Lydian (Mode I) will serve as an important point of reference for my discussion. Example 6(a) reveals a small preferred roster of chords in this mode.<sup>32</sup> Its lone [027] trichord, usually realized in sus2 form, is naturally built from fifth-stack pitches 1–3. Accordingly, the theory interprets the chord as exhibiting “ideal” stability, which thereby invites comparison with the [027] chords that we will encounter in the remaining modes. Although the Lydian sus2 appears in many of Zappa's compositions, its most extensive use can be found in the instrumental “The Black Page #1” (1976/1978).<sup>33</sup> In this piece, every shift of a pedal brings forth a modulation to a different Lydian scale, and sus2 chords exclusively are featured in the chordal zone. In addition to the sus2 chord, the Lydian mode permits complete tertian extensions to its tonic triad. However, considering the preference for using trichords in the chordal zone, Zappa typically incorporates upper extensions through superimposing the Ionian and Mixolydian triads (V and II, respectively) on top of the bass note. The synclavier piece “Night School” (1986), for

example, realizes its chordal zone with both of these triads (along with I) in a harmonization of the descending stepwise melody from B to E in C Lydian (Example 7). The V and II chords are inherently valued in the LS, as each sets one of the Lydian leading tones as a consonant chordal third. The Mixolydian triad (II) is particularly important, as its inclusion of leading-tone  $\hat{4}$  marks it as the primary tonicizer of the mode.<sup>34</sup> In addition, superimposed V and II have the potential to assert a type of diatonic polymodality, whereby the Lydian pedal accompanies competing modes of the LS, which are represented in the chordal zone.<sup>35</sup> We will later see this implicit polymodality come to the fore in various ways.

Before proceeding, we should observe a seemingly peculiar aspect of Lydian melodies: the common absence of the Lydian tonic pitch. This phenomenon is a result of the concerns outlined above in relation to tritone restrictions. That is, the melodic preference is to feature those pitches that promote motion (such as  $\hat{4}$ ) rather than those that inhibit motion (such as  $\hat{1}$ ). Because this preference naturally favors the melodic use of  $\hat{4}$ , stated or outlined tritones in the “wrong” registral order become a concern; therefore, the tonic pitch is most often simply avoided. Example 8 offers three brief examples of such “missing tonic” melodies from Zappa's Lydian music.

Ionian (Mode 2) occurs in tandem with the pedal on pitch 2 of the Lydian fifth-stack. Russell relegated the Ionian mode to “horizontal” situations, and it is in such functional contexts that Ionian most often appears in Zappa's music. For an example that clearly demonstrates how Zappa segregates Ionian and Lydian scales, consider the piece “Holiday in Berlin” (1961/1970), which features three adjacent thematic modules, all of which are nominally in the key of D. The first two modules (0:46 and 1:10, *Burnt Weeny Sandwich*, 1970) clearly parody tonal styles, as they feature chord shifts every one to two measures and use only functional Ionian II–V–I progressions. However, when the third module arrives (1:46) the accompaniment changes to a single pedal on D that persists for twenty-three measures. In response to this new static harmonic environment, the Lydian scale usurps the previously established Ionian.<sup>36</sup> This module is followed by a lengthy D-Lydian guitar solo at 2:58 (to be discussed below).

Zappa rarely employs the Ionian mode in his characteristic modal textures, suggesting that he may have viewed it as less suitable for this purpose than Lydian. In fact, Russell's assignment of Ionian to the role of a Lydian “inversion” may very well apply to Zappa's modal settings of Ionian. This strange notion can be somewhat confirmed by considering the weak functionality of the Ionian triad (V) in the Lydian scale, which stands in stark contrast to the strong functionality of the major-scale V chord. Additionally, as Example 6(b) shows, Ionian pitch

31 The only exception I have found to this general rule is the [027] sonority accompanying the A-Lydian main theme of “Waka Jawaka” (1972). This superimposed chord features the least stable pitches of the fifth-stack (5–7), and thereby creates a very striking and dissonant effect.

32 The interested reader may find nearly all of the chords listed in Example 6 (a) in the song “Syborg” (1978/1979).

33 Throughout this article, citations of works will be followed by two dates, the first representing the year in which the piece in question is first known to have been performed and the second indicating the year in which it was first released on an official recording. This method has been chosen due to the large number of recordings available for each of the titles to be discussed. Particular recordings will be cited only when necessary or relevant. Readers interested in the performance/recording history of any of the titles cited in this article are encouraged to consult the website <http://globalia.net/donlope/fz>, maintained by Román García Albertos.

34 The Lydian II chord is also discussed in Vincent (1974), Everett (2009), and Bates (2009).

35 This type of polymodality may also be exhibited in the melodic zone through various means of tonic assertion.

36 The characteristic Lydian fourth does not officially appear until 2:04.

EXAMPLE 7. *Harmonic accompaniment of "Night School."*(a) "Alien Orifice" (*Frank Zappa Meets the Mothers of Prevention*, 1985), 2:35–41

(b) "RDNZL" (*Studio Tan*, 1978), 7:27–39

(c) "Montana" (*Over-Nite Sensation*, 1973), 3:56–4:06

EXAMPLE 8. *Melodic avoidance of the Lydian tonic.*

structures are similar to those of Lydian in many respects, save for several adjustments necessitated by the controversial "Ionian fourth." Regarding tertian chords, a notable divergence between Lydian and Ionian is the lack of the eleventh in the third-stack, which is explainable due to the tritone restrictions discussed above. Of cyclic chords, the Ionian mode includes both *sus2* and *sus4* chords. The *sus4* chord is of particular interest, given that its pitch content is identical to that of the characteristic Lydian *sus2* chord (pitches 1–3 of the fifth-stack). The use of this chord thereby supports the reading of Ionian as an "inversion" of Lydian, achieved primarily through a shift in the pedal up a fifth. Example 9 shows the main theme of "Uncle Meat" (1968/1969), in the texture used in performances from the late 1960s.<sup>37</sup> Here, the Ionian pedal D is accompanied by its tonic-*sus4* chord. Importantly, the melodic zone lacks the Ionian

fourth; therefore, its pitch-class content is not in conflict with Lydian melodic zones. This feature will prove important in Zappa's later revision of "Uncle Meat" (to be discussed below).

