

HISTORY, IMPLEMENTATION, AND PEDAGOGICAL IMPLICATIONS OF AN
UPDATED SYSTEM OF FUNCTIONAL ANALYSIS

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DISSERTATION ABSTRACT

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This dissertation follows the history of functional ideas and their pedagogy, illuminates with many examples the implementation of my updated system of Functional Analysis, and discusses the pedagogical implications that this updated system implies. The main goal is to update a system of labeling to be as pedagogically friendly as possible, in order to assist students and teachers of harmony to more easily and enjoyably learn, teach, and engage with common-practice tonal harmonic practice. Example syllabi, assignments, classroom demonstrations, and long projects are also included, and each aspect of the labeling is carefully discussed as it is presented.

By surveying the history of functional thinking in music theory, we find that desire to analyze for function is not a new idea, and has been a goal of many theorists and harmony teachers for centuries. However, the current methods for instructing in function still leave students confused or baffled, as they struggle to match functional concepts to labels that do not exemplify their analysis goals and methods that insist on starting from tiny detail instead of coming from a more complete musical perspective.

The elaboration of each detail of my Functional Analysis system shows how each part of Functional Analysis has been designed to help make harmonic analysis quicker, easier, more intuitive, and more personalized. The greater pedagogical implications on a

larger scale involving courses and curricula are also covered, informed by my experience both as a teacher of today's standard system and from teaching Functional Analysis in the classroom.

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CHAPTER I

INTRODUCTION

This project began long ago, before I considered teaching or music theory as goals for myself. I was struggling to complete a performance degree, but wanting to pursue composition, so I decided to change my major to music theory in pursuit of that goal. Immediately following that change, I spent six months in Berlin, where on a whim I took introductory music theory. I was surprised to learn that not everyone did things the same way I had first learned them. I was quickly converted to the German way of doing things and decided to write my undergraduate thesis on a comparison of *Funktionstheorie* and Roman numeral analysis.¹

I never intended to write another paper on that topic. But as I taught theory and aural skills in support of my composition master's degree, I discovered that I liked teaching, and that I had strong opinions about how to teach to best reach beginning students. After finishing my master's, I continued to the music theory PhD program with the primary purpose of writing this document.

The goal of this project is not to offer a new theory of function. Generally, the common understanding of tonal function in common-practice music is useful and not debated. There may be nuances and differences of approach, but in general people agree on what they mean when they say “tonic” or “dominant.” What I am trying to accomplish is an updated system of labeling function for *pedagogical purposes*. The current methods available for talking about function are complex, uncommon, or adapted from some other purpose. My aim is to build a system that leaves out needless complexity and is highly user-friendly.

Therefore, many of my analyses may seem straightforward re-workings of existing analyses.

¹ Krista Abrahamson, “A comparative study of approaches to basic tonal theory and analysis: *Funktionstheorie* vs. *Stufentheorie*,” Undergraduate Thesis, University of Nebraska – Lincoln, 2009.

But I am not necessarily trying to arrive at new analytical outcomes; instead, I aim to show that we can achieve current analytical outcomes more quickly and simply if we focus on function by using labeling that clarifies the analysis process, thereby allowing students a faster and less frustrating access to more interesting music-theoretical territory.

In this dissertation, I aim to establish an updated system of Functional Analysis. This system will be based in part on Hugo Riemann's *Funktionstheorie*,² borrowing many of his functional ideas but focusing very little on the transformational ideas associated with the newer Neo-Riemannian theory. In this way, my system of Functional Analysis (FA) resembles the type of analysis currently in use in Germany, but I have translated and adjusted it for English speakers to maximize easy implementation. Additionally, I have adapted Functional Analysis to flow smoothly into Schenkerian-type reductive ideas. The focus of Functional Analysis is common-practice era music and tonality, but I will also show ways in which Functional Analysis can be applied to more modern music, including late-Romantic chromatic music and modern pop music.

I have designed Functional Analysis to provide new insights into common-practice tonality more quickly than current methods, principally by encouraging a combination of short- and long-term thinking to more quickly identify interesting harmonic occurrences. This could prove a boon to performers and musicians who mistakenly see music theory as forbidding and difficult. I want performers and musicians of all types to be able to use theory to their advantage and to find theory undaunting and even fun. Since many of us still deal with common-practice era functional tonality (and those who don't still are often in dialogue with common-practice music), I believe that making this music easier to understand on a deeper level could help many musicians of many different types.

² I will use "*Funktionstheorie*" when referring to the German/historical practice and "Functional Analysis" when referring to my own adaptation.

1.1 Chapters

My dissertation is split into three main chapters: history, implementation, and pedagogical implications. Chapter II is focused on history and background from Jean-Philippe Rameau through Riemann, Heinrich Schenker, and theorists of the twentieth century. Sections 2.4 and 2.5 provide specific insight into the pedagogical history of functional thought, with current pedagogical sources, a survey of textbooks, and more recent scholarly works relative to my ideas.

Chapter III focuses on the specifics of the implementation of Functional Analysis, describing in detail the system and providing numerous practical examples. These examples span from the most simple, diatonic progressions, to basic chromaticism, to entire pieces. Section 3.3 also includes some adaptations of Functional Analysis to apply to more diverse genres of music.

Chapter IV shows the pedagogical motivations and teaching applications of Functional Analysis. First I detail my experience teaching Functional Analysis in the classroom. Then I build on my classroom experience with Functional Analysis and present a few possible ways to integrate Functional Analysis into current courses. This is followed by a discussion of model syllabi and assignments, which are included in the appendices. To conclude, I provide analyses and discussions of Beethoven's Piano Sonata op. 31 no. 3 (1), Chopin's Prelude op. 28 no. 4, and the Beatles' "In My Life" as longer examples of the application of Functional Analysis.

1.2 What is Functional Analysis?

The following explanation assumes a certain amount of fluency with musical terminology and notation. For those who may not be as familiar with this terminology, some basic terms are explained in Appendix A (page 143) for reference. Functional Analysis is a

harmonic analysis system that focuses on roots from a bass-oriented perspective. It is triad-based, but does not rigidly demand stacks of thirds when determining roots, preferring to privilege function and bass rather than only building chords out of thirds. It can also be used to provide insight into voice-leading when using detailed analysis, and also into phrasing and larger forms, through connections with other types of analysis, particularly formal analysis and Schenkerian analysis.

An in-depth introduction to Functional Analysis appears in Chapter III, but to provide some framing for the whole document, here follows the short version. Functional Analysis begins with the concept of cadence, which defines the three primary functions (tonic, dominant, and predominant). These basic cadences are similar in major and minor keys, but there will be important differences later, so Examples 1.1 and 1.2 show examples of a cadence in both major and minor. In C major (Example 1.1), the primary predominant is the F major triad (F A C), followed by the dominant of G major (G B D), and finally the tonic of C major (C E G). In A minor (Example 1.2), the predominant is D minor (D F A), the dominant is E major (E G# B), and the tonic is A minor (A C E).

Example 1.1

C: P D T

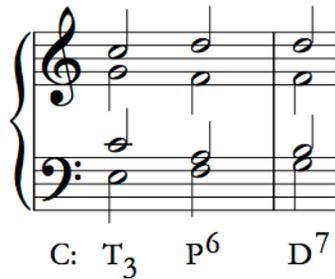
Example 1.2

a: p D t

In Chapter III, I will explain how to identify various chords in different contexts as they relate to these primary functions. One important aspect of Functional Analysis is use of superscripts and subscripts. Unlike Roman numerals, bass lines and upper voices are separated out into two different places in the label. Pitches of the bass line that have changed

from the primary function are shown separately from those that have changed in other voices, as seen below in Example 1.3.

Example 1.3



This system has significant pedagogical implications and motivations. In my experience as a teacher, I have seen the need for analytical tools that are easy to use and remember. I have designed Functional Analysis to facilitate easy use. Additionally, to meet that goal of ease, I have designed Functional Analysis from an aural basis – what you hear is what you label – and with performers in mind.

Functional Analysis is adaptable for personalized analysis, acknowledging that different people hear the same music in different ways. Depending on context, aural attention, and other factors, different performers may wish to bring out different aspects of a piece of music. There are many ways in which notes may look the same on the page while having more than one potential meaning and aural impact, but the simplest is the example of the tonic-relative versus the predominant-variant. Because the chord in Example 1.4 has two pitches in common with the tonic triad of C major (C and E), most of the time we hear this chord as a substitute for the C major triad. However, in another context, the ear may focus on the pitches in common with the predominant triad of F major (A and C), and in that case we may hear it as more closely linked with the F major triad.

Example 1.4



One of the principal performer-directed aspects is the flexibility of levels; different levels of analysis may be appropriate for different levels of performer (or amount of time till performance). If there is not enough time to perform a detailed analysis, Functional Analysis trains musicians to start on a larger level of analysis and then later zoom into details. While it is definitely possible to decide to use Roman numerals in a similar fashion for different levels – all detail or only structural chords – the very vertical nature of Roman numerals makes it harder to do so. Also, as Roman numerals are usually conceived on a detailed level and then later zoomed out, this leads students of Roman numeral analysis to begin small and only later look at bigger structures.

However, Functional Analysis is designed to start with the bigger structural level and then later zoom in. Levels are also useful as a pedagogical tool for theorists who wish to continue on to Schenkerian analysis. These levels act like Russian dolls, or embedded functional circuits in others' terminology. Several layers of nested T–P–D–T progressions are possible. This encourages the big-to-small approach of analysis, allowing students to find the phrase length progression, then dig deeper and find the next level and the next level down.³ This means unlike some other current functional approaches seen with Steve Laitz or Ian Quinn, Functional Analysis is non-contrapuntal, and does not emphasize the identification of types of prolongational motion

³ Example 3.41 shows a piece that is a good example of nesting.

(passing, neighbor), instead looking at the levels and prolongations from this nested, functional circuit point of view.

Functional Analysis owes a great deal to current German practices, but there are changes and additions. Using functional letters, having primary and substitute functions, understanding chords without roots, and showing inversions and upper voices separately are all fairly close to the *Funktionstheorie* I learned in Berlin. However, the *Funktionstheorie* labels are abbreviations for German words, so I have changed the substitute function letters to be abbreviations for English words.⁴ The method I learned did not use sharps and flats along with the sub/superscript numerals but < and > for raise and lower instead, which I could never keep straight, so I changed it to sharps and flats, with which musicians can be expected to be familiar.⁵ Additionally, the German system I learned did not have a method of dealing with sequences (they used Roman numerals in my class), so the my borrowing of LIPs for sequences is new.⁶ Finally, *Funktionstheorie* does not employ levels or other prolongational concepts, so all of those additions are mine.

While on the surface Functional Analysis may not look all that different from Roman numeral analysis, I have found it leads to new or different understandings of harmony. Tonic and dominant functions are already fairly commonly used, but substitute functions (replacements of the primary functions) are more challenging to talk about with current labels, because Roman numerals are based on pitch membership of a chord and do not allow multiple labels for the different functions of the same notes (as noted above). Also, predominants are already acknowledged to be the most flexible and flavorful category in harmonic analysis – this is where interesting chromatic chords such as augmented sixths and

⁴ Those familiar with Neo-Riemannian theories may find these switches confusing in particular, but I have designed Functional Analysis for musicians with little previous theory background, and it is certainly unlikely that such a person would be familiar with Neo-Riemannian theories.

⁵ See Example 3.16.

⁶ See Section 3.2.3.

Neapolitans occur.⁷ Functional Analysis draws connections between different flavors of predominant and helps both to show their similarities and to remember their differences, reminding analysts that these sometimes confusing altered chords are just that, simple alterations of the primary predominant function (or one of its substitutes), and that these alterations follow the voice-leading principles with which we are familiar.

Finally, for both students and performers of all types, the aural grounding, the flexibility, the simplicity, and the emphasis on multiple levels of Functional Analysis lead to much faster analysis. Aural grounding with flexibility provides a quick, easy connection to each musician's own musical reality. Functional Analysis encourages using the least complicated label and has as few steps of removal from that reality as possible. By having an emphasis on learning larger chord chunks by understanding harmonic rhythm and phrase motion before concerning ourselves with the details, the analytical process of chunking into larger structural functions can lead to more expressive phrasing in performance and faster memorization. Students may learn to be fast with current methods; with Functional Analysis speed is much more inherent.

1.3 Functional Analysis in the Classroom

One may wonder why I would like to implement a whole new system, instead of just adapting current methodologies to my purposes. My dissatisfaction with Roman numerals mostly stems from a square-peg-round-hole problem. It seems to me that Roman numerals do not fit the job we are asking them to do, and attempting to further adapt them only makes them more confusing, not less.

⁷ Examples 3.29 and 3.30.

During the winter quarter of 2014, I had an opportunity to test-drive Functional Analysis with undergraduate students.⁸ Ranging from non-music majors to senior majors, we covered everything from basic functions through tonicization and chromatic chords (mode mixture and augmented sixths) in ten weeks.

Throughout the course, we worked with concrete examples from the music literature, finding functional pillars before describing their elaborations. Advanced students were also asked to write some progressions to consider how function affects voice-leading. A favorite homework assignments compared various iterations of the chordal pattern of the Bach Chaconne from the D minor Partita for Unaccompanied Violin.⁹ A similar exercise was attempted with different versions of famous Bach chorales (*Herzlich tut mich verlangen*) and with Functional Analysis it was quite easy to analyze and track the changes to the functional pillars of the phrase.

Some new ways of looking at things were challenging at first (different conceptualizations of sixth chords such as P^6 and relations in minor, for example), but by the end of the quarter, all students wrote papers on a piece of their choosing, using Functional Analysis to help them uncover something new (to them) about the piece.

In my own personal practice and analysis, I find that using Functional Analysis for harmonic analysis instead of Roman numerals helps me get to the graphing step of Schenkerian analysis quicker. Additionally, functional thinking allows me to memorize music for performance, something with which I have personally struggled. In my teaching, presenting Aural Skills materials to freshmen from a functional perspective has them nodding their heads enthusiastically instead of staring at me with a glazed look.

⁸ I documented my course with a blog: <https://functionalanalysis.wordpress.com/2013/12/12/syllabus-and-schedule/>

⁹ Example 4.1/2.

The impact of Functional Analysis is not always readily apparent to experienced theorists who have already internalized Roman numeral analysis. However, Functional Analysis can make theory and analysis more user-friendly for students and musicians who otherwise may not be inclined to use theory, to help them gain perspective and insight on both unfamiliar and well-loved musics, to ease memorizing, and to serve as a gateway to other theories and types of analyses by making theory more approachable.

CHAPTER II

HISTORY

“In the beginning was the Tonic” would be a promising opening for the gospel of tonality. Though the tonic pitch may be the origin and goal of harmonic progression, in itself it offers no diversity, no motion.¹

2.1 Functional Beginnings: Fundamental Bass, Thoroughbass, and *Stufentheorie*

It is difficult to pinpoint the beginnings of functional harmonic ideas. Should we go back to modal *ficta* and examine why tendency tones were performed a certain way in the middle ages? Or should we start with the codification of the triad, with Lippius and Zarlino? Do we need to wade into the battle of primacy of melody versus harmony? At what point in history is music mostly or entirely written in a common-practice tonality – before or after composers and theorists are cognizant of the difference between major/minor tonality and modes?

I have chosen to start with Rameau. The purpose of this historical discussion is to trace functional ideas as they wend through different formats and relevancies, showing the historical precedence for Functional Analysis and looking at the various guises functional language has worn. From Rameau, we move to the thoroughbass of his contemporaries, then to *Stufentheorie*, and then to Riemann and related authors, and finally to Schenker. In each case, these historical scholars have used functional ideas with evolving language that shows the contemporary analytical concerns of their period.

This historical investigation will also provide some of the background on the historical emergence of Roman numerals as well, which I find shows that Roman numerals were always intended to be functional. Some of the primary precedents of Roman numerals are also important antecedents to *Funktionstheorie* and Functional Analysis.

¹ David Damschroder, *Thinking About Harmony*, 105.

2.1.1 Rameau

While Rameau's treatises are written firmly in the Enlightenment era, more than a century after the more or less accepted beginning of tonality in music, he is often proclaimed to be first true harmonic theorist:² "since the appearance of his *Traité de l'harmonie* in 1722, both the conceptualization and the pedagogy of tonal music have been profoundly altered."³

Jean-Philippe Rameau (1683–1764) is recognized as the first theorist to demonstrate the understanding that all the elements of music, whether they be triads, bass foundations, counterpoint, root generation, directed harmonic motion towards a cadence, interaction of diatonic scales and chromaticism, harmony, or rhythm and meter all work together to create a sense of tonality.⁴ His concept of a Fundamental Bass underlying harmonic progression spread widely and quickly.⁵ As with any theorist, Rameau did build on the work of his predecessors, and much of his work consists of reformulating and combining previous theories,⁶ the most obvious and contemporary of which is the idea of *thoroughbass*, to which I will come shortly in Section 2.1.2.

The primary idea behind Functional Analysis is the tension between dominant and tonic. This can be articulated in multiple ways, including referencing the desire for dominant to resolve to tonic, or the pull of the leading-tone, but no matter the phrasing, dominant represents motion and tonic represents rest. Rameau's thoughts on dissonance and the seventh chord translate into dissonance propelling harmony from dominant to tonic,⁷ and in his theories all non-tonic harmonies are compelled to return to the tonic,⁸ heralding the

² Thomas Christensen, *Rameau and Musical Thought in the Enlightenment*, 26.

³ Christensen, *Rameau and Musical Thought*, 1.

⁴ Joel Lester, "Rameau and eighteenth-century harmonic theory," *The Cambridge History of Western Music Theory*, 753.

⁵ Lester, "Rameau," 772.

⁶ Lester, "Rameau," 753.

⁷ Lester, "Rameau," 761; Christensen, *Rameau and Musical Thought*, 120.

⁸ Christensen, *Rameau and Musical Thought*, 129.

beginnings of functional harmonic thought.

Some other functional ideas of Rameau's that are still in use in Functional Analysis include his preference of bass movement by third and fifth⁹ – which resembles the relationships between the functions and their substitutes (Section 3.2.1), *double emploi* which is part of the idea behind the P⁶ (“double employment,” which is based in part on his desire for thirds in the bass instead of steps,¹⁰ see Example 3.20), and the idea of a subdominant – which was not previously common.¹¹ These last two ideas are introduced in Rameau's later treatise *Nouveau système de musique théorique* (1726), and both are essential to the treatise *Generation harmonique* (1737).¹²

The main drive behind Rameau's description of these harmonic phenomena was his concern with providing scientific proof of musical ideas he knew were common. Functional Analysis is less concerned with proving the rationality or logic of any given phenomenon and more with describing it in a useful way to students and analysts. Thus, Functional Analysis simply recognizes the commonness of chord relationships and progressions by thirds and fifths without the necessity of answering why they came to be. And while Rameau's original purpose behind theorizing double employment is unnecessary in a descriptive system, the idea that ii⁶ and IV are somewhat equivalent and mostly interchangeable remains.

Generation harmonique is the first treatise in which Rameau writes on the topic of a tonic surrounded by fifths on either side, with subdominant below and dominant above.¹³

This is the sort of idea that would later influence dualist writers like Hauptmann and

⁹ Lester, “Rameau,” 763.