Mixolydian (Mode III) holds a more important position within the LS (see Example 6[c]). As described above, the Mixolydian triad (II) represents the strongest nontonic sonority in the Lydian scale. When clearly subservient to Lydian modality, it stands as a primary tonicizer. In other circumstances, emphasis on the Mixolydian triad (or its pitch center) in chordal/melodic zones can create the effect of competing polymodality within the scale. When the Mixolydian pedal is employed to create a locally stable mode, the tonicizing role of its triad (now a I chord) is clearly downplayed. However, Mixolydian structures remain indebted to those established by the LS. Tertian chords, for example, are limited to the major-tonic triad. Hence, contrary to Russell's pairing of this mode with the (dominant) seventh chord, Mixolydian has no seventh-chord representative. Again, this constraint is a result of tritone restrictions in the LS, which bar the use of the dominant-seventh

<sup>37</sup> It is important to note that the recording on the album *Uncle Meat* was transposed (post-recording) up a minor third. Therefore, the transcription in Example 9 represents how the piece sounded in actual performance.



EXAMPLE 9. *Opening theme of "Uncle Meat," as performed 1968–69.*

chord and its associated downward resolution of the Lydian tonic pitch. Various cyclic chords are available in the Mixolydian mode—including a sus2 and a sus4 chord—but most characteristic is the “quartal” chord. This sonority continues the pattern—established by the Lydian sus2 and Ionian sus4—of forming [027] chords from stable fifth-stack pitches 1–3. Quartal chords are often used by Zappa as harmonic accompaniments to his Mixolydian guitar solos, with examples including “Yo Mama” (1977/1979) and “Zoot Allures” (1981–88 version). Other examples include the accompaniments to “Pound for a Brown” (1958/1969), “Exercise #4” (1973/1993), and “Teenage Wind” (1980/1981).

Dorian (Mode IV) is the primary representative of minor modality in the LS—a “relative” minor to the major-mode Lydian. In fact, for both practical and theoretical reasons, the LS could quite accurately be termed the “Lydian/Dorian” system. Although Dorian is the modal opposite of Lydian, it can also be viewed as a strong sonic analog. For example, the Lydian and Dorian third-stacks are similarly structured, as both produce consonant major or minor triads with all adjacent three-note segments (Example 10). Additionally, these tertian structures are intervallic inversions of one another, with the highest pitch of the Lydian third-stack (D in the example) mapping onto the lowest pitch of the Dorian third-stack (also D), and so on. The role of the Dorian tonic as axis of symmetry is also apparent in the Lydian fifth-stack, where the Dorian tonic (pitch 4) occurs in the middle of the fifth-stack. This inversional relationship was most directly exploited by Zappa in the two chords provided in Example 11: favored members of a “Chord Bible” created by Zappa in the late 1970s–early 1980s.<sup>38</sup> The Lydian chord given, with a pitch voicing of the intervallic series 4–7–7–1–7–7, has a Dorian counterpart that directly inverts this interval sequence to 7–7–1–7–7–4.

The chordal zone structures of Dorian are likewise related to those of Lydian (see Example 6[d]). Both modes permit the addition of all tertian extensions to their respective triads. Concerning cyclic chords, Dorian is the first mode yet encountered in which a sus2 chord is not found. This constraint applies because a potential Dorian sus2 chord would incorporate one of the “leading tones” of the LS, which are generally barred in

EXAMPLE 10. *Lydian and Dorian third-stacks.*

EXAMPLE 11. *Lydian and Dorian chords of Zappa's "Chord Bible."*

cyclic chords. Conversely, the Dorian mode is particularly rich in chords produced through the complementary cycle of perfect fourths, which will naturally maintain a pitch-class content within pitches 1–5 of the Lydian fifth-stack. Therefore, the quartal trichord found in Mixolydian is also present in Dorian, although it exploits a different segment of the fifth-stack.<sup>39</sup> The Dorian mode also features the famous expanded quartal chord known as the “So What” chord (in reference to its first usage by pianist Bill Evans on the track “So What” from Miles Davis’s *Kind of Blue* [1959]). This chord, which is extensively used in the piece “Zoot Allures,” is comprised of the pentatonic set created by pitches 1–5 of the Lydian fifth-stack.

Like Ionian, the Aeolian mode (Mode V) has weak status within the LS and is rarely encountered in Zappa’s characteristic modal textures. To consider why this is the case, we might look to the functional ambiguity of the Aeolian triad (iii) in the Lydian scale: this triad tends to sound like the upper structure of the tonic-seventh chord rather than an inherently stable chord. Additionally, the fifth of Aeolian triad is one of the unstable leading tones of the LS (see Example 6[e]), making the establishment of stable Aeolian modality somewhat

<sup>38</sup> Clement (2009, 206).

<sup>39</sup> The quartal trichord is employed in the accompaniment of the Dorian guitar solo in “The Mammy Anthem” (1982/1984).

The image shows a musical score for the opening of "Outrage at Valdez". It consists of four staves: Clarinet (top), Celesta, Harp, and Tuba/Trb. etc. (bottom). The time signature is 9/8. The Celesta part features a series of chords, with a bracket underneath labeled "Bbm11 (Dorian)". The Harp part has a single note (Bb) sustained across several measures, with a bracket underneath labeled "Dorian hint?". The Tuba/Trb. etc. part has a single note (F) sustained across several measures, with a bracket underneath labeled "Pedal: F Aeolian".