¹⁰ Lester, “Rameau,” 766.

¹¹ Lester, “Rameau,” 768.

¹² Lester, “Rameau,” 768.

¹³ Lester, “Rameau,” 768.

Öttingen, and Rameau is often listed as one of the intellectual forbearers of Riemann.¹⁴

Dualism is still an important forerunner to Functional Analysis, even if it has been discredited in many ways.¹⁵

While Rameau is considered the inventor of modern harmonic analysis, a very vertical concept, Christensen argues that Rameau is also a melodic and horizontal thinker, noting that all his analyses are time-based and unfolding:

... the central claim of the *Traité* remained unaltered and unchallenged: music is a coherent and intelligible succession of directed harmonies over real time that can be both defined by and modeled with the fundamental bass.¹⁶

This is not surprising, as the most linear, horizontal theories of modern times—those of Schenker—can also be traced back to Rameau through *Stufentheorie*.¹⁷

2.1.2 Thoroughbass

Since the ideas of thoroughbass are much older than Rameau, some might consider it backward to come to the discussion of thoroughbass *after* Rameau. However, thoroughbass continued long after Rameau, and was considered a contemporary foil to Rameau's Fundamental Bass;¹⁸ scholars of the time were engaged in great debates with Rameau on one side and thoroughbass on the other.¹⁹ But, according to Lester, only six years after the publishing of *Traité*, Fundamental Bass's influence can already be seen in Heinichen's 1728 thoroughbass treatise *Der General-Bass in der Composition*²⁰ while Holtmeier also sees Heinichen's work as counterproposal to Rameau's *Traite*: "[Heinichen's work] explicitly represents the unique attempt of its time to systematize and theoretically

¹⁴ Lester, "Rameau," 774.

¹⁵ Daniel Harrison uses dualism in his book *Harmonic Function in Chromatic Music*, as does Margaret Notley in "Plagal Harmony as Other: Asymmetrical Dualism and Instrumental Music by Brahms."

¹⁶ Christensen, *Rameau and Musical Thought*, 132.

¹⁷ More on Schenker in Section 2.3 and more on *Stufentheorie* in Section 2.1.3.

¹⁸ Ludwig Holtmeier, "Heinichen, Rameau, and the Italian Thoroughbass Tradition: Concepts of Tonality and Chord in the Rule of the Octave," 26; Lester "Rameau," 753.

¹⁹ Jairo Moreno, *Musical Representations, Subjects, and Objects*, 128.

²⁰ Lester, "Rameau," 753.

substantiate the music theory of the Italian partimento tradition.”²¹

Thoroughbass, also sometimes known as figured bass, continuo, partimento, or *Generalbaß*, is the practical performance tradition of realizing an accompaniment from just the bass line or a bass line with figures:

A basso continuo ... is an instrumental bass line which runs throughout a piece, over which the player improvises (‘realizes’) a chordal accompaniment. The bass may be figured, with accidentals and numerals (‘figures’) placed over or under it to indicate the harmonies required. Continuo realization is essentially an improvised art, and much remains undocumented and ambiguous.²²

There is no single approach to Thoroughbass, and it and its defining outputs like the Rule of the Octave are not tied specifically to any one inventor or instrumental style, nor are they necessarily consistent across different writers.²³ Further, the Rule of the Octave reinforces Rameau’s Fundamental Bass theories: “The *basse fondamentale* constitutes the inner ‘essence’ of harmony, [while] the Rule of the Octave its outward [musical] appearance.”²⁴

The Rule of the Octave and other rules of the thoroughbass tradition were part of a “coalescing tonal syntax” that led to the theory of tonal harmony described by Rameau, though the rules by themselves are not considered by some scholars to constitute a true theory of harmony.²⁵ After a while, the term thoroughbass came to be used to stand for the science of harmony in general.²⁶ Additionally, by the 1770s many ideas of the thoroughbass traditions had been commandeered or borrowed by harmonic approaches.²⁷

The Rule of the Octave is among the main facets of thoroughbass practice that designate it as a functional tonal way of thinking about music. In short, the Rule of the Octave designated which chord to play on a given note of a scale – depending on whether

²¹ Holtmeier, “Heinichen,” 26.

²² Peter Williams and David Ledbetter. "Continuo." *Grove Music Online. Oxford Music Online.*

²³ Lester, *Compositional Theory in the Eighteenth Century*, 42; Holtmeier, “Heinichen,” 8, 13.

²⁴ Holtmeier, “Heinichen,” 12.

²⁵ Lester, “Rameau,” 757.

²⁶ Williams and Ledbetter. "Thoroughbass." *Grove Music Online. Oxford Music Online.*

²⁷ Lester, *Compositional Theory*, 257.

the bass line was going up or down and stepping or leaping – a very helpful concept for basses lacking in figures. This was significant because the Rule of the Octave demanded that performers know what key they were playing in, and generally codified a set of best practices for harmonic and bass progression.²⁸ The Rule of the Octave is generally acknowledged to be the most theoretical part of the practical school of thoroughbass, which leads Holtmeier to describe the Rule of the Octave as “a theory of harmonic functionality.”²⁹

A further Functional Analysis concept that could be traced to one of the thoroughbass traditions is flexibility in determining inversions. When Heinichen writes about inversion he “distances himself from the procedure of systematic third-stacking... [for him] the functional meaning of a chord is not determined by the principle of third-stacking.”³⁰

A problem I try to tackle with Functional Analysis is the divide between linearity and verticality. Holtmeier writes that the opposition of melody and harmony is an invented problem that arose because 19th-century *Harmonielehre* writers taught harmony and counterpoint separately, and in actuality thoroughbass figures were not merely vertical:

In the seventeenth and eighteenth centuries, considering the typical case, thoroughbass figures had not only vertical but also linear significance. One is often unable to draw a [dividing] line between the contrapuntal and harmonic sense of the figures. The recurring formulation in Italian lesson books, where one learns counterpoint through thoroughbass or partimento, should be taken seriously and understood quite concretely...³¹

That is to say, while we still sometimes today separate vertical and horizontal musical writing and learning, at the time, one learned the linear through the vertical and vice versa.

Additionally, the lack of rigidity and over-arching rules in the amorphous schools of thoroughbass could be seen as a strength, not a weakness:

²⁸ Lester, *Compositional Theory*, 72; Lester, “Rameau,” 756.

²⁹ Holtmeier, “Heinichen,” 11.

³⁰ Holtmeier, “Heinichen,” 32.

³¹ Holtmeier, “Heinichen,” 9.

One might consider it a deficit that the tradition of Italian thoroughbass does not offer a comprehensive and straightforward systematics, but perhaps this is precisely where its true strength lies: that it does not seek to deduce harmony and melody, line and sonority, chord and counterpoint from a single coherent principle, as Rameau does, but permanently works through the tension between those poles in a dialectical way.³²

Music is, after all, a combination of dimensions, and acknowledging the tension between linear and vertical is another purpose Functional Analysis aims to fulfill.

2.1.3 *Stufentheorie*

Roman numerals for harmonic analysis are part of some of the earliest instances of *Stufentheorie*, which can be considered part of the historical functional lineage. After Rameau, there were several theorists who used some manner of numerals (Roman or Arabic) to label the roots of a Fundamental Bass progression in relation to a scale.³³ However, Georg Abbé Vogler is generally acknowledged as one of the first scholars to use Roman numerals consistently to describe the root of a chord in relation to a scale, the predecessor of today's typical approach to harmonic analysis.³⁴ Vogler also used the concept of *Mehrdeutigkeit* to understand modulation – that a single sonority could mean VI in one key, but II in another.³⁵

The theorist who most thoroughly demonstrates the link between *Stufentheorie* and functional thought is Gottfried Weber, who tries to explain harmony functionally with the resources at his disposal in *Versuch eine geordnete Theorie der Tonsetzkunst* (1830).³⁶ He believed that theory depends on practice, and was most concerned with describing what was happening in music of his day.³⁷ His additions and adjustments to *Stufentheorie* were

³² Holtmeier, "Heinichen," 43.

³³ Damschroder, *Thinking about Harmony*, 1–5.

³⁴ David W. Bernstein, "Nineteenth-century Harmonic Theory," *The Cambridge History of Western Music Theory*, 780.

³⁵ Bernstein, "Nineteenth-century Harmonic Theory," 781.

³⁶ Janna Saslaw, "Weber, (Jacob) Gottfried," *Grove Music Online, Oxford Music Online*.

³⁷ Bernstein, "Nineteenth-century Harmonic Theory," 782.

exceedingly popular and immediately plagiarized, including the use of large and small letters to indicate major versus minor quality.³⁸

Most importantly, Weber was one of the first to conceptualize modulation and tonicization.³⁹ Our current understanding of applied chords and pivot modulations is descended from Weber – using *Mehrdeutigkeit* to explain how one chord might exist in two keys.⁴⁰ While today we distinguish between modulation and tonicization, Weber describes them as the same thing; his “digressions” are shown in terms of *Verwandschaft* – closeness to tonic – based on closely related keys.⁴¹ He showed which keys are most closely related with a *Tonnetz*⁴² originally described by Leonhard Euler.⁴³ The idea that certain progressions of chords (such as V–I) imply a new key shows the beginnings of function.

Other ideas that Weber originated that I still find useful include the concept of vii^{o7} as the V⁹ missing its root and the idea that there are primary chords to a key (I, V or V⁷, and IV).⁴⁴ Weber’s treatise was widely translated and disseminated in the second half of the 19th Century.⁴⁵ One of his successors was Ernst Richter, whom I will cover in Section 2.4.2. Another who took Weber’s ideas and re-formed them was Simon Sechter, the most notable writer in the *Stufentheorie* tradition. Sechter is often noted as a forerunner of Schoenberg and Schenker, two scholars I will come to in Sections 2.4.2 and 2.3 respectively.⁴⁶

³⁸ Gene Cho, *Theories and Practice of Harmonic Analysis*, 30.

³⁹ Janna Saslaw, “Weber,” *Grove Music Online, Oxford Music Online*.

⁴⁰ For a further philosophical discussion of Weber’s analytical techniques, particularly *Mehrdeutigkeit*, see Jairo Moreno, “Gottfried Weber and Mozart’s K. 465: The Contents and Discontents of the Listening Subject,” *Musical Representations, Subjects, and Objects*, 128–159.

⁴¹ Bernstein, “Nineteenth-century Harmonic Theory,” 784.

⁴² Bernstein, “Nineteenth-century Harmonic Theory,” 786.

⁴³ Catherine Nolan, “Music theory and mathematics,” *The Cambridge History of Western Music Theory*, 283.

⁴⁴ Bernstein, “Nineteenth-century Harmonic Theory,” 783; Damschroder, *Thinking About Harmony*, 11–12.

⁴⁵ Bernstein, “Nineteenth-century Harmonic Theory,” 787

⁴⁶ Bernstein, “Nineteenth-century Harmonic Theory,” 788.

2.2 Riemann and Associated Scholars

In the 19th-century, there was a locational split between thoroughbass/*Stufentheorie* and harmonic dualism/*Funktionstheorie*; the first was Austrian and the latter Prussian, but both were influenced by the Fundamental Bass of Rameau, which was more international in influence.⁴⁷ The core differences between *Stufentheorie* and *Funktionstheorie* are explained by David Bernstein thus:

Properly speaking, ‘functionality’ in tonal music concerns the behavior of chords in relation to the tonic. A function theory differs from a theory of chordal scale degrees (*Stufentheorie*) in that the former goes beyond the description of chords according to their position within the scale and constitutes a systematic ratiocination of chordal relationships around a tonal center.⁴⁸

The obvious historical predecessor to modern Functional Analysis is Hugo Riemann. His best-known treatise, *Vereinfachte Harmonielehre* (Harmony Simplified) lays out his concepts of chord relations and function.⁴⁹

Overall, Riemann helped define music as a stable knowable entity worthy of scientific study.⁵⁰ For our purposes, Riemann’s system may be seen as a huge development, as he is the founder of functional labeling. But before we dive into Riemann’s theories, we will first trace many of his ideas and philosophies from Hauptmann, Helmholtz, and Öttingen.⁵¹ In addition, there are some other scholars who wrote using functional ideas before Riemann coined the terminology that we still use today.

⁴⁷ Henry Klumpenhauer, “Dualist tonal space and transformation in nineteenth-century musical thought,” *The Cambridge History of Western Music Theory*, 456.

⁴⁸ Bernstein, “Nineteenth-century Harmonic Theory,” 796.

⁴⁹ Hugo Riemann, *Harmony Simplified*, 9.

⁵⁰ Alexander Rehding, *Hugo Riemann and the Birth of Modern Musical Thought*, 183.

⁵¹ William Mickelsen, *Hugo Riemann’s Theory of Harmony*, 30.

2.2.1 Nineteenth-century functional ideas

Some thoroughbass writers as early as the 1750s were already advising continuo players to organize a key around three primary chords, instead of to diatonic scale pitches, such as Johann Frederick Daube in his 1756 *General-Baß in drey Accorden* (Thoroughbass with three chords).⁵² As mentioned in the previous section, Weber also related his Roman numerals to the three or four most important harmonies,⁵³ and two Spaniards in London in 1850 were using the names cadence, precedence, and transcadence, which roughly correspond to our tonic, dominant, and predominant.⁵⁴ The most developed system of this style of the time was Johann Gottlieb Portmann (*Musikalischer Uniterricht*, 1785) who had only four categories of chords instead of *Stufentheorists'* seven.⁵⁵ Riemann, in his historical surveys and other acknowledgements, only briefly touches these predecessors.⁵⁶

However, Riemann does more closely acknowledge his scholarly lineage through Hauptmann, Helmholtz, and Öttingen. Daniel Harrison describes Moritz Hauptmann (*The Nature of Harmony and Meter*, 1853) and Hermann Helmholtz (*On the Sensations of Tone*, 1863) as harbingers of a new age in music theory.⁵⁷ Part of the Hauptmann and Helmholtz tradition is the urge to revise, adapt, and update previous theories,⁵⁸ an urge which I also feel!

One of the hallmarks of Hauptmann's theory that carries over into Riemann's theory is dualism. Hauptmann had a very philosophical, Hegelian interpretation of music, and used nested, logical relationships to try to explain why music works the way it does and where its

⁵² Damschroder, *Thinking about Harmony*, 9; Bernstein, "Nineteenth-century Harmonic Theory," 795.

⁵³ Damschroder, *Thinking About Harmony*, 12.

⁵⁴ Joaquín de Viretués y Spínola and FT Alphonso Chaluz de Vernevil; Damschroder, *Thinking About Harmony*, 13.

⁵⁵ Damschroder, *Thinking About Harmony*, 6–7, 13, 90.

⁵⁶ Damschroder, *Thinking About Harmony*, 16.

⁵⁷ Daniel Harrison, *Harmonic Function in Chromatic Music*, 216.

⁵⁸ Harrison, *Harmonic Function*, 217.

various elements come from.⁵⁹

The best way I have found to think about Hauptmann's dualism is a having/being dichotomy: major chords/keys *have* overtones, and minor chords *are* overtones of different fundamentals; this means that minor triads have their roots as the highest note.⁶⁰ Some critique Hauptmann, saying he is too idealist, but there are interesting insights that come from thinking about music in this way.⁶¹ Later, Öttingen and Riemann back off of the dualistic dialectic by trying to aurally justify undertones, which actually hurts their cause; Hauptmann's work might have arbitrary relationships, but his instincts about the nature of keys and tonal relationships seem reasonable and even insightful.⁶²

Writing a decade later than Hauptmann, Helmholtz relies on the research methods of contemporary physics and physiology, being one of the first people to study and understand acoustics, and so meticulously that his writings are still a standard in acoustics and physiology.⁶³ His understanding of acoustics led him to believe that minor triads were inferior, which led others to vehemently disagree with him, but his impeccable scientific methods often set the terms of the debate and made him somewhat unassailable for a time.⁶⁴

While many dualists took Helmholtz very seriously based on his physiological foundation,⁶⁵ a different option was taken by Öttingen. Hauptmann and Helmholtz's ideas are merged by Arthur von Öttingen in his *Harmoniesystem in dualer Entwicklung* (1866), which was written at least in part because Öttingen thought Helmholtz was wrong about minor

⁵⁹ Harrison, *Harmonic Function*, 218, 223.

⁶⁰ Harrison, *Harmonic Function*, 227–28.

⁶¹ Klumpenhauer, “Dualist tonal space and transformation in nineteenth-century musical thought,” 459.

⁶² Harrison, *Harmonic Function*, 232.

⁶³ Harrison, *Harmonic Function*, 234.

⁶⁴ Harrison, *Harmonic Function*, 241–42.

⁶⁵ Klumpenhauer, “Dualist tonal space and transformation in nineteenth-century musical thought,” 457.

keys.⁶⁶

A picturesque analogy describing the difference between Öttingen and Helmholtz's theories uses bridge building, saying Helmholtz built a bridge to span from science (acoustics) to art, while Öttingen built an alternate bridge using the same raw materials, but starting from art and trying to span back to science; both bridges start well-founded, but by the time they cross the gap to the other side (whether science or art) the bridge is not as solid or well-supported as at first.⁶⁷ That is to say, Helmholtz's acoustical reasoning did not lead to fertile musical ground, and when Öttingen tried to start in fertile musical ground, he ran into (what we now understand as) problems trying to make solid acoustical justifications for undertones.⁶⁸

2.2.2 Riemann

Alexander Rehding's 2003 book *Hugo Riemann and the Birth of Modern Musical Thought* explores Riemann's philosophical background and motivations, and reframes Riemann in terms more approachable to modern thinkers.⁶⁹ Rehding clarifies many concepts and elucidates the philosophical context in which Riemann was working, and even points out that sometimes Riemann himself is unclear on how he is using his terminology: "...equivocation between chords and their interpretation is a constant source of tension in Riemann's theory of harmonic function."⁷⁰ Function might be most productively thought of as an interpretation of a chord.⁷¹

This discrepancy between function-as-chord or function-as-ideal will have

⁶⁶ Harrison, *Harmonic Function*, 216, 242; Klumpenhauer, "Dualist tonal space and transformation in nineteenth-century musical thought," 458.

⁶⁷ Harrison, *Harmonic Function*, 243.

⁶⁸ Klumpenhauer, "Dualist tonal space and transformation in nineteenth-century musical thought," 464.

⁶⁹ Alexander Rehding, *Hugo Riemann and the Birth of Modern Musical Thought*, Cambridge: Cambridge University Press, 2003. Another good explanation of Riemann's various theories and treatises can be found in David Kopp's "Hugo Riemann," from *Chromatic Transformations in Nineteenth-century Music*, 61–102.

⁷⁰ Rehding, *Hugo Riemann*, 58.

⁷¹ Rehding, *Hugo Riemann*, 57.

ramifications when we reach syntactical function in Chapter IV. Riemann often describes chords using complicated contortions to emphasize their function first, even if it means it takes longer to understand what the individual notes are – to him how we understand the chord is more important than what it looks like.⁷² For example, even if a highly chromatic chord such as an augmented sixth should follow a dominant, Riemann labels it as a highly altered tonic, to show the expectation/fulfillment pattern.⁷³

Riemann's theories are based strongly on Öttingen's (in turn an amalgamation of Hauptmann and Helmholtz, as seen above) and he intended his theories for use in conservatories and universities.⁷⁴ He first coined the term "function" in his *Vereinfachte Harmonielehre* of 1893, using it to mean a relationship between chords, similar to the original mathematical definition of function, relating argument and value.⁷⁵ Here is his first definition of function:

There are only three kinds of tonal functions (significance within the key), namely, tonic, dominant, and subdominant. In the change of these functions lies the essence of modulation.⁷⁶

Riemann's system of functional labels is based on the idea that all chords relate to the cadence, and it is only through a cadence that we can firmly establish a tonality. *Vereinfachte Harmonielehre* (or *Simplified Harmony*),⁷⁷ designed to be a teaching book for one to learn harmony from, expands on these relations to the cadence. As a teaching tool, it includes many other necessary musical parameters (instrument transposition, clefs), besides being greatly concerned with voice-leading. What follows is a quick overview of the basics of relevant portions of Riemann's chordal labels.

⁷² Rehding, *Hugo Riemann*, 76.

⁷³ Rehding, *Hugo Riemann*, 77.

⁷⁴ Klumpenhauer, "Dualist tonal space and transformation in nineteenth-century musical thought," 458.

⁷⁵ Brian Hyer, "Tonality," *The Cambridge History of Western Music Theory*, 736.

⁷⁶ Riemann, *Harmony Simplified*, 9.

⁷⁷ Riemann, *Harmony Simplified*, 20.

The three principal chords in this system are tonic (T, I), dominant (D, V), and subdominant (S, IV). Though it may not be readily apparent in a quick overview of Riemann's dense prose, he defines tonality as the interplay between tonic, subdominant, and dominant.⁷⁸ Their respective functions may be defined as stability, tension or desire for stability, and transition.

Once the principal chords of a key are defined, Riemann goes on to relate all other chords back to them. The first relation back to these principal chords is by thirds; chords that are a third below a major triad are known as its *Parallelklang* (such as A minor's relation to C major) and may substitute in a musical context for that function. This relationship is shown by adding a P after the principal functional label – Tp, Sp, Dp.⁷⁹ The third relation in the opposite direction is the *Leittonwechselklang* (leading-tone change chord), so named because the tonic note is exchanged for its leading tone (e.g., CEG becomes BEG). Riemann indicated these chords by placing a < over the functional letter, as seen in Example 2.1:⁸⁰

Example 2.1



Pitches added to these basic triads are indicated with Arabic numerals next to the label; a subdominant chord with an added sixth above the root is indicated by S6/5.⁸¹ Riemann indicates which note is in the bass by placing the number directly below the letter; for example he shows a 3 for the third in the bass.⁸²

⁷⁸ Renate Imig, *Systeme der Funktionsbezeichnungen zeit Hugo Riemann*, 224.

⁷⁹ Riemann, *Harmony Simplified*, 74.

⁸⁰ Riemann, *Harmony Simplified*, 80, 194.

⁸¹ Imig, *Systeme der Funktionsbezeichnungen*, 16–17.

⁸² Riemann, *Harmony Simplified*, 38.

Applied dominants are enclosed in parentheses, so that in C major, an A major triad going to a D minor triad would be indicated (D)Sp.⁸³ There are also backward arrows for when such a progression happens in the opposite order, and brackets for when the resolution is unexpected or missing (D)[Sp].⁸⁴ The most common secondary dominant – our V/V – is indicated by two Ds, the second slightly down to the right of the first (Example 2.2):⁸⁵

Example 2.2



These relations apply only to major and minor triads. The diminished triad was often seen as an alteration of a minor triad. The main exception was its most common use: the vii°. Riemann viewed this triad as an abbreviation of the dominant seventh chord, but missing the root, because of its function as a weaker dominant substitute.⁸⁶ He indicated missing roots with a slash through the label, as shown in Example 2.3:⁸⁷

Example 2.3



All of the above guidelines for functional labeling apply only to major. Partially because of the dualistic development of minor in Riemann's system, everything in minor is exactly reversed. Riemann views the fifth of a minor triad as its root, has the *Parallel* triads

⁸³ Riemann, *Harmony Simplified*, 129, 194–95,

⁸⁴ Imig, *Systeme der Funktionsbezeichnungen*, 10–11; Riemann, *Harmony Simplified*, 130.

⁸⁵ Imig, *Systeme der Funktionsbezeichnungen*, 12; Riemann, *Harmony Simplified*, 194.

⁸⁶ Riemann, *Harmony Simplified*, 69–70.

⁸⁷ Riemann, *Harmony Simplified*, 71.

above the principal instead of below, draws the *Leittonwechselklang* symbol backwards (>), and indicates added tones and inversions by the interval below the root (our fifth) with small Roman numerals.⁸⁸

This dualistic development of minor has been something of a problem for Riemann's reputation, but it is important to remember that where minor comes from was a question that scholars really wanted answered, and our dismissiveness of dualism is partially because that question is no longer interesting to most.⁸⁹ Eventually Riemann agreed to do away with arguments involving undertones in a 1905 treatise, if the use of argument from overtones were also thrown out, demonstrating again that psychology is now more important than acoustics.⁹⁰

For Riemann, the visual aspect of the score was irrelevant, because the psychology of what the music sounds like was more important: "the score was for [Riemann] a mere vehicle by which the composer conveyed his thoughts to the listener."⁹¹ Also, part of his interest in backing up his theories with acoustics was the desire to appear as a natural scientist, because scientists of his time enjoyed great a great deal of prestige.⁹²

One of the things Riemann was reacting against what he viewed as the prevailing ideas of *Stufentheorie*.⁹³ A student of Riemann's complains: "Through Roman numerals one does not receive the picture of the chord connections, but only the picture of the place of the chord in the scale."⁹⁴ Function theorists wanted to bring attention to the relative

⁸⁸ Riemann, *Harmony Simplified*, 6, 73, 79/194, 23.

⁸⁹ Rehding, *Hugo Riemann*, 32.

⁹⁰ Rehding, *Hugo Riemann*, 34.

⁹¹ Rehding, *Hugo Riemann*, 163.

⁹² Rehding, *Hugo Riemann*, 108.

⁹³ Imig, *Systeme der Funktionsbezeichnungen*, 124.

⁹⁴ "Durch die römischen Zahlen erhält man nicht das Bild der Akkordbeziehungen, sondern nur das Bild der Stellung des Akkordes in der Tonleiter." Hermann Grabner, *Die Funktionstheorie Hugo Riemanns und ihre Bedeutung für die praktische Analyse*, 6.

importance of triads, and not call every triad built on any scale-step equal.⁹⁵ One of Riemann's other goals was actually to show how music is normal at a more basic structural level, even when the surface sounds chromatic and harmonically bold.⁹⁶

2.2.3 Successors to Riemann's ideas

In Germany, a descendent of Riemann's functional labeling system was used in conservatories for most of the 20th century, and is more recently starting to gain traction in the universities as well.⁹⁷ In this section, I will trace the development of *Funktionstheorie* after Riemann systematized it. Those who followed after him—his students and his students' students—kept the basic concepts but changed some of the details to make the system more pedagogically friendly.⁹⁸

My current usage of function in Functional Analysis focuses on the chords representing the functions (instead of function-as-ideal), loosely based on modern German trends, which I encountered in Berlin in 2008. The differences between and evolution from Riemann's original to today's modern German usage are outlined in a book by Renate Imig from 1970, often cited in this section.

Many thought Riemann's system was too complicated or not practical.⁹⁹ Riemann's original system did not even survive past his death; before he died his student Herman Grabner was re-working the functional labeling system. In his 1923 work, *Die Funktionstheorie Hugo Riemanns und ihre Bedeutung für die praktische Analyse* (The Functional Theory of Hugo Riemann and its Meaning for the Practical Analysis), Grabner frames his discussion around

⁹⁵ Riemann, *Simplified Harmony*, 9.

⁹⁶ Rehding, *Hugo Riemann*, 39.

⁹⁷ Imig, *Systeme der Funktionsbezeichnungen*, 223.

⁹⁸ Grabner, *Die Funktionstheorie Hugo Riemanns*, v; Imig, *Systeme der Funktionsbezeichnungen*, 135.

⁹⁹ Imig, *Systeme der Funktionsbezeichnungen*, 122, Mickelsen, 16.

how theory is useful to musicians, especially performers – not just composers.¹⁰⁰ He imbues the entire document with a desire to be practical and useful to practicing musicians. There is even a section on basic pedagogical concepts.¹⁰¹

Once Grabner gets into the analytical portion of this treatise, he keeps much of what Riemann laid out. He makes two important changes: the first is that he completely discards the idea of undertones and the dualistic generation of minor and adapts functional relationships to non-dualistic tonality;¹⁰² and the second important change for my purposes is the name change *Leittonwechselklang* to *Gegenparallelklang*, which is then shortened to *Gegenklang*.¹⁰³ This name change shows that he views these triads as similar in function but in opposite direction as *Parallelklänge*, which can make one more likely to understand it as a similar substitute function. It also changes the focus of the term from the voice-leading of *Leittonwechselklang*, which indicated a half-step motion, to instead the functional usage of the resulting chord.

The idea of the reversal of the direction of the relation of *Parallelklänge* with major and minor keys did continue even if the dualistic development of minor did not.¹⁰⁴ This may be because musicians are familiar with reversing direction to get back and forth between relative major and minor keys, up a third one way, down a third to get back. Consequently, in later versions of functional labeling, principal minor triads are built up by thirds from the root exactly as major triads are, but the relationship of *Parallel* and *Gegenklänge* in minor keys are still the exact opposite of their relationships in major.

¹⁰⁰ Grabner, *Die Funktionstheorie Hugo Riemanns*, 1–3.

¹⁰¹ Grabner, *Die Funktionstheorie Hugo Riemanns*, 11–13.

¹⁰² Harrison, *Harmonic Function*, 302.

¹⁰³ Grabner, *Die Funktionstheorie Hugo Riemanns*, vi.

¹⁰⁴ Mickelsen, *Hugo Riemann's Theory of Harmony*, 55

The next important and lasting change to the functional system was made by Wilhelm Maler, a student of Grabner, as evidenced in his 1931 *Beitrag zur durmolltonalen Harmonielehre* (Treatise on Major-Minor Harmony). Maler's major contribution is the use of uppercase letters for major triads and lowercase for minor.¹⁰⁵ Otherwise, his notation is very similar to Grabner's. His book is meant to be essentially a core theory text, similar to Riemann and Grabner, and goes through all of the basics one would expect from such a work. The table of contents lists the function symbols relevant to each chapter side by side with the still prevalent Roman numerals.¹⁰⁶ This provides a useful, concise crib sheet for some of the basic translations between systems. Maler's additions and adaptation of Grabner's changes to the system were quite popular, and his textbook was reprinted in new editions multiple times.¹⁰⁷

Other less commonly known writers also worked with Riemann's ideas. One theorist playing off of Riemann's ideas was Sigfried Karg-Elert. He took his ideas in a different direction from Grabner and Maler. Though his system extended far beyond what many considered practical, it has been taught in some conservatories.¹⁰⁸ Karg-Elert is described as radical and eccentric¹⁰⁹ and manages to make his system of labels more dualistic than Riemann, using upside-down letters for transformations he described as polar.¹¹⁰ Another "radical" theorist was Hermann Erpf, who instead of three functions only delineated between Tonic and Not-tonic, describing how many transformational steps it would take to return to tonic – his main focus was the late 19th-century music Riemann avoided.¹¹¹

¹⁰⁵ Imig, *Systeme der Funktionsbezeichnungen*, 122, 224.

¹⁰⁶ Wilhelm Maler, *Beitrag zur durmolltonalen Harmonielehre I*, vi–vii.

¹⁰⁷ Maler, *Beitrag zur durmolltonalen Harmonielehre*, ii–v.

¹⁰⁸ Imig, *Systeme der Funktionsbezeichnungen*, 120.

¹⁰⁹ Harrison, *Harmonic Function*, 307, 313.

¹¹⁰ Harrison, *Harmonic Function*, 315.

¹¹¹ Harrison, *Harmonic Function*, 308–310.

Funktionstheorie has aimed to be practical, and it has been taught in German conservatories almost since its conception.¹¹² Though the practice was strong in conservatories, *Funktionstheorie* was only slowly gaining traction in the separate German university system as of the 1970s, though it is now taught widely there.¹¹³ One current (at the time in the 70s) teaching book that Imig mentions is the *Harmonielehre* of Diether de la Motte.¹¹⁴

The popularity of Motte's text is evidenced by its fourteen reprintings.¹¹⁵ There are few changes from the system that Maler codified, though the layout and presentation is now that of the evolution of music through time.¹¹⁶ He even adds a chapter dealing with 20th-century post-tonal music in a recent edition.¹¹⁷

As seen throughout this section, most theorists aimed to improve functional labeling by making it simpler, clearer, and more practical. Some had different ideas of practicality than others, but the general evolution of *Funktionstheorie* is definitely toward the usable. Though the original audience was practical performing musicians, academics have more recently also become interested in its use. Imig claims “[t]he main job of function labels lies in the showing of the compositionally important harmonic happenings. A labeling system should therefore also understandably use the symbols the harmonic flow desires.”¹¹⁸ In his opinion, functional labels more clearly show the flow of musical harmony. Karg-Elert said this about Riemann and *Funktionstheorie*:

¹¹² Imig, *Systeme der Funktionsbezeichnungen*, 120.

¹¹³ Diether de la Motte, *Harmonielehre*, 14th edition, Kassel: Bärenreiter, 2007.

I spent six months in Berlin in 2008 and took a basic freshman theory course where I learned these techniques. My professor did not use a text book, though he suggested the Motte book as a resource.

¹¹⁴ Imig, *Systeme der Funktionsbezeichnungen*, 223.

¹¹⁵ Motte, *Harmonielehre*, 6–11.

¹¹⁶ Motte, *Harmonielehre*, 5–6.

¹¹⁷ Motte, *Harmonielehre*, 261–281.

¹¹⁸ Imig, 225.

Functions Theory is a logic of harmony and the best form of chord analysis. Riemann's molding of a functional labeling system is not emphasized highly enough, if it does also have a multitude of contradictions and holes. To have laid down the basic principle of function remains a great deed in the history of harmonic theory.¹¹⁹

2.3 Functionality of Schenker

Possibly the most influential thinker on modern tonal analysis is Heinrich Schenker.¹²⁰ Though he is best known for his treatise *Der Freie Satz* (Free Composition, 1935), the analytical third book from *Neue musikalischen Theorien und Phantasien*,¹²¹ in this section, I am interested in his writings on harmony from his first book, *Harmonielehre* (1906). Schenker's *Harmony* is paired with his writings on counterpoint (*Kontrapunkt*, 1910/1922), as was quite common for theoretical compositional writings of the time.¹²² He was very emphatic that these two disciplines were different and that contemporary teaching manuals using contrived examples did both subjects a disservice. In a critique of a *Stufentheoret* teaching book (by Ernst Richter, who will be mentioned later in Section 2.4.2), he comments that voice leading and harmony are separate concerns, and that if the teacher cannot separate the two, no wonder current students are confused by these contrived examples.¹²³ Even more practical examples, like thoroughbass realizations of C.P.E. Bach, though not as contrived and more musical, do not demonstrate harmony: "It is impossible that every note of a true bass line should be a scale-step and that the progression of the bass notes should be identical with the progression of the scale-steps."¹²⁴

¹¹⁹ "Die Funktionslehre ist eine Logik der Harmonie und die hervorragendste Form der Klang-Analyse. Die Schaffung einer Funktionsschrift ist Riemann nicht hoch genug anzurechnen, wemgleich ihr auch eine Menge von Widersprüchen und Lücken noch anhaftet. Das grundlegende Prinzip der Funktion aufgestellt zu haben, bleibt eine Großtat in der Geschichte der Harmonielehre." Imig, 130.

¹²⁰ William Drabkin, "Heinrich Schenker," *The Cambridge History of Western Music Theory*, 812.

¹²¹ Drabkin, "Heinrich Schenker," 816.

¹²² Drabkin, "Heinrich Schenker," 813.

¹²³ Heinrich Schenker, *Harmony*, 176–177.

¹²⁴ Schenker, *Harmony*, 181.

This quote introduces the most Schenkerian of words: “scale-step” (*Stufe*, plural *Stufen* in German). This is because Schenker’s academic lineage comes from *Stufentheorists* through Simon Sechter.¹²⁵ To determine whether a chord is a scale-step or not, many things are taken into consideration, but some of the salient features include length, accent, harmonic flow, not having non-chord-tone type motions, and having principal pitches in bass-lines.¹²⁶

Schenker’s use of scale-steps is reductive in nature, viewing certain chords as supporting more structural harmonies,¹²⁷ so that one can understand a piece of music as decorations (diminutions) on a structural framework.¹²⁸ Schenker is often presented as anti-Riemann, which is partially due to Riemann himself; Riemann saw music history as a battle between functional ideas and *Stufentheorists* – and it can be said that Schenker is the ultimate culmination of *Stufentheorie*.¹²⁹

However, like many of the other theorists previously covered in this chapter, Schenker includes ideas that are clearly functional, but uses different vocabulary to discuss these ideas: “scale-step” can often be replaced sensibly with “function.” Take the following quote from *Harmony*, and consider the meaning if one were to replace “scale-step” with “function:”

For not every triad must be considered as a scale-step; and it is most important to distinguish between C as the root tone of a triad and C as a scale-step.

The scale-step is a higher and more abstract unit. At times it may even comprise several harmonies, each of which could be considered individually as an independent triad or seventh-chord; in other words: even if, under certain circumstances, a certain number of harmonies look like independent triads or seventh-chords, they may

¹²⁵ Bernstein, “Nineteenth-century Harmonic Theory,” 788.

¹²⁶ Schenker, *Harmony*, 141–149.

¹²⁷ Schenker, *Harmony*, 152.

¹²⁸ Structural does not necessarily equal interesting, salient, or motivic. For discussions of melodic and harmonic structure, see Allen Cadwallader and David Gagne, *Analysis of Tonal Music: A Schenkerian Approach*, 3rd Edition, 15–ff and 41–ff.

¹²⁹ Thomas Christensen, “Music Theory and its Histories,” 12.

nonetheless add up, in their totality, to one single triad, e.g., C–E–G, and they would have to be subsumed under the concept of this triad on C as a scale-step. The scale-step asserts its higher or more general character by comprising or summarizing the individual phenomena and embodying their intrinsic unity in one single triad.¹³⁰

While viewing Schenker's ideas functionally is quite easy, the reverse – viewing Riemann's through a scale-step lens – is more difficult, because Riemann didn't focus on explaining chords in a prolongational manner. However, one of his analyses shows how Beethoven's 'Waldstein' Sonata reinforces 8-bar phrase ideals and T–S–D–T functions – even through striking chromaticism and a 13-bar phrase length.¹³¹ Both Riemann and Schenker are interested in the large-scale patterns that underlie common-practice tonality.