EXAMPLE 12. Opening texture of "Outrage at Valdez."

challenged. Such a reading further demonstrates the sharp distinction between the LS and the traditional major/minor system, wherein the Aeolian and Ionian triads are viewed as especially stable. Ramon Fuller, for example, observes that the Ionian and Aeolian tonic triads gain stability due to their avoidance of the tritone interval (i.e., the tendency tones of the major/minor system).<sup>40</sup> Significantly, if we follow the same logic, the triads that avoid the leading tones of the LS are those of its characteristic major and minor modes: Lydian (I) and Dorian (vi).

A rare example of the Aeolian mode functioning within the structures of the LS is the piece "Outrage at Valdez" (1992/1994). Example 12, which provides the repeated harmonic texture of the piece, demonstrates the mode's instability in this context. In the opening measures, the Aeolian pedal F is established, but it is stated without the support of its leading-tone fifth, C. Further, two additional pitch configurations within the accompanying zones appear to work in opposition to the F pedal: (1) the ostinato arpeggiated Bb-minor-eleventh chord in the celesta; and (2) the repeated fourth in the harp, which rests on a sustained Bb. Both of these elements suggest a rival Bb-Dorian mode at play. Indeed, the Aeolian pedal is often interrupted throughout this piece by other pedals of the LS, particularly the stable Dorian and Lydian pedals (Bb and Db, respectively). In the final measures of the piece, the Aeolian pedal is overtaken by these two pedals in turn, ending conclusively with a pedal on the Lydian tonic Db.

#### MODAL INTERACTION WITHIN A LYDIAN SYSTEM

In this section, we will observe how the modes of the LS can interact without necessitating a shift in the given diatonic scale. Therefore, we can now refer to a LS in more concrete terms (e.g., the "F-Lydian system"), imagining it as a collection of same-scale modes having the potential for certain types of

interaction. Specifically, I will be concerned with two central issues: (1) pedal substitution and (2) chord progressions.

My discussion of "Outrage at Valdez" has already hinted at the technique of pedal substitution, a procedure that simply involves substituting one pedal within a given LS for another. For this method to be employed, one expects the retention of certain textural/thematic elements associated with the melodic and/or chordal zones. That is, pedal substitution exploits the characteristic tonal ambiguity of the melodic and chordal zones and demonstrates the easy flexibility offered in utilizing modes whose structures conform with the LS concept.

Given that Lydian, Dorian, and Mixolydian are the three primary modes of the LS, most pedal substitutions in Zappa's music involve these three modes. An impressive display of these substitutions is found throughout the album *Joe's Garage* (1979). Here, Zappa extracts several improvised guitar solos that were recorded during his 1979 tour and overlays them (untransposed) onto studio recorded vamps (a process he terms "xenochrony").<sup>41</sup> Example 13 illustrates that the "new" vamps make use of pedal substitution; in each case a different pedal is substituted from the LS established by the original solo.<sup>42</sup> Such shifts in tonal center naturally alter the listener's perception of the melody, but the close relationship of the three modes involved limits the disruption produced by the substitution. Indeed, the unique closeness between Lydian and Dorian modes makes them particularly amenable to pedal substitutions, often exploiting a dark/light dichotomy. For example, in the theme of "RDNZL" (1973/1978) shown in Example 14(a), three Dorian pedals are presented in succession in a rising half-step progression (D–Eb–E $\natural$ ). When this theme returns (rhythmically varied) at the climax of the piece (Example 14 [b]), the initial Dorian pedal D has been replaced by the Lydian pedal F. A similar Dorian/Lydian substitution occurs in "St. Alphonzo's Pancake Breakfast" (1972/1974), where the

<sup>41</sup> Marshall (1988).

<sup>42</sup> For additional information on the source solos, see [http://globalia.net/donlope/fz/lyrics/Joe's\\_Garage.html](http://globalia.net/donlope/fz/lyrics/Joe's_Garage.html).

<sup>40</sup> Fuller (1975, 201).

Lydian system	Original vamp: pedal	<i>Joe's Garage</i> track: substitution
C Lydian	"Inca Roads": C Lydian	"On the Bus": A Dorian
B $\flat$ Lydian	"Outside Now": B $\flat$ Lydian	"Keep It Greasy": G Dorian
E Lydian	"Easy Meat": F $\sharp$ Mixolydian "Opening Solo": E Lydian	"Packard Goose": F $\sharp$ Mixolydian

EXAMPLE 13. *Pedal substitutions in the guitar solos of Joe's Garage (1979).*(a) "RDNZL" (*You Can't Do that on Stage Anymore Vol. 2*, 1988), 5:00–20

(b) 7:59–8:13

EXAMPLE 14. *Dorian/Lydian pedal substitution in "RDNZL."*

primary thematic motive occurs at the outset (*Apostrophe*, 1:08) accompanied by the Dorian pedal G, but is replaced at the final climactic statement (1:35) by the Lydian pedal B $\flat$ . The chordal zone plays an interesting role here, as the initial Dorian statement is accompanied by a [027] trichord consisting of pitches 1–3 of the Lydian fifth-stack—a rare chord in the Dorian mode. When B $\flat$  Lydian is substituted in the final statement, this [027] remains unchanged in pitch-class content and is now recognizable as the characteristic Lydian sus2 chord.