Schenker's reductive view of analysis lends itself well to Functional Analysis. Even if *Funktionstheorie* was not originally intended to be reductive, that is primarily how modern thinkers use function now in addition to Roman numerals. As seen in the Riemann section, *Funktionstheorie* relates other chords back to three primary functions. In Schenker, chords relate to *Stufen*. In both of these cases, either the ideal of the function or the *Stufe* is primarily represented by a chord.

Schenker's description of dominant is similar to how we use it today, as tension, or need for resolution.¹³² And he even comments that the dominant is what defines a key,¹³³ which is exactly how I tell freshmen how to find a key still today. As for our interpretation of VII as dominant, when it also has two notes in common with predominant type chords, Schenker notes that VII “is psychologically akin, by virtue of its univalence [the tritone

¹³⁰ Schenker, *Harmony*, 139.

¹³¹ Rehding, *Hugo Riemann*, 36–39.

¹³² Schenker, *Harmony*, 219.

¹³³ Schenker, *Harmony*, 214.

between *ti* and *fa* and the pull of the leading tone], to the V⁷ chord; accordingly it would take us straight to the dominant.”¹³⁴

2.4 Function in Pedagogy and Pedagogical History

Having reviewed the historical basis and usage of functional terminology in theoretical treatises, I now turn to a discussion of functional ideas in American music theory pedagogy. This discussion serves the purpose of showing that the desire to analyze and teach with functional goals is neither uncommon nor new, while also showing that the trend toward a functional type of analysis is growing more prevalent or at least more overt. While music theory pedagogy has a long history of using ideas we now think of as “functional,” and historical texts may use functional ideas without using functional terminology, recent textbooks use specifically functional language. Following a survey of these textbooks, I will introduce and comment on three prominent current methods that highlight harmonic function in a different way than I do: those of Ian Quinn, Charles Smith, and David Damschroder.

To determine the history of functional thought in music theory pedagogy, I collected eight textbooks and treatises from 1873 to the mid-1990s.¹³⁵ In addition, I compared four major current texts¹³⁶ and three pedagogical sources.¹³⁷ I will begin by discussing pedagogical

¹³⁴ Schenker, *Harmony*, 229.

¹³⁵ Ernst Richter, *Manual of Harmony*, translated by JCD Parker, 8th edition, Boston: Oliver Ditson Company, 1873.

Francis L. York, *Harmony Simplified: A Practical Introduction to Composition*, 4th edition, Boston: Oliver Ditson Company, 1909.

Walter Piston, *Harmony*, 1st edition, New York: W.W. Norton and Co, 1941.

Paul Hindemith, *Traditional Harmony*, London: Schott and Co, 1943.

Leonard Ratner, *Harmony: Structure and Style*, New York: McGraw-Hill, 1962.

Arnold Schoenberg, *Structural Functions of Harmony*, edited by Leonard Stein, New York: W.W. Norton and Co, 1969.

Allen Forte, *Tonal Harmony in Concept and Practice*, 3rd edition, New York: Holt, Rinehart and Winston, 1979.

Ralph Turek, *Elements of Music*, New York: McGraw-Hill, 1996.

¹³⁶ Stephan Kostka and Dorothy Payne, *Tonal Harmony*, New York: McGraw-Hill, 2009.

sources, which differ from textbooks in that they draw back the curtain to let the teacher know background concepts and tricks that may not be apparent to students in the course textbook.

2.4.1 Current Pedagogical Sources

The following pedagogical sources really reveal what teachers and textbook writers are trying to accomplish. The first two, Gary Karpinski's *Aural Skills Acquisition* and Michael Rogers' *Teaching Approaches in Music Theory*, are focused on core curricula ideas of theory and aural skills, and the third, William Caplin's *Classical Form*, is mostly focused on the teaching and analysis of form, which is somewhat dependent on functional harmonic ideas.

Two current pillars of music theory pedagogy that I was introduced to in my graduate studies are Karpinski's *Aural Skills Acquisition* and Rogers' *Teaching Approaches in Music Theory*.¹³⁸ These two books cover primarily music theory topics relating to core music theory curricula and common-practice tonality, making them an appropriate place to find other professionals' approaches to function when analyzing common-practice music. Since Functional Analysis is designed to be aurally based, looking at the pedagogy of aural skills is particularly important.

To begin with aural skills: Rogers writes, "No job in ear training is more difficult than taking harmonic dictation."¹³⁹ To mitigate the difficulty of this task he turns to functional ideas, constantly advising students to listen for scale degree function and context

Jane Piper Clendinning and Elizabeth West Marvin, *Musician's Guide to Theory and Analysis*, 2nd edition, New York: W.W. Norton and Co, 2011.

Edward Aldwell, Carl Schachter, and Allen Cadwallader, *Harmony and Voice-leading*, Boston: Schirmer, 2011.

Steven Laitz, *The Complete Musician*, New York: Oxford University Press, 2012.

¹³⁷ Michael Rogers, *Teaching Approaches in Music Theory*, Carbondale: Southern Illinois University Press, 2008.

Gary Karpinski, *Aural Skills Acquisition*, Oxford: Oxford University Press, 2000.

William Caplin, "Fundamental Progressions of Harmony," *Classical Form: A theory of formal functions for the instrumental music of Haydn, Mozart and Beethoven*, New York, Oxford University Press, 1998, 23–31.

¹³⁸ Michael Rogers, *Teaching Approaches in Music Theory*, Carbondale: Southern Illinois University Press, 2008;

Gary Karpinski, *Aural Skills Acquisition*, Oxford: Oxford University Press, 2000.

¹³⁹ Rogers, *Teaching Approaches in Music Theory*, 120.

in the sections on both melodic and harmonic dictation.¹⁴⁰ The use of a T–P–D model is one way to highlight the contexts in which chords are likely to be heard. Rogers uses harmonic dictation as a tool to zoom into and out of the musical surface, first identifying large functional areas and then adding detail, and starts his approach from hearing the bass.¹⁴¹

Karpinski, while writing on absolute pitch, also espouses the value of function in aural skills:

Functional strategies are particularly important: tonal music derives a great deal of meaning from these functions, identifying a series of unrelated pitches does not promote the understanding of this meaning.¹⁴²

Many of his ideas are well adapted and easily used with Functional Analysis, including chunking (“chunking obviously increase listeners’ ability to remember music.... listeners who chunk are thinking analytically, functionally, and structurally”¹⁴³) and bass orientation (“The bass line plays a central role in a long tradition as a foundation of harmonic function.”¹⁴⁴). The process of using greater chunks is essentially what Functional Analysis is designed to do – if students focus on larger features, they learn dictation melodies faster. Additionally, Functional Analysis helps listeners to focus on the bass line as the determiner of function (more in Section 3.1.1).

Karpinski is an advocate for scale degree approaches and movable-*do* solfège, and he links these approaches to functional thinking and hearing. Using either scale degree numbers (counting each note in the scale from 1 to 7) or movable *do* helps students grasp individual pitch functions more quickly than using letter names or fixed *do*, because movable systems show how each pitch functions in context of that particular key. Identifying which individual

¹⁴⁰ Rogers, *Teaching Approaches in Music Theory*, 110–119, 120–126.

¹⁴¹ Rogers, *Teaching Approaches in Music Theory*, 122–4.

¹⁴² Karpinski, *Aural Skills Acquisition*, 58.

¹⁴³ Karpinski, *Aural Skills Acquisition*, 77.

¹⁴⁴ Karpinski, *Aural Skills Acquisition*, 120.

pitches are linked most strongly to which primary functions helps with intonation, using functional expectations in dictation (*ti* almost always resolves to *do*), and with proper voice-leading when part writing.

Turning now to the topic of theory and harmonic analysis: Rogers explicitly names showing function as an important job for the Roman numeral labels:

[The students] move to the next stage and put this information [labels] to some worthwhile purpose. ... We can probably say that [Roman numerals'] most important duty is to bear harmonic function. ... These *relationships*, not the chords themselves, are responsible for our sensations of tonal centers and the establishing of keys.¹⁴⁵

If relationships are what chord labels are intended to show, Functional Analysis is designed with this purpose in mind. Later, describing Roman numerals as a link from music fundamentals to harmony and harmonic analysis, he writes, "...functional analysis, in turn, is the link from harmony to musical form."¹⁴⁶ I quite agree: function can help students start thinking on larger levels instead of merely chord-to-chord.

William Caplin has written extensively on the functions of larger formal units in a piece. His theories can be summarized as analyzing musical units as belonging to beginning, middle or ending ideas on multiple levels.¹⁴⁷ While his writings on form and cadence are not always expressly pedagogically, they developed from his experience as a teacher, and he has taken his treatise and transformed it into an explicitly pedagogical textbook.¹⁴⁸ Many teachers use some or all of his methods of formal analysis in the later parts of the core curriculum.

Like Rogers, Caplin also has some ideas on harmonic function that link harmony to form. Because formal sections that function as endings must have a cadence, it is necessary

¹⁴⁵ Rogers, *Teaching Approaches in Music Theory*, 45–46.

¹⁴⁶ Rogers, *Teaching Approaches in Music Theory*, 48.

¹⁴⁷ William Caplin, "What are Formal Functions?" *Musical Form, Forms, & Formenlebre*.

¹⁴⁸ William Caplin, *Analyzing Classical Form: An Approach for the Classroom*, Oxford University Press, 2013.

for Caplin to define harmonic functions in order to show these cadential progressions.¹⁴⁹ Caplin's definitions of tonic, dominant, and predominant are a mix of scale-degree ideas (predominant is based on the fourth degree of the scale) and syntactical ones (dominant progresses to tonic).¹⁵⁰ These definitely show that a background in functional harmonic ideas is necessary for understanding form in this way.

2.4.2 Textbook Survey

Until the development of a standard curriculum for music majors, "Harmony" was a study primarily undertaken by composers or for a person's individual edification; textbooks from 100 years ago are slim volumes with no associated workbooks, and really deal only with harmony and voice-leading, with exercises which textbook writers assure will help the new composers to hone their craft.¹⁵¹ Most of the older textbooks are concerned with enumerating voice-leading rules, focusing on disallowing parallel fifths and octaves, for example, and providing examples or exercises of musical writing.

In contrast, post-World War II textbooks start taking on a form more familiar to modern students and help to establish the current model of a large textbook with associated workbook. These also begin to include concepts other than harmony and voice-leading. My survey of historical texts below includes only texts before 2000; I aimed to find approximately one text per decade of the 20th century. Starting with the earliest, I provide a brief introduction to each text in chronological order. Texts from the current decade follow the discussion of historical texts. In a later section I will note which sorts of functional ideas and language each text uses, organized by idea.

¹⁴⁹ William Caplin, "Harmonic Functions," *Classical Form*, 23.

¹⁵⁰ Caplin, "Harmonic Functions," 23.

¹⁵¹ Richter, *Manual of Harmony*, iv–v.

2.4.2a: Brief Introduction to the Historical Texts

Ernst Richter, *Manual of Harmony* (1873)

The translation of Ernst Richter's text is the 8th edition of the text most closely related to Weber's codification of Roman numerals in the 1820s, translations of which were one of the first textbooks for theory in the new conservatory system in Europe and America; Richter is commonly listed as an intellectual descendent of Weber.¹⁵² He writes in the preface that his purpose in writing the *Manual of Harmony*:

... to furnish pupils through their course of study in musical theory with some aid in illustrating and reviewing the principles brought before them. The essential qualities of such a book the author believed to be these: *that it contain the substance and fundamental features of musical theory in as condensed and complete form as possible; that it present these outlines together with practical directions and hints, to prepare the way for later attempts in composition....it is devoted only to practical ends....*¹⁵³

At that time "practical ends" meant almost exclusively composition, whereas today practical might mean analysis for performance purposes.

Francis York, *Simplified Harmony* (1909)

Unlike Richter's manual for practical, compositional musicians, York's 1909 text was originally aimed at musical amateurs, being published in a serial fashion in a magazine, aiming to give listeners a better understanding of music.¹⁵⁴ Though called *Simplified Harmony*, I can find no evidence that it is related to Riemann's work of a similar title, or that the two knew of each other.

One interesting facet is that York uses letters to indicate bass position/inversion, instead of what we would commonly consider normal with figured bass symbols (I^b for I⁶), an unusual move compared to most other books either today or in the past.¹⁵⁵ York includes

¹⁵² Robert W. Wason, "Musica practica," *The Cambridge History of Western Music Theory*, 66.

¹⁵³ Richter, *Manual of Harmony*, iii.

¹⁵⁴ York, *Simplified Harmony*, preface.

¹⁵⁵ York, *Simplified Harmony*, 26.

an interesting view of tendency tones and how they influence chordal behavior – what we think of as function. He insists that chordal behavior is based on the intrinsic character of component scale degrees, using colorful language to describe the relative stability or tension of each relative pitch.¹⁵⁶

Walter Piston, *Harmony* (1941)

Though first written in 1941, Walter Piston's *Harmony* was very forward thinking and in use for many years. Unlike Richter, Piston now states that the study of harmony is not just for composers, but that because theory follows practice it is even more essential for non-composers, an evolution towards current beliefs.¹⁵⁷ Piston's lineage includes those who continue to use Roman numerals all capitalized, without case to show major versus minor, which still continues to today for some purposes in some institutions and pedagogical traditions, the most common of which is Schenkerian interest in root movement.¹⁵⁸

Paul Hindemith, *Traditional Harmony* (1943)

Hindemith's textbook, *Traditional Harmony*, also from the 1940s, has very little prose but abundance of musical examples and exercises. Hindemith is definitely looking at harmony from a composer's point of view. Perhaps due to his German heritage, Hindemith also has a subdominant triad with an added sixth (that is usually called ii 6/5),¹⁵⁹ which more closely resembles Riemannian thinking than the more prevalent *Stufentheorie* ideas.

¹⁵⁶ York, *Simplified Harmony*, 2, 8.

¹⁵⁷ Piston, *Harmony*, 1.

¹⁵⁸ Examples of this sort of usage include the Aldwell/Schachter textbook, mentioned below, as well as Ian Quinn, discussed in Section 2.5.1

¹⁵⁹ Hindemith, *Traditional Harmony*, 48.

Leonard Ratner, *Harmony: Structure and Style* (1962)

This text has a similar perspective to my Functional Analysis, stating in the preface to “hear the chord as part of a larger context.”¹⁶⁰ It also has an entire chapter about “The Sense of Key,”¹⁶¹ an important place to begin from a functional perspective. However, overall the book has a very melodic/contrapuntal focus, dealing with function more from an individual pitch perspective than from a chordal/harmonic one.

Arnold Schoenberg, *Structural Functions of Harmony* (1969)

Schoenberg’s text grew out of many years of teaching in California and has its own little biases. One of these biases, as stated in the 1969 preface, is that his book is very much monotonic, defined as taking works to be in a single key and then relating all modulations to the original key, not to the most recent surface tonic.¹⁶² In an earlier preface from 1954 the editor reminds us that:

...in particular, it is important to remember Schoenberg’s practice, following the normal German usage of writing the names of major keys in capitals and of minor keys in small letters, without any explanatory “major” or “minor.”¹⁶³

This is a practice unlike Piston’s all caps and more similar to how we use capitalization to indicate mode or quality today. The “Structural Functions” in the title to which Schoenberg is referring relate somewhat to our ideas on tonal function, but Schoenberg defines his structural functions by root progression, not necessarily tendency tones, aural impact, or cadences.¹⁶⁴ This is also one of the only texts with a chart that looks like a *Tonnetz*, which Schoenberg uses to show distance and relationships between harmonic regions or

¹⁶⁰ Leonard Ratner, *Harmony: Structure and Style*, v.

¹⁶¹ Ratner, *Harmony: Structure and Style*, 17–25.

¹⁶² Schoenberg, *Structural Functions of Harmony*, x–xi.

¹⁶³ Schoenberg, *Structural Functions of Harmony*, xiii–xiv.

¹⁶⁴ Schoenberg, *Structural Functions of Harmony*, 6.

modulations.¹⁶⁵

Allen Forte, *Tonal Harmony in Concept and Practice* (1979)

After WWII, as music theory developed into own discipline, it came to be established as a course of study in college, and the requirement of music theory for music majors in college was more solidified. Therefore, it is unsurprising that Forte's 1979 book *Tonal Harmony in Concept and Practice*, reminds us of our own current texts in format and impact. Forte was a steadfast Schenkerian, and this bias shows in his teaching and his text. As discussed in Section 2.3, Schenkerian ideas translate very well to functional ones, so many of the ways of explaining concepts sound like functional ideas with different vocabulary.

Ralph Turek, *Elements of Music* (1996)

Turek's 2nd edition of *Elements of Music*, from the mid 1990s, is the text that I personally used in my undergraduate curriculum. I very much admire his practical, analytical, easily graspable presentation and layout. However, going back to discover its functional influences, I was surprised to find that while Turek does use some functional terminology, he often privileges ideas descended from *Stufentheorie*, such as defining dominant by the fifth-root progression, rather than the leading-tone pull.¹⁶⁶

2.4.2b Brief Introduction to Current Textbooks

Following the arc of this gradual evolution through the 20th century from composition manual to practical musician's guide, today's texts often cover or review notational basics, harmony and voice-leading, basic formal analysis, and extensions beyond common-practice tonality, but their core tonal harmony ideas are not too different from many of the predecessors I just noted. Since Functional Analysis deals primarily with harmonic analysis, these past texts that only deal with harmony and voice-leading were a

¹⁶⁵ Schoenberg, *Structural Functions of Harmony*, 20.

¹⁶⁶ Turek, *Elements of Music*, 126, 189, 196.

good starting place, as they include all the salient points to discover where functional thinking has evolved and flourished. Thus, I will look primarily at the harmony sections of the current texts, and not much at other chapters of these books.

Stephan Kostka and Dorothy Payne, *Tonal Harmony* (2009)

By the time I graduated with a Bachelor of Music, my institution had switched from the 1996 Turek text to the 2009 Kostka and Payne *Tonal Harmony*. Before beginning the text proper, Kostka and Payne define harmony and defend its study in the preface:

One thing that distinguishes Western art music from many other kinds of music is its emphasis on harmony. In other words, just about any piece that you perform will involve more than one person playing or singing different notes at the same time or, in the case of a keyboard player, more than one finger pushing down keys. There are exceptions, of course, such as works for unaccompanied flute, violin and so on, but even in such pieces an implied harmonic background is often still apparent to the ear.

...

Harmony is the sound that results when two or more pitches are performed simultaneously. It is the vertical aspect of music, produced by the combination of the components of the horizontal aspect.¹⁶⁷

What follows is more discussion of how functional harmony is defined with chords, triads, and their relationships.¹⁶⁸ While Kostka and Payne use a loose definition of functional tonal harmony as I am familiar with it, the way the topics are organized resembles an atomized part-writing approach, with a detailed example for each individual case, and less of a connective organization between similar cases or how to use generalization to one's advantage as I envision Functional Analysis to emphasize.