Pedal substitutions may occasionally take the form of "corrections"—a consideration coming to the fore in Zappa's revisions of pieces that originally featured passages in the Ionian mode. For example, Zappa's revision of "Uncle Meat" in the early 1970s, shown in Example 15, includes a substitution of the original theme's Ionian pedal D with the Lydian pedal G (compare Examples 9 and 15).<sup>43</sup> Observe that the establishment of the Lydian pedal G forces a reinterpretation of the accompanying

[027] trichord, which is now read as the trademark Lydian sus2 chord (G–A–D). Additionally, as noted above, the melodic zone of the original Ionian version of "Uncle Meat" (Example 9) avoids the Ionian fourth melodically; when the Lydian pedal is substituted in such instances, the resulting texture exhibits the common melodic avoidance of the Lydian tonic. This appears to be a consideration for Ionian/Lydian pedal substitution, as Ionian melodies that state the fourth are not subject to substituted Lydian pedals.<sup>44</sup>

Although Zappa claims to "loathe chord progressions," his modal music does feature a small number of diatonic chord progressions, which usually come in the form of repeated,

43 This Lydian substitution was premiered in 1972 and used in all subsequent versions of "Uncle Meat." A similar substitution enters at the beginning of the "waltz" theme from "RDNZL," as revised in 1975.

44 See, for example, "Uncle Meat" (0:15–25, *Uncle Meat*) and "RDNZL" (0:38–48, *Läther*), both of which retain their Ionian pedal in the revised versions.

EXAMPLE 15. Opening theme of “Uncle Meat,” as performed 1972–92.

two-chord oscillations. Zappa states, “I like to have one tonal center that stays there, or possibly with a second chord that *varies off the main tonal center*.”<sup>45</sup> Regarding oscillating progressions, there are two primary varieties, which I term the “Lydian/Mixolydian” (hereafter L/M) and “Dorian/Mixolydian” (hereafter D/M) progressions.<sup>46</sup>

The L/M progression is defined as the alternation between the Lydian and Mixolydian triads of a given LS (or as merely the alternation of these pedals, when a chordal zone is not present).<sup>47</sup> As Example 16 shows, the L/M progression involves major triads separated by a whole step; the direction of these triads may be reversed, but they are typically presented as a rising whole-step progression. Examples of L/M in Zappa’s music are numerous and include the guitar-solo vamps of “Inca Roads” (1973/1975) and “RDNZL” and the instrumental interlude of “Strictly Genteel” (1970/1971).

The L/M progression may be seen as composing out the above-described polymodal superimposing of the Mixolydian triad (II) in the Lydian mode. Given the involvement of the Mixolydian pedal in the L/M progression, this competing tonality here is given much stronger emphasis. Therefore, the ascending whole-step version of L/M shown in Example 16 will likely be interpreted as either I–II in Lydian or VII–I in Mixolydian.<sup>48</sup> That is, one’s hearing will depend upon whether the first or second chord in the progression is identified as tonic/center. Since both Lydian and Mixolydian are central modes of the LS, this theory does not necessarily privilege one

Lydian: I	II
Mixolydian: VII	I

EXAMPLE 16. The L/M progression.

hearing over the other. In fact, the centric ambiguity of the progression generates much musical interest.

However, it is important to note that Zappa appears to be inclined to hear the first chord as tonic. For example, when asked to comment on the “Inca Roads” L/M vamp—the alternation of major triads on C and D—he states that it is “basically [in] C Lydian.”<sup>49</sup> Accordingly, tonic identification may be inverted by reversing the order of L/M’s constituent triads. Zappa cleverly exploits this possibility in editing between the adjacent tracks “Holiday in Berlin” and “Aybe Sea” (1968/1970) on the album *Burnt Weeny Sandwich* (1970). In Example 17, both pieces use the L/M progression of the D-Lydian system. In “Holiday in Berlin” (Example 17[a]), L/M acts as the vamp to the concluding guitar solo, and in “Aybe Sea” (Example 17[b]) it accompanies the opening theme. However, the order of the two triads is not the same in both pieces; “Holiday in Berlin” states the Lydian triad first, and “Aybe Sea” begins with the Mixolydian triad. Therefore, I interpret the excerpts as asserting different modes of the same LS: “Holiday in Berlin” Lydian and “Aybe Sea” Mixolydian.<sup>50</sup> In fact, both themes begin with an identical melodic motive (G#–A–B), which highlights their shared L/M progression.

45 Zappa (1982a); emphasis mine.

46 These two progressions are identical to the Lydian and Dorian progressions proposed by Ian Bates in his diatonic modal theory for the music of Vaughan Williams. Bates’s progressions are based on the positioning of each mode relative to the tritone interval. See Bates (2009, 11–12).

47 The L/M progression may also appear exclusively in the chordal zone, with a single pedal accompanying.

48 Of course, the ascending whole-step progression may also function as Ionian IV–V or Aeolian VI–VII; see Spicer (2009) for a discussion of such “absent tonic” progressions. However, given Zappa’s general avoidance of the Ionian and Aeolian modes, we are not likely to hear the L/M progression functioning within these scales in his music. The Mixolydian VII–I progression is familiar from many rock/pop songs; see Everett (2009) and Biamonte (2010). Whether or not Lydian I–II occurs in rock/pop is a more controversial matter; see Clement (2013) for a discussion of this topic.

49 Zappa (1982a). Documentary evidence also supports the view that Zappa conceives the progression in Lydian. For example, earlier versions of the vamp used for the guitar solo of “Inca Roads” consist only of the Lydian pedal C (see the version from Spring 1974). The second chord (D major) was added to the vamp in fall 1974 and remained in place for all subsequent tours.

50 One may also choose to hear the L/M progression of “Holiday in Berlin” as Mixolydian VII–I, as does Jonathan Bernard (2000, 89). However, the previous sections of the piece feature a pitch center of D (as discussed above). Additionally, early live performances of the piece (heard on the recently released *Road Tapes Venue #1* [2012]) use a single D pedal throughout.



(a) “Holiday in Berlin” (*Burnt Weeny Sandwich*, 1970), 2:57 ff.