Edward Aldwell and Carl Schachter, *Harmony and Voice-Leading* (2011)

The 2011 edition of *Harmony and Voice-Leading* by Aldwell and Schachter added a third author, Alan Cadwallader. This text is not much changed from the long-standing, Schenkerian approach that Aldwell and Schachter have always taken. Following Schenker's

¹⁶⁷ Kostka and Payne, *Tonal Harmony*, ix.

¹⁶⁸ Kostka and Payne, *Tonal Harmony*, xi.

example, they continue to use Roman numerals without a lower-case to indicate minor.¹⁶⁹

Rather than a purveyor of functional ideas, this book is a precursor to Schenkerian analysis and emphasizes step progressions.¹⁷⁰

Jane Piper Clendinning and Elizabeth Marvin, *Musician's Guide to Theory and Analysis* (2011)

The other text with an edition released in 2011 is the text used at my current institution. The *Musicians' Guide to Theory and Analysis* by Clendinning and Marvin shows a commendable desire to integrate different aspects of theory, aural skills, and keyboard training, but that means that sometimes they try to do too many things at once. However, they do use explicitly functional terminology, and recommend adding an extra, functional layer to Roman numeral analysis to show the functional areas of each phrase.

Steven Laitz, *The Complete Musician* (2012)

Laitz's 2012 text *The Complete Musician* shows a mix of Schenkerian and functional tendencies. Like the Clendinning and Marvin, analyses include functional areas, and more, the chords are introduced in order of function rather than inversional position, as with the Kostka/Payne textbook, for example. He also includes Schenkerian ideas and graphs, for an approach that I find quite workable.

2.4.2c: Functional Concepts in the Various Texts

These texts all treat functional ideas in different ways and to different degrees. I have focused on five main indicators of functional thought. These concepts I feel act as indicators, even if full-blown functional vocabulary is not being used. First, I looked for overt presence of functional terminology, such as the words tonic and dominant, or describing vi as a substitute for tonic (or something similar). Were these labels used in a

¹⁶⁹ Aldwell and Schachter, *Harmony and Voice-Leading*, 48–49.

¹⁷⁰ Aldwell and Schachter, *Harmony and Voice-Leading*, 60.

meaningful way, or just as another label for the chords I and V? Second, I looked for descriptions of tendency tones or musical motion, another way that dominant is commonly shown to implicitly have function.

Third, I sought out explanations of structural versus embellishing chords; while not necessarily an indication of function, the concept of structural layers is an important aspect of Functional Analysis. The last two ideas I searched for were specific chords that have different common approaches: the cadential 6/4 and applied dominants. Is cadential 6/4 mentioned as a separate chord or an embellishment of dominant? Is it labeled with I or V or something else? How and when are applied dominants introduced? The idea that a chord can be a dominant *of* another chord shows dominant to be a function, not just a different label for V.

Functional Terminology

In the use of overt functional terminology, there was a range of outcomes. Some books, like Piston's, used tonic and dominant only for pitch names, not for chord names,¹⁷¹ while others, like Hindemith's and Schoenberg's, had the idea that I, IV, and V were the primary chords of a key without emphasizing names like tonic and dominant.¹⁷² Ratner uses tonic and dominant names as well as emphasizing their functions as "stable" and "departure."¹⁷³ At the most functional end of the terminology spectrum some, such as Richter's and Forte's, even used the idea of primary and substitute functioning chords.¹⁷⁴

Among more recent texts, explicit functional terminology is fairly common. Both the Clendinning/Marvin and the Laitz textbooks use an additional layer of functional analysis in addition to Roman numerals, asking students to mark (usually) one layer of T–P–D–T per

¹⁷¹ Piston, *Harmony*, 4.

¹⁷² Hindemith, *Traditional Harmony*, 4; Schoenberg, *Structural Functions of Harmony*, 13.

¹⁷³ Ratner, *Harmony: Structure and Style*, 21, 38, 40, 106.

¹⁷⁴ Richter, *Manual of Harmony*, 33; Forte, *Tonal Harmony*, 92.

phrase. The Aldwell/Schachter textbook is functional insofar as it is very Schenkerian; therefore, quite functional from how we today understand harmony. For them, tonic is the central goal and dominant leads to it, but most of their descriptions are from a more linear perspective than a harmonic one. Kostka and Payne do use functional language, but they are so detail oriented that sometimes the functional ideas get lost in the atomization of each example: looking at the voice leading specifics of each individual chord position one-by-one without making generalizations to provide context of those voice leading specifics.

Individual Pitch Functions

For a description of individual tones' functions, York was the most emphatic, with a full list “*do* – firm, rest, home; *re* – aspiring, expectant; *mi* – plaintive, quiet; *fa* – solemn, desolate; *so* – bold bright; *la* – sorrowful; *ti* – piercing, pressing up;”¹⁷⁵ then he based chords’ emotional tensions and characteristic sounds on the combination and conflict of these individual pitch characters. Richter, Hindemith, and Turek have an injunction against doubling the leading tone (which, as a tendency tone, generally leads to parallel octaves), but do not explain why one should not double the leading tone – the perfect time in my mind to discuss tendency tones.¹⁷⁶ However, Forte does discuss leading notes and “law of the half step,” which introduces the concept of tendency tone without giving it a solid name.¹⁷⁷ Additionally, Ratner has a full discussion of tendency tones, calling them “cadential tones,” and basing much of his function for the whole book around them.¹⁷⁸

There is a clear evolution from 20th- to 21st-century texts; all modern texts have adopted the term “tendency tone” or something similar. The exception is the Aldwell and Schachter textbook, which uses the terms “active” and “stable” for tones instead, but which

¹⁷⁵ York, *Simplified Harmony*, 2.

¹⁷⁶ Richter, *Manual of Harmony*, 39; Hindemith, *Traditional Harmony*, 22; Turek, *Elements of Music*, 189.

¹⁷⁷ Forte, *Tonal Harmony in Concept and Practice*, 11–12.

¹⁷⁸ Ratner, *Harmony: Structure and Style*, 38.

gets across the same idea.¹⁷⁹

Prolongation

In terms of prolongational terminology and ideas, Forte and Ratner give solid concepts of embellishing or prolongational chords.¹⁸⁰ But so does Richter, whose book was written first before Schenker was even born, describing how one chord can “pass” to another.¹⁸¹ Piston and Hindemith mention at least the concept of passing or neighbor chords,¹⁸² and Turek covers prolongation in a more melodic, Schenkerian sense. The two texts without emphasis on embellishing harmonies are Schoenberg and York.

Recently, the concept of structural and embellishing chords has also been quite common. The Kostka/Payne textbook has the least amount of emphasis on this concept, but does use the ideas of passing and pedal 6/4 chords.¹⁸³ Clendinning and Marvin spend the better part of three chapters on different types of embellishing chords,¹⁸⁴ and both Laitz and Aldwell and Schachter suffuse their approaches with Schenkerian ideas of prolongation and embellishment, which, unlike the earlier Forte book, do extend to chordal concepts as well as to melodic ones.

Cadential 6/4

For the cadential 6/4, Richter describes it as a I chord which delays a V,¹⁸⁵ York as an accented I that must go to V,¹⁸⁶ both of which fail to recognize the dominant, voice-leading-based nature of this sonority. Unlike some of his other, less functional ideas, Piston declares the cadential 6/4 to have the real root of a dominant, while looking like a familiar I

¹⁷⁹ Aldwell and Schachter, *Harmony and Voice-Leading*, 8–9.

¹⁸⁰ Forte, *Tonal Harmony in Concept and Practice*, 304–326; Ratner, *Harmony: Structure and Style*, 97.

¹⁸¹ Richter, *Manual of Harmony*, 138–39.

¹⁸² Piston, *Harmony*, 51; Hindemith, *Traditional Harmony*, 48.

¹⁸³ Kostka and Payne, *Tonal Harmony*, 147, 149.

¹⁸⁴ Clendinning and Marvin, *Musician's Guide*, Chapters 13, 14 and 17.

¹⁸⁵ Richter, *Manual of Harmony*, 87.

¹⁸⁶ York, *Simplified Harmony*, 19.

chord.¹⁸⁷ Hindemith also does not acknowledge the dominant-embellishing function of this chord, but comes close when describing it as a I chord that happens at a cadence.¹⁸⁸

Schoenberg also treats the cadential 6/4 in a less functional manner, saying it is a I that resolves to V,¹⁸⁹ while Forte explains that while the cadential 6/4 may look like a I, it does not represent its “parent” triad,¹⁹⁰ using background functional ideas without explicitly stating them. Ratner does not consider the cadential 6/4 either I or V, but always labels it “cad 6/4” and highlights that though it is built from I it is unstable.¹⁹¹ Lastly, though Turek still labels the cadential 6/4 as I 6/4, he explains it explicitly quite functionally, in that it resolves to dominant: “This suggests that the cadential six-four chord does not *function* as a tonic chord in spite of its spelling. Rather, it functions as a *dominant* with two simultaneous nonchord tones...”¹⁹²

Kostka and Payne seek to show both the tonic and dominant nature of the cadential 6/4, labeling it as I 6/4 but bracketing it with the following V and identifying it as dominant.¹⁹³ Clendinning and Marvin take a similar conceptual approach, but label it as V 6/4–5/3;¹⁹⁴ this approach derives from Schenker and is most similar to my functional understanding of this sonority. Both Laitz and Aldwell and Schachter discuss the cadential 6/4 as primarily cadential instead of highlighting its dominant nature,¹⁹⁵ emphasizing its non-structural, embellishing nature, as expected from the two most Schenkerian texts. As Functional Analysis draws its definitions from the cadence, a cadential definition of the cadential 6/4 is not necessarily a drawback. In fact, Laitz sometimes forgoes a Roman

¹⁸⁷ Piston, *Harmony*, 117.

¹⁸⁸ Hindemith, *Traditional Harmony*, 48.

¹⁸⁹ Schoenberg, *Structural Functions of Harmony*, 14. .

¹⁹⁰ Forte, *Tonal Harmony in Concept and Practice*, 79.

¹⁹¹ Ratner, *Harmony: Structure and Style*, 110–112. This is similar to Laitz description in a few paragraphs.

¹⁹² Turek, *Elements of Music*, 231–32.

¹⁹³ Kostka and Payne, *Tonal Harmony*, 145.

¹⁹⁴ Clendinning and Marvin, *Musician's Guide*, 278.

¹⁹⁵ Laitz, *Complete Musician*, 321; Aldwell and Schachter, *Harmony and Voice-Leading*, 348.

numeral entirely to label it as Cad 6/4, as if it is not even a chord – which some, in fact, do not find the cadential 6/4 to be.

Applied Dominants

On the subject of applied dominants, there is a clear evolution. Richter and York do not have a concept or name for applied dominants, saying instead that there are brief and fleeting modulations where contemporary North American theorists would normally see applied dominants.¹⁹⁶ In the 1940s, Piston is ahead of his time using the terminology V of X, much the same as the present day,¹⁹⁷ while Hindemith defines “secondary dominants” by their root motion (which is very *Stufentheorie* of him) and does not require a leading tone.¹⁹⁸ Ratner also uses terminology similar to modern texts, calling them subsidiary, applied, or secondary dominants, and noting that they are a temporary focus.¹⁹⁹

Schoenberg, whose volume has a stated monotonal bias, writes applied dominants not as such but in the same way as modulations, on a separate line.²⁰⁰ Forte also explains tonicization as a small modulation (consistent with a monotonic Schenkerian view), while using labels similar to some current ones.²⁰¹ Turek calls them both secondary and applied dominants, but then hearkens back to the ideas of the late 19th century, exhorting students to imagine applied dominants “as if it were in the key of...”²⁰²

All recent explanations of applied dominants tend to use overtly functional vocabulary, say that tonicizations include chords that “function as dominant,”²⁰³ “function[s]

¹⁹⁶ Richter, *Manual of Harmony*, 141; York, *Simplified Harmony*, 76–77.

¹⁹⁷ Piston, *Harmony*, 150–60.

¹⁹⁸ Hindemith, *Traditional Harmony*, 82.

¹⁹⁹ Ratner, *Harmony: Structure and Style*, 201.

²⁰⁰ Schoenberg, *Structural Functions of Harmony*, 28.

²⁰¹ Forte, *Tonal Harmony in Concept and Practice*, 266.

²⁰² Turek, *Elements of Music*, 374.

²⁰³ Laitz, *Complete Musician*, 347.

as a leading tone to,”²⁰⁴ or have a “function belong[ing] more closely to another key than the main key of the passage...”²⁰⁵ This shows that for this phenomenon, after being initially understood in the 19th century as modulation, and experimented with different manners of labeling through the 20th century, there is sort of a general consensus that describing applied dominants in terms of function is the most useful.

This survey of various textbooks can help us understand how scholars’ ideas of function have changed over time. It also allows us to track how similar ideas change terminology over time, and see which ideas have been most important to which people. Most importantly, it shows that many people in the last 150 years have valued functional ideas and tried to pass them on to their students. But what happens when you are not famous enough to get a big publisher to present your own textbook?

2.5 Recent Scholars Addressing Function in Non-Standard Ways

I started out looking for other scholars who might have developed a system of functional labeling by searching the primary journals (*Music Theory Spectrum*, *The Journal of Music Theory*, and *Music Theory Online*). However, these searches returned very few articles that include Functional Analysis or Functional Harmony in the full text. Many of these are only mentioning functional harmony to say it does not apply well to whatever chromatic or non-common-practice work or genre they are engaging. The *Journal of Music Theory Pedagogy* often has articles on functional concepts,²⁰⁶ but as I was specifically looking for functional labeling, articles describing how to teach function with current tools were not what I was looking for.

²⁰⁴ Aldwell and Schachter, *Harmony and Voice-Leading*, 468

²⁰⁵ Kostka and Payne, *Tonal Harmony*, 260.

²⁰⁶ For example, Reed Hoyt, “Harmonic Function and the Motion of the Bassline,” *Journal of Music Theory Pedagogy* Vol. 4 No. 2 (1990), or Steve Larson, “Scale-Degree Function: A Theory of Expressive Meaning and Its Application to Aural-Skills Pedagogy,” *Journal of Music Theory Pedagogy* Vol. 7 (1993).

Existence of such articles does reiterate the point that music theory teachers are trying to teach harmonic function to their students.

However, the ideas of harmonic function have been under discussion in various types of research throughout the last several decades, even if not as the hot topic or using different labels.²⁰⁷ Additionally, harmonic function in relationship to pop music has reinvigorated the discussion of function in non-common-practice music, and in recent years there has been a proliferation of articles on function in pop and jazz music.²⁰⁸ These also tend to deal with functional ideas more than functional labels – which were my main consideration, as I don’t intend to change functional theoretical ideas, only to label and analyze them.

Other articles understand functional analysis as antithetical to Schenker, which, as discussed earlier in this chapter, I find to be very strange. To me, Schenkerian analysis and Functional Theory are not opposing ideas but mutually reinforcing ones; in fact, as we will see later in Section 3.2.3, I use Schenkerian ideas to expand Functional Analysis. There is now a growth of interest in Riemann as a historical figure, but searches for Riemann still

²⁰⁷ For example, Charles Smith writes about function in relation to chromatic music in “The Functional Extravagance of Chromatic Chords,” *Music Theory Spectrum* Vol. 8 (Spring 1986), 94–139; and David Kopp discusses the many varying aspects of what coalesces to mean function in “On the Function of Function,” *Music Theory Online* Vol. 1 No. 3 (May 1995). Daniel Harrison also discusses Riemannian-type function and the benefits of dualism in his book *Harmonic Function in Chromatic Music*, University of Chicago Press: 1994, and in the last 15 years, writings on Function include Kopp’s ideas on Common-Tone Tonality in *Chromatic Transformations in Nineteenth-Century Music*, Cambridge University Press: 2002, 1–17; Kevin Swinden, “When Functions Collide: Aspects of Plural Function in Chromatic Music,” *Music Theory Spectrum* Vol. 27 (2005), 249–282; Marcus Alessi Bittencourt, “Reimagining a Riemannian symbology for the structural harmonic analysis for 19th-century tonal music,” *Revista Vórtex* No. 2 (2013) 30–48; and particularly Gabriel Miller’s dissertation “The Death and Resurrection of Function” from Ohio State in 2008, which covers the various different aspects and qualities of functions and how to reconcile them for analysis.

²⁰⁸ These include Allan Moore, “Patterns of Harmony,” *Popular Music* Vol. 11 No. 1 (Jan 1992) 73–106; Eytan Agmon, “Functional Harmony Revisited: A Prototype-Theoretic Approach,” *Music Theory Spectrum* Vol. 17 No. 2 (Autumn 1995), 196–214; Keith Waters, “Modes, Scales, Functional Harmony, and Nonfunctional Harmony in Compositions of Herbie Hancock,” *Journal of Music Theory* Vol. 49 No. 2 (Fall 2005), 333–357; James McGowan, “Riemann’s Functional Framework for Extended Jazz Harmony,” *Intégral* Vol. 24 (2010), 115–133; and Nicole Biamonte, “Triadic Modal and Pentatonic Patterns in Rock Music,” *Music Theory Spectrum* Vol. 32 No. 2 (Fall 2010), 95–110.

commonly lead to Neo-Riemannian and transformational theory, which is excessively complex from the standpoint of basic tonal music.

Some of the thinking that pits Riemann against Schenker comes from Riemann himself:

In a more rigorously Hegelian narration, Hugo Riemann portrayed the historical development of music theory as a relentless dialectical process. . . . Thus the third book of his monumental *Geschichte der Musiktheorie*, which details the development of harmonic theory beginning with Zarlino, reads almost like a military narrative. Riemann's story recounts an epic intellectual battle between foresighted progressives (such as Zarlino, Johann Friedrich Daube, and Moritz Hauptmann) and obstinate conservatives (including most thorough-bass theorists and such monists as Gottfried Weber and Ernst Richter).²⁰⁹

As demonstrated above in Section 2.4, teaching harmony is commonly done from a functional perspective, and has been done that way almost as long as the idea of a music conservatory existed. Now the functional basis is commonly not only implied through layout or pacing, but explicitly stated as Functional Harmony and using the vocabulary of tonics and dominants throughout the texts. Therefore, I am unsurprised to find sources for Functional labeling ideas in materials designed for teaching, or directed at a less experienced audience than some highly specialized music theory papers.

2.5.1 Ian Quinn

Ian Quinn designed one of the more prominent, recent teaching methods that discards Roman numerals, which is currently in use in Yale University's undergraduate theory curriculum. He voices a similar frustration to my own in relation to teaching the difficult parts of harmonic analysis (such as figured bass in inversional labels):

Of course, skilled and knowledgeable instructors are aware of all these pitfalls, and we navigate our students around them almost without a second thought. I have been

²⁰⁹ Christensen, "Music Theory and its Histories," 12.

moved ... to wonder what would happen if we didn't cause these problems in the first place.²¹⁰

This comes from the presentation of his method at the 2005 meeting for the Society for Music Theory, and he also sent me the 2008 version of his course materials.²¹¹ Quinn uses what he calls functional-bass symbols,²¹² which focus on the bass motion and the functional drive of harmonies. Roman numerals are used only to indicate modulations and key areas.²¹³

The example below is from Quinn's class notes,²¹⁴ showing how function and bass scale degree are used to indicate chords. A progression of I–V6/4–I⁶ is analyzed as T1–D2–T3. The lower-case letter to the right of labels indicates the type of prolongational motion (passing or neighbor). Parentheses show how long the prolongation lasts, as seen in Example 2.4.