(b) “Aybe Sea” main theme (*Burnt Weeny Sandwich*)

D Lydian: I II

E Mixolydian: I VII

EXAMPLE 17. *The L/M progression in adjacent tracks “Holiday in Berlin” and “Aybe Sea.”*

The D/M progression in Example 18 is defined as the alternation between the Dorian triad (or seventh chord) and the Mixolydian triad of the same LS. Like the L/M progression, the order of the two chords may be reversed, but Zappa rarely uses the reversed option.<sup>51</sup> Because the Dorian chord usually appears first, D/M functions most often as a Dorian i–IV progression, but a Mixolydian v–I interpretation is also viable if musical factors permit.<sup>52</sup> The Dorian version was most memorably termed “The Carlos Santana Secret Chord Progression” by Zappa, when describing the shuffle vamp in “City of Tiny Lites” ca. 1980–88.<sup>53</sup> Many of Zappa’s titles use D/M, including “Montana” (1972/1973), “Mr. Green Genes” (1968/1969), and “Wild Love” (1977/1979).

The piece “Oh No/The Orange County Lumber Truck” (1967/1968) offers important clues to understanding the D/M progression in the context of the LS. Example 19(a) shows the coda of the piece, which features the D/M progression of the E system (alternating C#-minor and F#-major triads). This same music is the basis for the later “Son of Orange County” (1974/

Dorian: i IV  
Mixolydian: v I

EXAMPLE 18. *The D/M progression.*

1975), shown in Example 19(b). The melodic succession of “Oh No” is presented in full in “SOOC,” but is rhythmically varied. The accompaniment of “SOOC,” however, substitutes the L/M progression of E Lydian (alternating E-major and F#-major triads). This indicates that the L/M and D/M progressions may be viewed as variants of one another—that is, each may be transformed into the other by applying pedal substitution to the first of their chords. What remains fixed is the shared Mixolydian triad, which behaves either as a tonicizing chord within Lydian/Dorian or as a local modal tonic.

#### OTHER SCALES

In this section, I will account for two additional scales used by Zappa in reference to the LS: the pentatonic scale and what I refer to as the “Minor-Lydian” scale. Given the centrality of the cycle of fifths in generating pentatonic scales, as well as its role in the diatonic LS, Zappa’s pentatonicism can be readily modeled in reference to the Lydian fifth-stack—that is, different collections can be located within the larger diatonic system,

<sup>51</sup> One example of a reversed D/M is the main theme of “Lonely Little Girl” (1967/1968).

<sup>52</sup> For example, the guitar solo to “Yo Mama” concludes with the D/M progression Bm–EM. However, this follows a lengthy pedal on E, over which Zappa solos in E Mixolydian. Therefore, the second chord of this D/M progression is more likely to be heard as the pitch center.

<sup>53</sup> This title appears on the album *Shut Up ‘N Play Yer Guitar Some More* (1981). The impetus for Zappa’s title may have been Santana’s cover of the Zombies’ “She’s Not There” (1977), which Zappa was fond of quoting during his “City of Tiny Lites” solos of 1980.

(a) "Oh No" (*Weasels Ripped My Flesh*, 1970), 1:25–end

(b) "Son of Orange County" (*Roxy & Elsewhere*, 1974), 0:07 ff.

EXAMPLE 19. *Dorian/Lydian pedal substitution between D/M and L/M progressions.*

reflecting the fact that Zappa's pentatonic melodies function within a diatonic context.<sup>54</sup> Example 20 presents the three distinct pentatonic collections within adjacent segments of the diatonic fifth-stack.<sup>55</sup> Zappa's use of the three collections is quite limited, as each collection is typically realized in only one ordering and is provided a clear pitch center/pedal.

Significantly, most of Zappa's pentatonic melodies are confined to the lower pentachord of the fifth-stack (Example 20 [a]). Therefore, these melodies avoid the leading tones of the LS.<sup>56</sup> The Dorian pedal accompanies this minor-pentatonic collection (minor-1 pentatonic), revealing again the high rank of the Dorian scale in the LS.<sup>57</sup> Example 21 provides the opening of "King Kong" (1967/1968), which features an accompaniment of the Dorian pedal E $\flat$  (plus sus4 chord) and a melody that alternates between minor-1 pentatonic and the Dorian scale. As shown, minor-1 pentatonic sequences predominate, though these sequences are "broken" occasionally with segments of E $\flat$  Dorian.

The remaining pentatonic segments are relatively uncommon. The second segment of the fifth-stack (Example 20[b]) provides "minor-2" pentatonic, which is also accompanied by the Dorian pedal. This scale appears in the main themes of "Run-Home Slow" (1963/1985) and "G-Spot Tornado" (1987). The final segment of the fifth-stack, which includes

EXAMPLE 20. *Pentatonic scales within the Lydian system.*

both leading tones, yields a "major" pentatonic scale with a Mixolydian pitch center (Example 20[c]). As shown, this pentatonic scale is usually manifest in the melodic zone, accompanied by the Lydian pedal. Example 22, the main theme from "Dupree's Paradise" (1973/1984), clearly exhibits this texture. The accompanying zones feature the Lydian pedal E paired with the Mixolydian triad (II, F $\sharp$ M); the melody above is "black key" major pentatonic, emphasizing the pitch F $\sharp$ .

In the late 1970s, two additional scale types became prevalent in Zappa's music. Following Zappa's keyboardist Tommy Mars, I refer to them as Minor Lydian scales (both of set class 7-32[0134689], being modes of the "harmonic" major or minor scales).<sup>58</sup> Interestingly, these two scales result from "modal mixture" between the primary major and minor modes of the LS (Lydian/Dorian). In Example 23, the first variety is created by raising the fourth of the Dorian scale, while the second is equivalent to a Lydian scale with a lowered third. Therefore, Dorian borrows a pitch from the parallel Lydian ( $\sharp 4$ ), while Lydian does the same of the parallel Dorian ( $b3$ ).<sup>59</sup>

54 In fact, Zappa's pentatonic melodies almost always eventually expand to a full diatonic scale. In other situations, the chordal and/or pedal zones supply the missing diatonic pitches.

55 These correspond to the soft, natural, and hard pentachords identified in Kopp (1997). See also Biamonte (2010).

56 This can be contrasted with the way traditional major and minor pentatonic scales are often conceptualized. That is, we often think of these scales as being created through avoidance of the pitches that create the tritone (F and B in the C scale): the tendency tones of the major/minor system.

57 The fact that the Lydian pedal does not accompany this collection is understandable, as the Lydian mode loses much of its effect without the leading tones.

58 Mars said: "Frank and I both, before I joined the band, were great fans of the Minor Lydian. This is a polytonal concept. If you have a C minor [chord] on the bottom and a D major [chord] on the top, that's a Lydian chord with a tritone in it." See Anonymous (Evil Prince) (1997).

59 One might also view both scales as being essentially Dorian, with a borrowing of one or both leading tones from parallel Lydian.

EXAMPLE 21. *Interaction between minor-pentatonic and Dorian scales in “King Kong.”*

EXAMPLE 22. *The major pentatonic scale in “Dupree’s Paradise.”*

EXAMPLE 23. *Minor Lydian scales.*

Minor-Lydian scales retain certain essential aspects of the Lydian/Dorian relation within the LS. For example, they both feature the important Mixolydian triad (now II is a major triad in both scales). Additionally, as was true of Lydian and Dorian, their third-stacks are inversions of one another.

Minor-Lydian scales are easily integrated within the LS, as they merely involve the chromatic alteration of Dorian (Minor Lydian [1]) and Lydian (Minor Lydian [2]). There is an extensive example that exploits the potential for interaction between diatonic and Minor-Lydian scales in the piece “Alien Orifice” (1981/1985). Example 24 offers a summary of the main theme, stated at both the beginning (Example 24[a]) and the end of the piece (Example 24[b]). Melodically, both statements are nearly identical, yet the final statement introduces small chromatic modifications to the melody and a different accompaniment. The original statement (a) is entirely diatonic, consisting of four consecutive four-measure phrases that alternate between Lydian and Dorian scales: phrase 1 is in  $E\flat$  Lydian, phrase 2 in  $E$  Dorian, phrase 3 in  $C$  Lydian, and phrase 4 in  $G$  Dorian.

The variation technique employed in the second statement (b) is largely one of pedal substitution. Comparing phrase 1 of (b) with the corresponding phrase of statement 1 (a), we find the familiar Dorian pedal substitution ( $C$  Dorian for  $E\flat$  Lydian), retaining the same LS. The remaining three phrases of

the second statement continue to exploit Lydian/Dorian pedal substitutions, but introduce additional Minor-Lydian modifications.<sup>60</sup> Phrase 2, therefore, begins by substituting  $G$  Lydian for the corresponding  $E$  Dorian of the original statement. Then,  $G$  Lydian is altered by lowering its third scale degree, resulting in the  $G$ -Minor Lydian (2) scale. The introduction of the chromatically inflected pitch ( $B\flat$ ), occurring where  $B\sharp$  “should” be, creates a striking melodic event. Phrase 3 exhibits the same process (but in reverse), as  $A$  Dorian is substituted for the original  $C$  Lydian and is subsequently altered by raising its fourth to  $D\sharp$ , giving rise to the  $A$ -Minor Lydian (1) scale. Phrase 4 represents the most extreme harmonic variation, as its pedal substitution does not take place within the same LS. Here, the original  $G$  Dorian is replaced not by  $B\flat$  Lydian, but instead by  $C$  Lydian, the LS two fifths away in the “sharp” direction;  $C$  Lydian is then further modified to become  $C$ -Minor Lydian (2). Accordingly, three chromatic displacements occur:  $B\flat-B$ ,  $F-F\sharp$ , and  $E-E\flat$ . The extensive chromaticism applied to phrase 4 intensifies the drive toward the coda of the piece.

#### PROGRESSIONS/MODULATIONS BETWEEN DIFFERENT LYDIAN SYSTEMS

With the notable exception of Example 24, each musical excerpt examined thus far has largely maintained a single LS. Such music is clearly unified by its shared diatonic collection, as well as by the principles of Lydian derivation and modal interaction discussed above. Harmonic variety within the LS is

<sup>60</sup> An understanding of these alterations would respond well to the Tymoczko’s concept of “voice-leading” between diatonic and harmonic major/minor modes; see Tymoczko (2007) and (2011).

(a) "Alien Orifice" main theme (*Frank Zappa Meets the Mothers of Prevention*, 1985)

Scale: E $\flat$  Lydian    E Dorian    C Lydian    G Dorian

(b) "Alien Orifice" main theme, second statement, 3:16 ff.

Scale: C Dorian    G Minor Lydian (2)    A Minor Lydian (1)    C Minor Lydian (2)

EXAMPLE 24. *Diatonic/Minor Lydian interaction in the main theme of "Alien Orifice."*

thereby achieved through the different modal environments for diatonic melodies and through potential pedal substitutions and chord progressions. However, it is not surprising that Zappa rarely maintains one system throughout a complete piece (or even multiple adjacent sections of a piece). For one reason, there are substantial limitations upon pedal progressions in a LS. Because the potential pedals of the LS comprise an anheim-tonic pentatonic set 5-35[02479], Zappa's pedal progressions tend to emphasize the most prevalent intervals in the pentatonic set: ics 2 and 5 (for example, the L/M and D/M progressions). Conversely, pedal progressions within one system cannot form ics 1 and 6. Using either of these intervals would automatically entail a shift to a different LS.