Example 2.4

Example 12

B: T(I D2p 3) D4n 3 D2p I D7n I) D5?

Gm: T(3 D2p) I D2p 3) D5 T1.

²¹⁰ Ian Quinn, script of “Harmonic Function without Primary Triads,” given at Society for Music Theory, Cambridge Nov. 11 2005, 3.

²¹¹ Ian Quinn, Personal communication, 12 March 2013.

²¹² Quinn, script of “Harmonic Function,” 3.

²¹³ Ian Quinn, “Class Notes for MUSI 210,” 9.

²¹⁴ Quinn, “Class Notes” 22.

A similar progression such as I–vii^{o6}–I⁶ would have the same T1–D2–T3 analysis, highlighting the connection between two similarly functioning chords that look quite different when analyzed with Roman numerals.

Throughout the teaching packet, there is a strong emphasis on fixed and variable scale degrees – stable pitches that stay the same between parallel major and minor, such as *do*, *fa*, and *so* – versus mode defining scale degrees, that change based on major or minor – *mi/me* or *la/le*. These stable pitches provide the primary bass pitch for each function, and as only fixed-scale degrees are stable enough to carry function, the variable scale degrees either act as color or as substitutes.²¹⁵

These variable scale degrees are also shown in contexts in which notes act as harmony-defining notes or as tendency tones. Quinn uses the terminology “functional trigger” and “functional dissonance;” a chord with *do* in it triggers or strongly suggests a tonic function,²¹⁶ and pitches which create dissonances within a function, such as *fa* to *ti* creating a tritone in a dominant seventh chord, act as tendency tones to drive the harmony forward.²¹⁷

Different types of prolongations of functions and harmonies are explored and defined by their bass contours. For example, one chapter explores different ways to use the sixth scale degree (*la/le*) in various tonic and subdominant contexts.²¹⁸ Bass motions such as a tonic prolongation via an arpeggiation down from *do* to *fa* (*do–la–fa*) are shown and their variations explored.²¹⁹ Similar bass motions are shown with different harmonizations, and

²¹⁵ Quinn, “Class Notes,” 2, 17.

²¹⁶ Quinn, “Class Notes,” 27.

²¹⁷ Quinn, “Class Notes,” 28, 31–32.

²¹⁸ Quinn, “Class Notes,” 37–42.

²¹⁹ Quinn, “Class Notes,” 38.

ability for a chord with *la/le* in the bass to function as either tonic or subdominant is examined, as well as specific instances such as the Phrygian half cadence.²²⁰

The primary difference between Quinn's functional-bass symbols and my incarnation of Functional Analysis is Quinn's focus on the exclusive preeminence of the bass. If there were a spectrum from slice-by-slice triad thinking on one end over to purely linear counterpoint thinking on the other, Quinn's functional-bass symbols lie nearer to the purely linear end of the spectrum than Functional Analysis.

While my Functional Analysis is best used linearly, triadic differences, vertical ideas, and more independent chords are also encouraged – which is not to say such details are not possible with functional-bass symbols, only that they are less apparent or less highlighted. This also shows in the use of figured bass short-hands rather than specifying upper voice pitches – the linear motion of the function is emphasized more than the individual pitch content of the chord.

While there are strong benefits to Quinn's system, it is designed from the perspective of part writing and composing. I have always thought of Functional Analysis from an analytical perspective. I feel that we should not completely abandon triads for only functions, but have designed my approach in hopes of showing both, and emphasizing the most currently relevant aspect at any given time, allowing for a flexibility between highlighting linear and horizontal ideas.

2.5.2 Charles Smith

Another example of functional-bass analysis shows up at the University of Buffalo with Charles J Smith, in an as-yet unpublished textbook.²²¹ Developed separately and before Quinn's method, Smith views his task thus:

²²⁰ Quinn, "Class Notes," 39–40.

The primary task of this study of harmony is to develop a clear, precise, and succinct language that allows us to describe and contrast particular hierarchical relationships — those referred to as TONAL relationships. This entire text, ostensibly about the technical disciplines of harmony, counterpoint, and form, can also be viewed as nothing more or less than an elaborate unraveling of just that one word, ‘tonal’ — both its technical meanings and its evocative implications. Literally, we build tonal models for tonal music.²²²

Smith expects his students to already read music, spell triads, and know key signatures,²²³

which not every text book does. He defines harmony in the most explicitly functional way:

Harmony is present here not just as a matter of unqualified chord-symbols, but through a filter of functional categories. These FUNCTIONS reflect the normative behavior of chords, not just their identities; many chords will even be qualified as “non-functional”, because in their particular context they do not behave according to functional norms. You will be encouraged to think primarily in terms of functions, rather than just with the more familiar chord-symbols.²²⁴

Below in Example 2.5 you can see Smith’s analysis of a Beethoven excerpt.²²⁵ His analysis shows the harmonic functions with T and D over which scale degree is present in the bass, the line separating the letter and the scale degree can be extended to show a chord lasting over multiple bass pitches. The slurs between letters indicate separate chords participating in a prolongation, and brackets show functional progressions – never more than one set of T D T per bracket. This particular example comes from an early chapter dealing with basic tonics and dominants. It also shows Smith’s reductive, Schenkerian thinking; his description of the first analysis as “incorrect” is because he encourages the larger span thinking such that the first chord is the most important by describing the other sonorities as embellishment instead of standalone chords. His “inelegant” analysis provides

²²¹ Which I got access to thanks to twitter and Brian Moseley, briancmoseley.com/mus106/ 16–17 April 2015. All the following cited page numbers are in the format book page/pdf file page.

²²² Charles Smith, “Introduction,” *Tonal Materials of Music*, 16/16.

²²³ Smith, “Preface,” vii/6.

²²⁴ Smith, “Preface,” viii/5.

²²⁵ Smith, “Chapter 6,” 67/91.

an example of how he labels inversions, when appropriate, and the final “preferred” analysis shows how he thinks of this prolongation as melodic embellishment.

Example 2.5

EXAMPLE 6.22: Bass-Arpeggiation through $\hat{5}$ under Tonic harmony

Beethoven, Symphony #3 in E \flat “Eroica” (Op. 55), Mvt. III, Trio, mm. 1–8

Allegro vivace

(a) Incorrect analysis—bass arpeggiation implying changes of inversion

E \flat : $\frac{T}{\hat{1}}$ $\frac{T}{\hat{3}}$ $\frac{T}{\hat{5}}$ $\frac{T}{\hat{1}}$ $\frac{T}{\hat{5}}$ $\frac{T}{\hat{3}}$ $\frac{T}{\hat{1}}$ $\frac{D}{\hat{5}}$ $\frac{T}{\hat{1}}$ $\frac{D}{\hat{5}}$ //

(b) Inelegant analysis—a single T/ $\hat{1}$ chord with fleeting changes of inversion

E \flat : $\frac{T}{\hat{1}}$ $(\hat{3})$ $(\hat{5})$ $(\hat{1})$ $(\hat{5})$ $(\hat{3})$ $(\hat{1})$ $\frac{D}{\hat{5}}$ $\frac{T}{\hat{1}}$ $\frac{D}{\hat{5}}$ //

(c) Preferred analysis—a single T/ $\hat{1}$ chord embellished by melodic arpeggiations in all voices

E \flat : $\frac{T}{\hat{1}}$ $\frac{D}{\hat{5}}$ $\frac{T}{\hat{1}}$ $\frac{D}{\hat{5}}$ //

However, Smith uses many different types of labels – chord letter names, Roman numerals, figured bass²²⁶ – in conjunction to show different aspects of harmony. In introducing these different labels, he comments on their ability to show certain facets of a chord. For example, figured bass is an excellent performer shorthand, and chord letter names have proven useful to improvisers, while Roman numerals help show a root pitch in context of a key.²²⁷

These facets are condensed below in a diagram borrowed from his book (Example 2.6).²²⁸ As he defines these labels, Roman numerals do not show inversion, because that element is the figured bass in conjunction with the Roman numeral.

Example 2.6

FIGURE 6.19: Summary of Four Different Notations for Chords

	Figured Bass	Fakebook	RN	Fctn/Bass
Diatonic Context			√	√
Modal Association			√	
Bass	√			√
Root		√	√	
Inversion/Intervals	√			
Quality		√	√	
Function				√

I would argue that Functional Analysis has some capability to show all seven of these chordal facets, by blending multiple ideas together. Obviously, a Functional Analysis label shows function and diatonic/scale context, but the separated inversion and bass layers help show both bass and inversion. Separating the bass from the root of the chord and tying the root of the chord to the function shows the root separate from the bass, which neither

²²⁶ Smith, “Chapter 6,” 44/20, 48/24, 33/9.

²²⁷ Smith, “Chapter 6,” 35/11, 44/20, 48/24.

²²⁸ Smith, “Chapter 6,” 59/35.

Quinn nor Smith's systems focus to show. Using lower-case letters in minor keys provides modal association and quality.

2.5.3 David Damschroder

Another author interested in using Roman numerals in a non-standard way is David Damschroder. Much of his writing is about Schenkerian Analysis,²²⁹ but in a recent book on Schubert,²³⁰ Damschroder lays out a new methodology for using Roman numerals in a prolongational way, not dissimilar to how I conceive of using layers in Functional Analysis. Damschroder advocates a big-picture first analytical lens:

Though presented here in high-level formulation, *Harmony in Schubert* calls into question many time-honored conventions of lower-level analytical pedagogy. It is a manifesto for a top-to-bottom transformation in the way musicians think about harmony.²³¹

In his quest to transform analysis, Damschroder includes the following among the “casualties:” applied dominants, upper and lower-case Roman numerals to show quality, figured-bass notation wedded with Roman numerals, and chord nicknames (such as German augmented sixth and the like).²³²

For my part, while I'm happy to see figured bass and chord nicknames fall away, I find doing away with applied dominants and upper/lower-case for quality counterproductive. However, having done away with those particular two things is not unexpected, as they are fairly well-known discards for Schenkerian scholars. While still using Roman numerals, Damschroder is more interested in large-scale voice-leading energies, and provides a system that includes inversions separated from bass pitch, the concept of chords

²²⁹ For example, this article: David Damschroder, “Schenker, Schubert, and the Subtonic Chord,” in *A Music-Theoretical Matrix: Essays in Honor of Allen Forte (Part II)*, ed. David Carson Berry, *Gamut* 3/1 (2010): 127–166.

²³⁰ David Damschroder, *Harmony in Schubert*, Cambridge University Press, 2010.

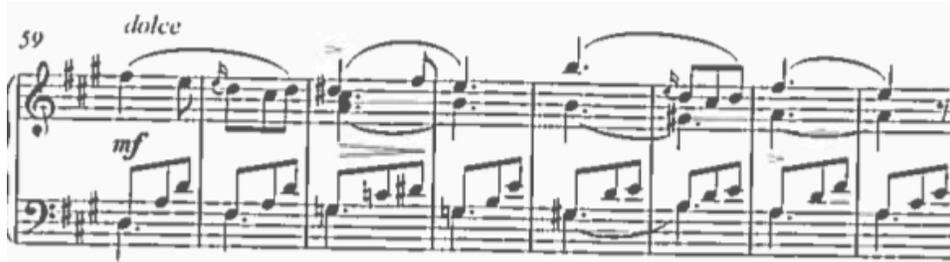
²³¹ Damschroder, *Harmony in Schubert*, ix.

²³² Damschroder, *Harmony in Schubert*, x.

missing roots, and chords related by third – all things that are present in my Functional Analysis.

To show inversions, Damschroder still uses figured bass symbols, but places the inversions on a separate line above the line with Roman numerals, as seen in Example 2.7.²³³

Example 2.7



1 Piano Sonata in A Minor (D. 537), mvmt. 3, mm. 59–66.

at a transformation occurs within the supertonic as the successor
 raws near:

m.	61–62	63–64	65–66
	6	6 4 5 3	
D Major:	II ⁶ ——— 7 ———		V ⁶⁻⁵ 4-3

Additionally, this example shows that Damschroder is also using figured bass-type numbers to indicate voice-leading motion over the root, such as the cadential 6/4. Hence, the top line shows that mm. 61–63 are in first inversion, and in m. 64 the bass moves up to second inversion. However, the bottom line shows that 6/4–5/3 motion in mm. 65–66 is not bass movement but linear upper-voice movement.

As with Functional Analysis and its *Funktionstheorie* predecessors, some chords are explained as missing their roots. Damschroder shows this with a dot below the Roman numeral, as shown in Example 2.8:²³⁴

²³³ Damschroder, *Harmony in Schubert*, 4.

Example 2.8

The image shows a musical staff with 11 measures, numbered 1 through 11. Below the staff, Roman numerals are written for each measure. The numerals are: 1: D Major: II; 2: II⁷; 3: II[♯]; 4: II⁷; 5: II⁷; 6: II⁹; 7: II^{9♯}; 8: II⁷; 9: II^{7♯}; 10: II^{9♯}; 11: II⁹.

1.2 The II family of chords in D Major.

Notice that each chord with a dot to indicate a missing root in the above example is some alteration of a $\text{vii}^\circ/\text{V}$ (since there are no applied dominants in this system, all V/V chords are shown as II). This is exactly the same usage as *Funktionstheorie*, for vii° to be shown as off-shoots of V.

Damschroder has similar explanations of functional substitutes, viewing chords related by third, such as ii and IV, as prolonging the same Roman numeral [function].²³⁵ However, he is more likely to see a third-related chord as an alteration of a more primary chord, such as having a sixth replace a fifth: “... as in the asserted 6 phase of IV5–6 [referring to certain instances of ii^6 functioning as IV].”²³⁶

Additionally, these concepts are dependent on where they occur: “Context determines function.”²³⁷ This conception is largely based on the Schenkerian differentiation between chord and *Stufe*. Some chords take on a structural function [*Stufe*], while others merely provide surface motion that is not functionally directed. As seen here in an explanation of a surface progression typical to Schubert:

Analysts who attempt to make [structural] *harmonic* sense of each chord within a glide [type of progression] inevitably will be frustrated, because [this] parallel

²³⁴ Damschroder, *Harmony in Schubert*, 5.

²³⁵ Damschroder, *Harmony in Schubert*, 9–10.

²³⁶ Damschroder, *Harmony in Schubert*, 15.

²³⁷ Damschroder, *Harmony in Schubert*, 8.

progression is a linear, not a harmonic, operation. Only its endpoints participate in the broader progression [emphasis mine].²³⁸

I use this type of idea when explaining some types of sequences in Section 3.2.3.

2.6 Conclusion

This survey of texts and modern functional thinkers shows that I am not alone in my wish for ways to use functional ideas in analysis. Functional thinking is, in fact, quite common. Perhaps then, it will be less of an uphill battle to introduce new ways of labeling and analyzing music. It is my hope that my approach to Functional Analysis can be useful to other musicians and analysts. In the next chapter, I will describe the specifics of using Functional Analysis with many examples.

²³⁸ Damschroder, *Harmony in Schubert*, 44.

CHAPTER III

IMPLEMENTATION

In this chapter, I will define and illustrate the various labels associated with my system of Functional Analysis. This chapter builds on the references to previous systems from Section 2.2.3, and also on the pedagogical foundations discussed in Section 2.4. After covering diatonic harmonic concepts, I move on to more complex topics such as basic chromaticism and sequences. Further, this chapter covers how to use Functional Analysis as a precursor to Schenkerian analysis, as well as some thoughts on how to extend the labeling system for music that is not completely traditionally tonal.

3.1 Goals of Functional Analysis

What philosophy lies behind the labels of Functional Analysis? These functional labels highlight several other things in addition to function, drawing attention to the following aspects of music and harmony: cadence, non-scalar organization, bass-oriented analysis, and larger-span analysis. This section explores how Functional Analysis labels are used. The above listed priorities are expounded upon in that order.

1. Functional Analysis is based on the cadence, not the scale. The beginning of function is to hear chords as they create metaphorical motion towards a cadence. The stability of the tonic exists only in relationship to the desire of the dominant to resolve in a cadence to create closure. In some musical styles, different sounds can represent these desires. First, we will focus on common-practice tonality, and a brief exploration of styles that use other sonic vocabularies for their primary functions will be treated towards the end of the chapter.

2. Because of this cadential focus, chords are organized in terms of relationships of fifths or thirds, rather than ordered linearly in a scale. Scale is primarily a melodic, horizontal

phenomenon while harmony is primarily vertical. Although melody and harmony are interrelated, beginning with a more vertical harmonic conception helps to differentiate between harmonic and melodic processes. Because of music's temporal nature, it rarely makes sense to completely divorce the vertical and horizontal dimensions, but having a clear conception of what is more prominent at which times can be useful. Harmony can also be conceived of more linearly, which lies predominantly within the realm of Schenkerian analysis, as discussed in Section 2.3.

3. Much like the Functional Bass analysis of Quinn and Smith seen in Sections 2.5.1 and 2.5.2, the use of Functional Analysis encourages orientation towards the bass. Bass pitches provide the foundation on which each function is built. The pitch content of a chord is less important than how it is functioning. Motion in the melody can happen over the bass without necessarily changing the function. Because of this allowance for motion over a functional bass, triads are important but not to exclusion; the bass-oriented function is more important than the triad. If a given sonority has a strong sense of function but does not stack in thirds to form the expected functional triad, the function supersedes the triad. Example 3.20 provides an example of this later in the chapter.

While an analysis using Functional Analysis symbols will begin with the bass, the labels themselves are not bass-oriented but triad-root-oriented. This is an important distinction between Functional Analysis and the figures that accompany Roman numerals; in Roman numerals, all intervals are shown from the bass. In Functional Analysis, intervals are shown from the root, regardless of whether the root is in the bass or not.

4. Finally, and most importantly, larger-span oriented analysis comes first, as students must understand phrase pillars before harmonic details. Starting large, at more background levels, allows students to come to grips with longer stretches of music sooner. It also makes

phrase construction a natural part of analysis at the first stages of analysis. The very first lesson begins with defining the cadence, which is where examples will start in Section 3.2.1. In this context, there are no cadences without a concept of phrase, as cadences and phrases help to define each other, and that harmonic motion which defines a phrase is founded on the most important functional pillars. Functional Analysis emphasizes a big-to-small approach: once the big-idea concepts are in place, it is much easier to add detail, instead of starting with detail and trying to zoom out.

3.2 Common-Practice Tonality

3.2.1 Diatonic Harmony

These first examples introduce the primary functions in the context of cadences. In Example 3.1 we see the basic outline of a perfect authentic cadence in C major. Perfect authentic cadences work the same in minor keys, as you can see in Example 3.2 in A minor. The perfect authentic cadence includes our primary functions: tonic, dominant, and predominant. Tonic is stability, dominant is tension, predominant is transition.¹ In major keys, the primary functions are associated with major triads, while in minor keys they are associated with minor triads. In minor, dominant is an exception to this rule, because one of the pitches that most defines dominant function is the raised leading tone, creating a major triad on scale degree 5. Capital letters indicate major triads while lower-case letters indicate minor triads, as is familiar to many musicians.