To gain an understanding of Zappa's approach to system shifts, let us begin by investigating oscillating progressions akin to L/M and D/M, but which feature pedals/chords in different systems. For example, the opening chord oscillation of "Who Needs the Peace Corps?" (1967/1968) uses the tritone pedal progression C-F $\sharp$ . As this pedal motion cannot occur in a single LS, Zappa employs scales from two different systems: C Lydian and F $\sharp$  Dorian, respectively. The choice of F $\sharp$  Dorian proves musically fortuitous, as its LS (A) shares four common tones with C Lydian; of these, F $\sharp$  is given particular melodic emphasis at the beginning and ending of the phrase (0:08–16, *We're Only in It for the Money*, 1968). A similar example is the vamp to "Black Napkins" (1975/1977), which consists of an oscillating half-step progression between C $\sharp$ -minor-seventh and D-major-seventh chords. In accordance with Zappa's usual chord/scale preferences, the improvised melody responds with the scales C $\sharp$  Dorian and D Lydian, respectively. The systems of these chords/scales (E and D) share a common pentatonic collection (E–B–F $\sharp$ –C $\sharp$ –G $\sharp$ ), which corresponds to minor-1

pentatonic of the E system and major pentatonic of D system. Significantly, this collection comprises the entire pitch-class content of the composed melodic "head" of "Black Napkins," shown in Example 25.

These examples strongly suggest that common-tone retention is a central consideration when Zappa applies system shifts.<sup>61</sup> With such oscillating progressions, common tones mitigate between the two systems, upholding Zappa's general preference for harmonic stasis. Little new is required to uncover the common-tone relationships between systems. Pertaining to the diatonic modes, the number of common pitch classes will be greatest for those modes within systems separated by one perfect fifth (familiar from representations of key signatures along the circle of fifths). In Example 26 the diatonic modes of F Lydian and C Lydian retain six common tones. The use of a Minor-Lydian scale in either of these systems will reduce this number to five, and only four common pitch classes will result if Minor-Lydian scales are used in both systems. Pentatonicism allows for more inclusive pitch-class invariance, as the pitch-class content of two of the three pentatonic subcollections will be entirely contained in the diatonic modes of the adjacent LS. Additionally, two of the three pentatonic collections in a given system will find a corresponding pentatonic collection in the adjacent system with identical pitch-class content. Of course, the further removed two systems are along the circle of fifths, the fewer the number of pitch classes held invariant.

These common-tone relationships are quite important when exploited across full-scale pieces, where shifts away from a

61 Such emphasis on shared pitch classes has long been recognized as an important technique in the music of Debussy, Ravel, and Stravinsky; see Parks (1990), Wile (1997), and Tymoczko (2007 and 2011).

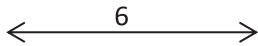


pentatonic collection

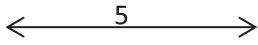
EXAMPLE 25. “Black Napkins,” main theme.

F Lydian

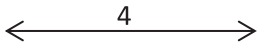
diatonic modes



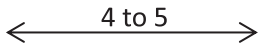
Minor Lydian



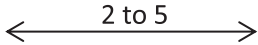
Minor Lydian



pentatonic



pentatonic

C Lydian

diatonic modes

diatonic modes

Minor Lydian

diatonic modes

pentatonic

EXAMPLE 26. Common-tone relationships between adjacent Lydian systems.

central system produce the effect of modulation. My final demonstration comes from the song “Andy” from *One Size Fits All* (1975), a stylistically varied title constructed of six distinct thematic modules. Example 27 offers transcriptions of these modules, labeled M1 through M6.<sup>62</sup> The analytical annotations in Example 27 indicate the LS in which each theme resides, as well as the pedal in use and any other characteristic progressions or collections. Scanning these themes, one finds a healthy representation of the various tonal structures discussed above, including static pedals (M1 and M5), sus2 chords (M2), pentatonicism (M6), and Zappa’s two trademark chord oscillations L/M (M1, in the chordal zone) and D/M (M4).

Considering the degree of musical variety within the modules, how does one hear such disparate content as being unified at a higher level? The first task in answering this question involves identifying a referential diatonic collection from which relations can be determined. To this end, the A-Lydian scale is the clear choice, given its prominent representation within the song. As represented in Example 28, an outline of the formal layout of the modules, those episodes given the most formal primacy are all based on A Lydian. These include the Lydian “main theme” M1, which appears every three modules, as well as the interior theme M5 and the guitar solo; additionally, both M3 and M6 feature modes of the A LS. With A Lydian established as a clear point of reference, the remaining

two modules are easily put into relation. Both are contained in systems one fifth removed from A Lydian: M2 on the flat side (D Lydian) and M4 on the sharp side (E Lydian). Therefore, M2 and M4 each share a maximal number of pitch classes (6) with the referential A LS.

Example 29 demonstrates how this common-tone relationship is musically manifested. The pitch-class content of both melodic and accompanying zones is shown, with those pitch classes contained in the A-Lydian collection represented by open note heads and nonscale tones indicated by filled-in note heads. Similar to the technique witnessed previously in “Black Napkins,” melodic zones of both M2 and M4 contain only common tones with A Lydian, leaving their accompaniments to feature the “chromatic” pitch classes. Therefore, the melodic zone sustains the A-Lydian collection throughout the song, providing a degree of pitch continuity that works to lessen the disjointed, episodic nature of the piece. Interestingly, the only challenge to this reading is presented by M3, a module featuring the Ionian mode (E) of A Lydian. As shown, this episode represents Ionian via the incomplete blues progression I–IV–I–V. Typically, such a functional progression would be considered the parlance of the opposing major-key tonal system, and thereby not contained within the LS framework. The use of melodic “blue” notes G and D in M3 furthers the sense of contextual “otherness” represented by the module. However, while we may conceptually separate M3 from the remainder of the song, the pitch-class content of its key (E major) remains identical to that of A Lydian, allowing its integration at the level of diatonic collection.

## EPILOGUE: SALAMANDERS IN THE SUN

Although the Lydian-based theory I have developed throughout this article may appear novel, there is evidence that many of the techniques described here were observed by those who worked closely with Zappa. Consider, as an example, the guitarist Steve Vai. Before joining Zappa’s band as “stunt guitarist” (1980–82), Vai was hired as a transcriptionist; his work in that capacity ultimately resulted in the massive *Frank Zappa Guitar Book* (1982), containing detailed transcriptions of Zappa’s rhythmically complex guitar solos.<sup>63</sup> The countless hours spent transcribing—as well as the years logged on the road learning the intricacies of Zappa’s composed music—made Vai uniquely knowledgeable of the textures, modes, chords, melodic

62 As most of these episodes appear more than once and are sometimes varied in texture, rhythm, etc., the transcriptions given provide only the details considered most essential to the commentary.

63 Zappa (1982b).

(a) M1

Pedal: A Lydian

(b) M2

Pedal: D Lydian

(c) M3

Lydian system: A (pedal: E Ionian)

(d) M4

Lydian system: E (pedal: C# Dorian)

(e) M5

Pedal: A Lydian

(f) M6

Lydian system: A (pedal: F# minor-1 pentatonic)

EXAMPLE 27. Six thematic modules of "Andy."

structures, and compositional techniques used by Zappa. We can see Vai applying some of this knowledge in his instrumental composition "Salamanders in the Sun" (*Flex-Able*, 1984), with its clear demarcation of melodic, chordal, and pedal zones, its slow harmonic rhythm, and its Lydian-derived harmony.

A brief analysis of this piece will serve as a summary of many of the topics covered in this article. Example 30 provides a reduction of the theme from "Salamanders," where each measure of the reduction represents four measures of the piece's triple meter.

M1	M2	M3	M1	M4	M2	M1	M5/solo	M2	M1	M4	M6
0:00	0:34	0:58	1:17	1:50	2:07	2:23	2:32	3:46	4:03	4:20	5:08

EXAMPLE 28. *Modular layout of "Andy" (One Size Fits All, 1975).*

A Lydian: referential collection

Melodic zone

Chordal/Pedal zone

Lydian system: A                      D                      A (E Ionian)                      E (C# Dorian)                      A                      A (F# m-1 pent)

EXAMPLE 29. *Analytical reduction of "Andy."*

A section: Part 1                      A section: Part 2

Melody

Chord

Pedal

D Lydian      (vi)      C Lydian                      E Mixolydian      (vi)      D Mixolydian

B section: Part 1                      B section: Part 2

Melody

Chord

Pedal

A $\flat$  Dorian                      G $\flat$  Ionian(?)                      A $\flat$  Dorian                      C $\flat$  Lydian (I)                      II                      L/M

EXAMPLE 30. *Reduction of Steve Vai's "Salamanders in the Sun" (Flex-Able, 1984).*

The A section alternates between the Lydian systems of D and C. Each modal unit is realized in ways that are generally consistent with Zappa's practices. Most noticeably, the chordal zone throughout consists exclusively of sus2 chords, first in conjunction with Lydian pedals (Part 1), then with

Mixolydian pedals (Part 2). Melodic configurations are also familiar, such as the emphasis placed on the Lydian leading tones in the opening melodic sequence, and the outlining of the Mixolydian II chord above the C-Lydian pedal. The only melodic divergence of note is Vai's use of  $\hat{1}$  in both Lydian

segments. The manner in which this pitch is introduced above the C-Lydian pedal would be uncharacteristic of Zappa's music, since it appears as the upper note of an outlined tritone, and is thereby destabilized.

Turning to techniques of modal interaction, pedal substitution is exhibited between the two parts of the A section. That is, Part 2 repeats the melody from Part 1 untransposed, but transposes its pedal/chordal zones up a whole step. This new Mixolydian modal environment thereby achieves a large-scale L/M progression from Part 1 to Part 2. The A section also shows Vai following Zappa in his handling of the shifts between the D and C systems. Here the melody of the music in the C LS (C Lydian/D Mixolydian) focuses almost entirely on common tones between the two systems, with the only exception being a late-arriving C♯—the melodic peak of the section—that clearly stands out in the texture.<sup>64</sup> The D-major chord plays an important role in this common-tone scheme, as it is both the tonic triad of D Lydian and the Mixolydian triad (II) of C Lydian. D sus2 also appears as the opening and closing chord of the A section, as the pedal substitution of Part 2 produces only common tones in the accompanying zones.

The B section takes place in a single system, with its primary mode being A♭ Dorian. Like Zappa, Vai avoids using the sus2 chord when setting this mode, switching instead to a simple triad. This Dorian mode is placed in dark-to-light modal progressions within the LS, first moving to G♭ Ionian, then climaxing in Part 2 on C♭ Lydian (where the chordal zone switches back to sus2 chords).<sup>65</sup> This Lydian climax is completed with a cadential L/M progression. The melodic zone plays an important unifying role throughout these progressions. As shown, the melody is largely an elaboration of the Lydian leading tones, with most modal units beginning and concluding with a leading tone. Vai creates a searching, dramatic experience through the chosen successions of modes in this section, as the full effect of the leading tones is not achieved until the C♭-Lydian climax occurs.

In sum, "Salamanders in the Sun" demonstrates a contextual preference for Lydian very much in the spirit of Zappa's modal style. That is, while several modes of the LS are employed, with particular emphasis on the three most typical scales, Lydian clearly represents an ideal harmonic state in this context. One might even venture to apply the term "tonic" in describing its role, given the methods of departure and return on display. Therefore, as is true of Zappa, the practice of privileging certain scales and chords over others, and the manner of textural and formal realization, is essential in articulating the underlying theoretical principles of the Lydian system. In this way, the Lydian system can be viewed to be based on similar broad musical values as major/minor tonality, and thereby not as diametrically opposed as it might first appear.

<sup>64</sup> Note that this is the same C♯ that violated the tritone restriction.

<sup>65</sup> Observe, however, that the Ionian segment is missing its fourth (common in Zappa's Ionian music); hence this span is identified as Ionian only in reference to the established diatonic collection of the B section.

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