¹ In context of teaching or in a future textbook, I would note that the functions cycle: generally P goes to D and D goes to T, and ask students to be aware that a D to P progression is unlikely. Additionally, P to T is possible, but is probably better called S (subdominant) using the terminology discussed later in Section 3.5. The label S would be handy for plagal cadences or other plagal tonic prolongations such as *do-la-mi* or *do-fa-do* in the bass.

Example 3.1

C: P D T

Example 3.2

a: p D t

After primary functions, the next level of detail is substitute functions, to fill out the diatonic chordal vocabulary. Substitute functions occur in situations in which another chord replaces a primary-function chord and stands as a substitute of it: for variety, for prolongational purposes, or in the deceptive cadence. Sometimes the substitute functions literally substitute for a primary function in an analogous context, sometimes substitute functions serve to lengthen the phrase through prolongation of the perceived time a function is in effect, and sometimes a substitute function chord will upset an expected resolution, deceiving the ear, and taking the place of the primary function that was expected. (For example, the deceptive cadence is when dominant resolves to tonic relative.) There are two types of substitutes, relative substitutes and variant substitutes, shown in Examples 3.3 and 3.4, illustrating these substitute-types for the tonic triad in major and minor. Substitute functions are perceived as related to primary functions at least partially because they share two pitches in common for each pair.

Example 3.3

C: Tr T Tv

Example 3.4

a: tR t tV

Look at Example 3.3. The middle of the three chords is the tonic. If *do* and *mi* are kept constant, but *so* changes to *la*, then this shift forms the first substitute function: the relative, as seen in the chord on the left. The relationship between the primary function to its relative is the same as that between two relative keys. Hence, a major triad's relative chord has a root a diatonic third below (C–A), while a given minor triad has a relative with the root a diatonic third above (A–C), as in Example 3.4.

A substitute-function chord will be the opposite quality of the primary-function chord it relates to: for major primary-function triads, their substitutes are minor, while for minor primary-function triads, their substitutes are major. The label is designed to show the relationship between primary and substitute functions. In this case, the primary function to which this chord is related is major, shown with the capital T, but the chord itself is minor, shown with a small r. The reverse is true in minor: a referenced primary function will be minor (t), and the substitute function major (R).

To uncover the “variant” relationship, hold two different notes constant, *mi* and *so*, and change *do* to *ti*, as in the second half of Example 3.3. The variant is a diatonic third in the opposite direction from the relative relationship. The reversed relationship is shown in minor in Example 3.4. This relationship was originally known as the *Leittonwechsel* – leading tone exchange, because *do* is exchanged for *ti*.² In minor, while different solfège of *so* to *le* are involved, the interval is still a half step. I chose to name this relationship “variant” because it uses an orthographically and phonologically distinct letter (V or v) in abbreviations.

Remember that R or the V will show the quality of the substitute function triad, while the T or P will show the quality of the related primary function.

² Hugo Riemann, *Simplified Harmony*, 76.

Predominant substitutes are formed in the same way as tonic substitutes, as seen in Examples 3.5 and 3.6, still in C major and A minor. While formed in the same manner as tV, the pV in minor is not a diatonic chord, so I have typically omitted it when teaching diatonic relations. You may know this chord as the root position Neapolitan. Later, Example 3.26 deals with the diatonic chord built on scale degree 2 in minor.

Example 3.5



C: Pr P Pv

Example 3.6



a: pR p pV

Notice that a relative and variant of the same primary function, such as the two tonic substitutes Tr and Tv in Example 3.7, share a fifth root relationship. Also note that Tr and Pv are two labels for the same triad in a major key, seen in Example 3.8, and likewise tV and pR in a minor key, as in Example 3.9. This is possible because the triad built on scale degree 6 can sometimes be used as a tonic replacement, but it also serves predominant function at other times.

Example 3.7



C: Tr Tv

Example 3.8



C: Tr Pv

Example 3.9



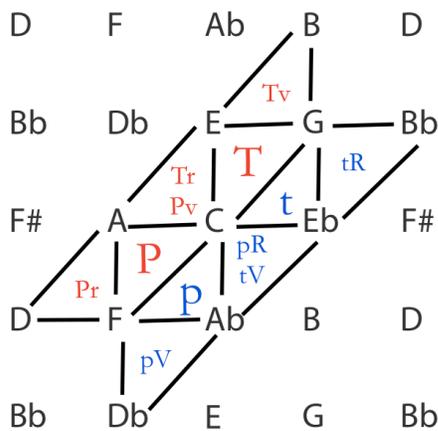
a: pR tV

The relationships between relative chords, variant chords, and their primary functions can also be visualized on a *Tonnetz*, seen in Example 3.10. A *Tonnetz* is a spatial visualization of

chords or keys, popularized by Riemann, but dating from years before Riemann as discussed in Section 2.1.3.

This triadic *Tonnetz* is constructed with a slant axis of perfect fifths, a vertical axis of major thirds, and a horizontal axis of minor thirds. The chords that are related by fifths between their roots are triangles of the same orientation sharing one vertex, and common tones are immediately visible as common corner nodes. Example 3.10 shows the tonic and predominant primary and substitute functions of C major (red) and its parallel C minor (blue), with the relative and variant relationships of both keys side-by-side.

Example 3.10



As in the Example 3.11 *Tonnetz* below, it is also easy to demonstrate the overlapping chord vocabularies between relative keys. The relatives and variants of tonic C major (red) and A minor (green) are shown below. The tonic and tonic relative triads in major (C major and A minor) switch places in the relative minor, with A minor being tonic and C major being tonic relative.

Example 3.12

G: T Pr Tv P D Tr D^7_3 T
Pv

Example 3.13

e: t p_6 tR p D tV D^7_3 t

The following examples, 3.14 and 3.15, show the diatonic triads grouped by function, instead of in scale order, for major and minor respectively.

Example 3.14

G: T Tr Tv P Pr Pv D D^7_3

Example 3.15

e: t tV tR p p_6 pR D D^7_3

This system is designed to have great flexibility and to show multiple levels of detail simultaneously. Sometimes only the large functional areas of a phrase matter; other times details are required to show exactly how each voice of a given harmony leads to the next chord. Most of the time, analyses lie somewhere in between, accounting for almost every note in the harmony, but still allowing for non-chord-tones, passing and neighboring chords, etc.

With a full gamut of diatonic chords available through primary and substitute functions, the next step to learning this system is Arabic numerals, which show more detail. For added tones such as a 7th above the root, indicate a 7. For other intervals, include synonymous numbers, which you can see in Example 3.16, a reduction of mm. 24–31 from J.S. Bach’s Prelude in C major, from the *Well-Tempered Clavier*, Book 1. The bass holds a dominant pedal and the numerals indicate the voice-leading in the moving lines of the upper voices. Here, the numerals are all listed in descending order. In this, superscripts can sometimes resemble familiar figured bass patterns. Chromatic pitches are indicated in the superscripts with sharps and flats, as in m. 28.

Example 3.16

C: D —————

With so many voices, one may choose to list all superscripts in numerical order, or one may have each voice-leading strand stay in the same position in the superscript, as demonstrated below in Example 3.17. Now, the superscripted numerals, while still showing the intervals above the bass, keep the different upper voices in order from top to bottom as they move across the excerpt. This can help highlight the voice-leading specifics.

Example 3.17

Example 3.17 shows a sequence of eight chords in C major. The chords are represented by their figured bass notation below the staff:

C:	D	7	6	5	7	#7	8	7	7
	5	6	7	7	#7	8	7	7	
	3	4	4	3	4	4	4	4	3
	8	8	8	8	9	8	8	8	8
	7	6	5	5	b6	6	5	5	

The labeling of inversions is where these Arabic numerals diverge from the familiar formulas of figured bass. As stated in Section 3.1, Functional Analysis highlights the root of the triad when showing inversions by using Arabic numerals that are intervals from the root, as opposed to intervals from the bass, as in Roman numeral analysis. When a note other than the root is in the bass for inverted chords, that bass pitch is indicated with a numeric subscript as seen in Example 3.18. This is a tonic triad with the third in the bass.

Example 3.18

Example 3.18 shows a tonic triad in C major with the third (E) in the bass. The figured bass notation is:

C: T₃

A larger functional area can be clearly seen in Example 3.19, which shows a phrase-length model harmonic progression; the tonic prolongation is where most of the chords are related to tonic, quickly identified by labels that have T's in them.

Example 3.19

C: T D_3^9 Tr T_3 P^6 D^7 T

Prolongation is a common compositional tactic to provide variation within a span of time dominated by one function; this can take the form of different versions of the primary function chord, its substitutes, or embellishing chords sandwiched between more structural harmonies. The basic gist of prolongation is often subconsciously understood, but the details of how to decide which chords are structural or embellishing is a complicated process of intuition, metric stability, and expectations – among other things. A further discussion of prolongation appears with Example 3.41, though some of the mechanisms of prolongation will continue to be mentioned throughout the examples.

Two chords in the phrase shown in Example 3.19 have a different conceptualization from current standard practice, and are isolated in Examples 3.20 and 3.21.

Example 3.20

C: P^6 D^7

For the case of the P^6 , the Roman numeral label would be ii^6 , whereas someone unfamiliar with Functional Analysis might unknowingly translate P^6 to IV^6 – a different sonority entirely – because the bass and upper voice numerals are not separated in Roman

numerals. Because the 6 is in an upper position, the label P^6 indicates a sixth above the root fa . While ii^6 and IV look vastly different in label, and are distinct sonorities, the aural difference is often somewhat trivial, not changing the strength of the function. In Functional Analysis, attention is drawn to the similarities rather than differences between these two sonorities as different flavors of one function.

This label in Example 3.20 highlights the strength of the predominant function, showing a triad based on fa , where the sixth has replaced the fifth. If both fifth and sixth were present, then both numbers would be indicated. For superscripts in Functional Analysis, the general rule is that even numbers typically replace odd ones: if a 6th is present the 5th will not be; likewise if the 4th is present, the 3rd will not, or if the 2nd not the unison, unless otherwise indicated. Therefore, to indicate a chord with both the fifth and the sixth above the root (F–A–C–D for predominant in this key), both the numerals 5 and 6 would be displayed. Additionally, for odd intervals a seventh and larger, the pitches are generally added to the chord and do not replace any other pitches. Any number that might have been previously replaced can be added in as a reminder in following chords.

The second chord in Example 3.19, the diatonic leading-tone seventh chord known as $vii^{\circ 7}$ in major, is isolated in Example 3.21. In Functional Analysis, this chord is conceived of as a dominant seventh chord (D^7) that happens to be missing its root; the absence of which is shown with a slash. Then proceed labeling as usual thus far, with the 3 for the third above the missing root (sol) as the pitch in the bass, and add an extra 7 and 9 to indicate pitches in the upper voices.

Example 3.21

C: T $\text{D}^9_7/3$

Examples 3.22 and 3.23 show a model harmonic progression in minor labeled with both Roman numerals (3.22) and Functional Analysis labels (3.23). Many of the previously discussed concepts are here demonstrated in context of a constructed phrase. These also illuminate the case of the V 6/4.

The second chord of this phrase would be known in many current Roman numeral practices as passing V 6/4,³ and the third to last chord as cadential V 6/4.⁴ In my teaching experience, having the same label apply to two different functions, sonorities, and pitch collections has always been a point of confusion. However, with Functional Analysis labels the upper voices and the bass voice are in separate positions in the label. These two V 6/4 chords are separated by their function: the cadential chord is related to accented non-chord tones and shown with superscripts, while the passing chord is in inversion and shown with a subscript. While a given set of three notes can have more than one label, there is never more than one set of notes for a given label.

³ Jane Piper Clendinning and Elizabeth West Marvin, “Chapter 14, Expanding the Tonic and Dominant Areas: Expanding Harmonic Areas with 6/4 Chords,” *The Musician’s Guide to Theory and Analysis*, 285.

⁴ Clendinning and Marvin, “Chapter 14,” 278.

Example 3.22

a: i V⁶₄ i⁶ iv ii⁷ V⁶⁻₄₋ ⁵/₃ i

Example 3.23

a: t D₅ t₃ p⁶₅ p⁵₆ D⁶⁻₄₋ ⁵/₃ t

This leads to the question of which chords might have more than one label. One example shown previously is the chord built on *la* being either tonic or predominant function depending on context (Example 3.8). Example below is an excerpt from the third movement of Mozart's Symphony K. 550, mm 10–14 of the Trio section. Depending on how one hears this passage, the chord with root and bass pitch of B might sound either like the goal of the previous dominant chord or as the beginning of a predominant prolongation. (I'd probably choose Tr here, though each could be argued to be supporting a different dominant prolongation.)

a minor key (ii^{o7}) in root position was a different challenge. I wanted to devise a label that emphasized the strength of its function, its complexity, and its normalcy.

When, as shown in the first chord of Example 3.26, this seventh chord is inverted, it is labeled similar to a major key, as a minor predominant (fa, le, do) with an added sixth in addition to the normal fifth (re). To keep simplicity and relation to the primary label p , the label for the second chord shows the sixth as an added tone in the bass, below the functional root. This might make some people think uncomfortably of Riemann's dualistic practice of keeping the root at the top of the chord in minor and counting all intervals and additions down to mirror the upward direction of major,⁵ but it is not that. It is merely showing the strong functional root (fa) as not in the bass of the chord, and all numbers are still intervals above the functional root. One other option was to label a chromatic pV (Example 3.6) with a raised root, but putting an accidental in the label of a diatonic chord seemed overly complex.

Example 3.26

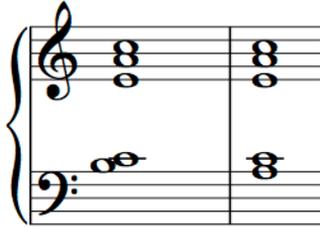
The image shows two chords in a grand staff. The first chord consists of notes F, A, and C in the bass clef, with a 6 above the 5. The second chord consists of notes F, A, and C in the bass clef, with a 5 above the 6. The label 'a:' is to the left of the first chord. Below the first chord is the label 'p⁵' and below the second chord is the label 'p₆⁵'.

One compelling reason for separating the bass and upper voices into sub- and superscripts is for bass suspensions. Example 3.27 is a reduction of mm. 8–9 of the same Bach Prelude used in Examples 3.16 and 3.17. In figured bass numbers, a descending bass

⁵ Riemann, *Harmony Simplified*, 6.

suspension is indicated with ascending numbers, such as 2–3. Instead, here it is clear to see that the root of the chord is being approached by step from above in a descending motion.

Example 3.27



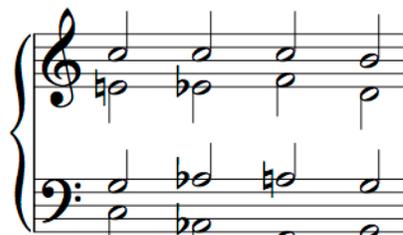
C: Tr₂₋ 1

3.2.2 Basic Chromatic Harmony

Since relative major and minor keys are closely intertwined in Functional Analysis, sometimes jumping to parallel major and minor keys for mode mixture or borrowing (using chords from a parallel minor key in a major context or vice versa) can be challenging. On the other hand, early familiarity with minor of any kind can make it easier to switch back and forth. Plus, there should be little trouble remembering which chords are major or minor, as primary and substitute functions are typically opposite quality triads. Then, when a chord providing a substitute function is the same quality as the primary function, we can know that a chord borrowed from a parallel key is involved.

Example 3.28 shows how a tonic prolongation might occur with a borrowed chord; instead of using the triad built on *la*, the triad built on *le* is borrowed from the parallel minor.

Example 3.28



C: T tV P D

Once understood, there is a smooth transition from mode mixture to the more alluring, chromatically altered chords. This makes augmented sixth chords and the Neapolitan less intimidating to introduce; they are just quick, logical, chromatic alterations of predominants in a minor key. Example 3.29 shows the varieties of augmented sixth as variations of a pR, and Example 3.30 shows the Neapolitan as an alteration of minor predominant. All the chromatic pitches in the superscripts show how the voice-leading should resolve, with sharps going up and flats going down.

Example 3.29

C: T pR pR^{#6} pR^{#4} pR^{#6} D

Example 3.30

c: t tV p^{#6} D

Typically, the dominant function is always major, even in minor keys. However, a minor-quality dominant can serve as a prolongational passing chord, as in Example 3.31. This minor dominant is rarely used at cadences, and commonly found with the third in the bass.⁶

Example 3.31

d: t d₃ tV

⁶ Exceptions to this discussed in Section 3.3.2.

Example 3.32 shows a brief tonicization, or momentary modulation, with the second chord being the dominant of the third chord. When chords are applied to another chord, as in the case of applied dominants, they are put in parentheses. Multiple chords may be shown in parentheses to indicate extended tonicizations. When these chords resolve in an expected fashion, the chord that follows the parentheses is the object of tonicization. Since the dominant of the dominant is fairly common, it has its own symbol, the superimposed Ds seen below in Example 3.33. Also known as double dominants, this label can also be slashed to indicate diminished sevenths (slash-Ds) applied to the dominant.⁷

Example 3.32

C: T (D) Pr D

Example 3.33

C: T Tr (D⁷) D

Examples 3.34 and 3.35 show a less conventional resolution of an applied dominant in “Mit dem grünen Lautenbände” from Schubert’s *Die schöne Müllerin*. There are two ways to label this applied dominant: either draw an arrow back to the reference chord (3.34), or put the missing resolution following the parentheses in square brackets (3.35). These two methods will be useful at different times; sometimes there is a previous chord to refer to, sometimes there is not.

⁷ In teaching the double dominant, it may be useful to emphasize that while it has a dominant function in relationship to the dominant, it also serves a predominant function at a larger level. Discussions of when DD is appropriate versus an altered Pr (PR) might depend on inversion, strength of either function, or relative stability in context of the overall structural hierarchy.

Example 3.34

Bb: T₃ T₅ Tr (p₃ D) D₇

Example 3.35

Bb: T₃ T₅ Tr (p₃ D) [Tr] D₇

Longer modulations with a pivot chord are handled similarly to Roman numeral practices; any type of labeling that puts the first key on one line and the second key on another works equally well. Example 3.36 shows how the a minor triad could function as the end of the tonic prolongation in C major, but then pivots meaning to become the predominant relative for G major.

Example 3.36

C: T D₇ T₃ Tr
G: Pr D T

Example 3.37 combines many of the previous topics in a phrase-like context. It shows the passing versus cadential 6/4 (m. 1 beat 2 versus m. 4), a dominant of tonic variant (m. 2 beat 2), and an augmented sixth chord. The augmented sixth chord is a clear example of how a triad built on scale degree 6 can be both a tonic and predominant substitute. In the m. 3 beat 1, *le-do-me* is acting as the end of the tonic prolongation, identified as the last chord in this phrase that has a T in the label. When the *le-do-me* has *fi* added to it in m. 3 beat 2, it is clearly acting as a predominant as *fi* pulls to *so*, so the label shows the relationship to the predominant instead. *fi* is a sharp sixth above the root (*le*), but the fifth is also present, so it is labeled #6/5.

Example 3.37

a: t D₅ t₃ (D⁷) t_V #6/5 D⁴⁻₃⁵ t

3.2.3 Sequences

The *Funktionstheorie* upon which I have based Functional Analysis is vertically, harmonically oriented. This makes dealing with linear topics like sequences a challenge. I found in my experience with modern *Funktionstheorie* in Berlin, Germany that Roman numerals are still used for this purpose. At the time, the German professor described falling fifths as easier to see with actual numbered chords to do math with. I can see the point, but the modulo 7 math of Roman numerals is often counterintuitive and Roman numerals are still primarily vertical as well, so in constructing this version of Functional Analysis, I have added a hybrid technique for understanding sequences.

Many sequences can be handled functionally. The previously mentioned fifth relationship of substitute functions (Example 3.7) is brought out in Example 3.38. Every dominant-type chord leads to a tonic-type chord. But these labels do not tell the whole story, because sequences are also a linear phenomenon.

Understanding a linear phenomenon with vertically conceived labels is difficult. For that reason, I have added Linear Intervallic Patterns (LIPs) to this system of Functional Analysis for analyzing sequences. LIPs track recurring intervals between a prominent upper voice and the bass.⁸ For Example 3.38, the pattern between the soprano and bass is 5–3–8, which then repeats.

Example 3.38

C: T P D_3^7 Tv Tr Pr D T

Example 3.39 shows a functional sequence from the first movement of Mozart’s Piano Sonata in F major, K. 332 (mm. 60–65) that is also linearly controlled through an LIP. The LIP is labeled in the middle of the staff with numbers indicating the interval between the outer voices. While every chord in this example can be shown to follow some functional pattern, what is more important is the intervallic alternation of 10–7 in the outer voices controlling the texture. The LIP drives the phrase from the tonic pillar to the predominant before setting up for the cadence.

⁸ LIPs are a Schenkerian concept. For more information see: Forte and Gilbert, “4: Linear Intervallic Patterns,” *Introduction to Schenkerian Analysis*, 83; Cadwallader and Gagne, “Linear Intervallic Patterns,” *Analysis of Tonal Music: A Schenkerian Approach*, 3rd Edition, 86.

Example 3.39

60 61 62 63 64 65

C: t P (D) tR tV Pr D

Example 3.40 shows an excerpt from the Gavotte I of Bach's English Suite, BWV 808 (mm. 24–31) that has some functional pillars, but trying to explain every chord with functional labels is daunting. The attempt at functional labels below the staff is too complex and confusing, particularly in mm. 26–27. (The complex series of symbols under mm. 26–27 is predominant, moving to the double dominant and then dominant of an absent dominant relative.) When analyzed instead with an LIP, as between the staff, the framework of the phrase moving from predominant to the dominant expansion is clearer.

Example 3.40

24 25 26 27

10 6 10 6

g: t (D)₇ p₃ t₅ p (D)₇ D₃[dR] D₅

28 29 30 31

D₃ t₃ p D⁶⁻⁵₄ t

3.2.4 Levels of Analysis

Visually, Functional Analysis labels can quickly guide the observer to the larger functional areas of a phrase. If an analyst wants to give special attention to which details are more or less salient at different levels of harmony, an analysis with multiple layers of Functional Analysis is possible. This returns to the concept of prolongation. A very detailed layer can show all chords, while a more background layer can emphasize the structural harmonies that are being prolonged by the detailed layer.

The following Example 3.41 shows the theme from the first movement of Mozart's Sonata in A major, K. 331, with three levels of analysis. The lowest level, closest to the staff, has many fine details that are often superfluous to the basic understanding of the phrase, but could be useful in some contexts for some purposes. The middle level is something like how I would normally analyze a piece, though there is still at least another level possible between the lowest and the middle. The last level shows the functional phrase pillars with lines indicating how long the tonic prolongations last.

Typically, when I do an analysis, I start with the largest level, finding the cadences and the principal dominants and predominants. Then I move to the middle level, finessing the large-scale analysis to note where the predominant has a 6 instead of a 5, and which chords are embellishing the tonic. Handily, this process of adding detail very rarely involves using the eraser side of my pencil, as interpretations are more often added detail than changed roots or chords. For beginning analysis, this method of adding detail is more forgiving than methods that begin with detail before zooming out, and may help keep them from feeling frustrated.

Example 3.41

Andante grazioso

T D₅⁷T₁ 3 D₃T D₃⁷ Tr⁷ D₃ T P⁷⁻⁶ D₄⁶⁻⁵ T D₅⁷T₁ 3 D₃T D₃⁷

A: T₁ 3 D₃⁷ Tr D₃ T P D T₁ 3 D₃⁷

T _____ P D T _____

Tr⁷ D₃ T P⁶ D₄⁶⁻⁵ T T P₅ T D₃⁷

A: Tr D₃ T P D 7 T T ₄ ₃ D₃⁷

[T] _____ T P D T T _____

T P⁶D₄⁶⁻⁵ T D₅⁷T₁ 3 D₃T D₃⁷ Tr⁷ D₃ T P⁷⁻⁶ D₄⁶⁻⁵ T D₅⁷T₁ 3

A: T P₃ D T₁ 3 D₃⁷ Tr D₃ T P D T₁ 3

T P D T _____ P D T _____

D₃T D₃⁷ Tr⁷ D₃ T P⁶ D₄⁶⁻⁵ T₇₋₈⁹⁻³ T D₅⁷T₃ P D₄⁶⁻⁵ T

A: D₃⁷ Tr D₃ T P D T T D₅⁷T₃ P D 7 T

[T] _____ T P D T T _____ P D T

The most zoomed-in layer provides some alternate hearings of particular chords.

Measure 9 could be heard as voice-leading motion within the tonic chord or as a

predominant with the fifth in the bass embellishing tonic. Zooming into the predominant in m. 12 shows that it is not just predominant, but could be P with the 3rd in the bass, or it could be Pv with a 6 instead of 5, but #6. Some may also hear this as an applied dominant, a slash-double-D with the fifth in the bass, but I prefer Pv^{#6} to show the transient, voice-leading nature that I perceive in this chord.

This piece could be shown with many more layers than just these three; the middle layer could be a little more or less detailed depending on the purpose of the analysis. The processes of deciding how many layers to use and determining where prolongations start and end at a larger level make the transition from Functional Analysis to Schenkerian analysis very smooth. Deciding which pitches are important enough for the middle level of analysis or which chords are anchoring the prolongations allows students and analysts to start thinking in a more linear fashion.

Below in Example 3.42 is a sketch by Schenker of the first phrase of this Mozart Theme.⁹ Comparing the Functional Analysis levels to Schenker's graph, one can easily line up the similarities. Schenker's level "c" is the surface of the music, with all the notes; his level "b" is the middleground, which takes about one bass note per beat, as we did in the middle level of Example 3.41. Finally, the level "a" *Urlinie* shows a similar tonic prolongation as the lowest level of Example 3.41 does, and could lead to a fruitful discussion of why certain choices were made to highlight which pitches, and why any one given interpretation is better than another for what purposes.

⁹ Allan Keiler, "On Some Properties of Schenker's Pitch Derivations," 204.

Example 3.42

The image displays three systems of musical notation for Example 3.42, all in the key of D major (two sharps).

- System c:** Piano accompaniment. The right hand features a melodic line with a large slur over the first three measures and a smaller slur over the last two. The left hand provides a harmonic accompaniment with chords and moving lines.
- System b:** A single melodic line with a large slur encompassing the first three measures, followed by a smaller slur over the last two measures.
- System a:** A single melodic line with a large slur over the first three measures and a smaller slur over the last two. Below the staff, harmonic analysis is provided: *A dur*: I (under the first measure), II (under the second), III (under the third), $\frac{II}{IV}$ (under the fourth), and V (under the fifth). The word "Ursatz" is written above the first measure.

3.3 Extended Harmonies

Having completed the exposition of most concepts common to common-practice tonality, we move on to chords that don't quite fit Functional Analysis as I originally conceived it. None of the following chords can really be said to be complicated, uncommon, or exotic. However, in the context of Functional Analysis's common-practice tonality basic metric, they are considered unusual, and some were initially difficult to label. These more colorful harmonies show up more often in later genres, such as late-Romantic era music (mediants) or 20th/21st-century pop music (dominants other than V).

3.3.1 Chromatic Mediants

Chromaticism became more and more elaborate through the 19th century. Composers like Reger, Liszt, and Wagner among others began to experiment with chord successions that did not necessarily follow functional logic.¹⁰ Some of this chromatic music can be explained with tonal relationships; others cannot. Functional Analysis may be only partially useful for musics in which functional tonality is not the main driving factor – but still may be useful on some level.¹¹ On the other hand, much chromatic music can still be explained with some references to a tonic, and then Functional Analysis can be extended to include these chromaticisms. For example, a chord might include altered tones that resolve in a functional manner. In fact, the increasing prevalence of chords like the augmented sixth or Neapolitan (Examples 3.29 and 3.30 on page 77) is a good example of altered tones that resolve functionally.

Another type of chromatic color is chromatic mediants, which begin to occur both as key areas and as chords. They are fairly easily described as alterations of relative and variant third relationships discussed in Section 3.2.1. The following examples show a few of these more chromatic relationships, starting with the chromatic mediants available in a major key in Example 3.43. Some mediants may be functional, alterations of a function, or not functional at all.¹²

¹⁰ Daniel Harrison, *Chromatic Harmony*, 1.

¹¹ The Chopin analysis of Section 4.3.2 is an example of functionality that works consistently only at the largest level, but does not use tonal function to move from one note to the next. For ideas on how to approach the non-functional parts of late Romantic music, see Daniel Harrison's "A Renewed Dualist Theory of Harmonic Function," in *Harmonic Function in Chromatic Music*. Additionally, David Kopp has developed another approach to chromatic third relations positing common-tone tonality – a version of chromatic pitch space that privileges chords that keep common-tones. This realm is neither diatonic in the 18th-century sense, but it is also not entirely atonal/chromatic in the 20th-century sense. Kopp, *Chromatic Transformations in Nineteenth-century Music*, Cambridge University Press, 2002.

¹² Kopp, *Chromatic Transformations*, 8.

Example 3.43

C: T Tv TV Tr TR

Because the capital T refers to the home tonic, we know the variant would normally be built on the major third *mi* (second chord), and that substitute functions are the opposite quality of the primary – Tv. However, if we have TV (third chord), that would be a major chord built on *mi*, not a closely related key at all. Likewise with TR (last chord), which is the parallel major of the relative minor. Other chromatic mediants can be seen as more familiar chords borrowed from the parallel minor, such as tR, but Example 3.44 shows a few more possibilities.

Example 3.44

c: t tR tr tV tv

These chords are now the minor version (tr, tv) of those that would normally be major triads in a minor key (tR, tV). Since much music of the 19th century already uses modal borrowing (chords from the parallel major or minor are available in any key, see Example 3.28), any of these chromatic mediants from major or minor could hypothetically be found in either major or minor keys.

These chords expand the realm of harmonic possibilities when considering modal borrowing and other chromatic techniques. Students may enjoy exploring the relationships and startling color shifts between distantly related sonorities by writing chromatic progressions or modulations of their own, or analyzing the opening of the second movement of Dvořák’s Ninth Symphony, as in Example 3.45 below. While the chords sound very striking, and look very unrelated – sharps in a flat key – the Functional Analysis shows that there are still prolongational relationships to be found even in this chromatic music; specifically, this passage consists of upper and lower chromatic mediant surrounding the emergent $D\flat$ tonic, ending with a plagal p – T progression.

Example 3.45

The image shows a musical score for a piano accompaniment in D-flat major (three flats). The score consists of two staves, treble and bass clef, with a common time signature. The key signature is three flats (B-flat, E-flat, A-flat). The music is divided into seven measures. Below the notes, functional analysis labels are provided for each measure: Db: tR, TR₃, tR, T, tV, p⁵⁻⁶, and T. The first measure is a D-flat major triad (tR). The second measure is a chromatic mediant (TR₃) with notes G-flat, B-flat, and D-flat. The third measure is a D-flat major triad (tR). The fourth measure is a D-flat major triad (T). The fifth measure is a chromatic mediant (tV) with notes F, A-flat, and D-flat. The sixth measure is a plagal progression (p⁵⁻⁶) with notes G-flat, B-flat, and D-flat. The seventh measure is a D-flat major triad (T).

3.3.2 Non-V Dominants

Functional Analysis is designed for common-practice tonal music. While common-practice music does sometimes use non-standard chords (those other than discussed in Section 3.2 above) for any given function, the primary reason for exploring non-V dominants is modern popular music. This section and later Section 4.3.3 do not comprise a complete adaptation of Functional Analysis for non-common-practice genres; however, these sections may give insight on how to begin adapting my methods for different musics.

Having chords other than *so-ti-re* leading to tonic was initially a large stumbling block for me using Functional Analysis with pop music, because to call something dominant

implies tonic is coming, but in Functional Analysis it also implies the specific notes *so-ti-re*. And what to do when *so-ti-re* doesn't imply tonic? I struggled for some time with to find a way to describe chords I heard as moving to tonic, but yet were not the pitches *so-ti-re* that was easy to read and understand and no more complicated than the rest of the system.

Then I discovered Nobile and Doll.¹³ These two recent pop scholars are talking about harmony and function in pop or rock music, and have some very helpful insights as to how to describe function. Up to this point we have not spoken in detail of what/how to define function theoretically – only practically, aurally, by cadence (Section 3.2.1). Drew Nobile offers three different theoretical versions of function in his forthcoming article in *Journal of Music Theory*. These are function-as-category – in which function is defined by chord identity, or a chord's intrinsic notes; function-as-progression – function as defined by what follows what, such as predominant is what it is because it is followed by dominant; and finally function-as-syntax – function as defined by context, usually a combination of the context of a key or of a form.¹⁴

Using syntax to define function relies more on formal inputs than the individual notes. A chord is described as tonic because it is the end of the phrase and feels stable. Dominant is not only the chord that implies tonic, but also any chord that gives a feeling of half cadence or motion – whether or not a tonic comes next.¹⁵ Syntax function also emphasizes prolongation, looking for only one T P D T circuit per formal unit/phrase.¹⁶ Additionally, syntax-based function works well in a hierarchy (like Schenkerian analysis, or Functional Analysis levels), because in different context the same chord may function

¹³ Christopher Doll, *Listening to Rock Harmony*; Drew Nobile, *A Structural Approach to the Analysis of Rock Music*. Doll is also working on a forthcoming book, *Hearing Harmony: Towards a Tonal Theory for the Rock Era* (University of Michigan Press) from which he kindly shared the first two chapters with me, “Tonic and Pre-tonic,” and “Chains, Numerals, and Levels.”

¹⁴ Nobile, “Harmonic Function,” 4.

¹⁵ Nobile, “Harmonic Function,” 13.

¹⁶ Nobile, “Harmonic Function,” 12.

different ways.¹⁷ Even in diatonic, common-practice, historical tonality, a *so-ti-re* chord can also be an embellishing chord when not at a cadence. Thus, with syntax function, there are two types of function: predictive (i.e., a chord having a pre-tonic function – predicting tonic), and non-predictive (a chord that gives the impression of serving a different hierarchical level).¹⁸

My earlier definition using the cadence most ideally follows the syntax definition (as you will see in a moment), but my initial aural identification of function depends somewhat on all three types. When we hear the leading tone resolve, or we identify specific notes as being likely markers of a given function, then it is function-as-category. When we hear V follow IV in progression, or I follow V, then it is function-as-progression. When we understand dominant and tonic in context of cadence, phrase, form, and key, it is function-as-syntax. (This is interesting, because we define function in context, but we also define the context via the function.)

In functional tonality, these different definitions of function tend to reinforce each other. In other genres, that is not always the case, and the definitions may be in conflict. For cases where we wish to stretch the limits of Functional Analysis, the syntax definition helps us the most, and I find it to be most aurally salient. In pop music, even when traditional tonal harmony is not in play, we can still identify a feeling of function, of stability versus instability, formal closure, and the desire to resolve.¹⁹

For syntax purposes, Nobile advocates divorcing the pitch labeling from the function label.²⁰ If any given analysis or labeling only showed syntax function, a different

¹⁷ Nobile, “Harmonic Function,” 10, 13.

¹⁸ Nobile, “Harmonic Function,” 11.

¹⁹ Milo Fultz, classroom brainstorming, 10 May 2014.

²⁰ Nobile, “Harmonic Function,” 2.

system may be needed to show what pitches are present²¹ – which in pop music is often already obvious based on the chord symbols. However, since Functional Analysis is designed to show both pitch identity and syntactical function simultaneously²² – an advantage in common-practice music where these identities reinforce the syntax, we must stretch Functional Analysis somewhat to use it when analyzing music where pitch identity and syntax are not equivalent.

Since students are, in general, more familiar with pop music than tonal music when they begin music theory core programs, being able to demonstrate function with music with which they are familiar can be important to help them learn basic concepts. Using music they like can also draw students into the idea of analysis in general, and present them with opportunities for inquiry relevant to their interests.

The first idea of syntax-based function is that “dominant” function (historically the *so-ti-re* pitches) is defined more by context and emotional drive to tonic than intrinsic notes or progressions – leading to a multiplicity of chords that can come before tonic, which Doll calls pre-tonic chords.²³ Pre-tonic is technically a function-as-progression type of term (this chord sounds dominant because tonic comes next),²⁴ but I find it to be a better term than dominant (which is so strongly linked to *so-ti-re*) to encompass the multivariate chords that we will talk about in this section because it shows what it is about these chords that make us feel like they have that function – they imply that tonic and stability are coming, whether they are strictly acting as pre-tonics (tonic does come next) or syntactical dominants (tonic does not necessarily come next).

²¹ This is not unlike the current versions used in say, the Laitz textbook that show pitch with RNs and function with T P D in a different layer.

²² Section 2.5.2, after Example 2.5 (Page 55)

²³ Doll, *Listening to Rock Harmony*, 16; Nobile, *A Structural Approach*, 32.

²⁴ Nobile, “Harmonic Function,” 12.

No more is it only *ti* that can pull to *do*, but depending on the tonal or formal context, other pitches or chords may be more successful in implying the oncoming tonic. When I first teach function to the most beginning students, I ask if they can hear open versus closed cadences, or the sense of desire to resolve. This desire is present with more than just the pitches *so*, *ti*, *re* in many genres. After all, "... functions are ultimately determined by specific musical context, not by any unalterable fate of their pitch-class content or intervallic relationship to tonal center."²⁵

According to Doll, any chord that gives the aural impression of leading to or predicting tonic can function as a pre-tonic chord.²⁶ A beginning, basic pop-adapted Functional Analysis might include first identifying tonic, pre-tonic, and pre-pre-tonic syntactical structural areas, much like the T, P, and D in the lowest level of the Mozart analysis in Example 3.41, before zooming in to identify specific chords and pitches using some of the following labels.

Since Functional Analysis places emphasis on hearing the functions – the desires – of chords, while also showing the pitch content (function-as-category), I had to come up with additional labels for pre-tonics that were not *so–ti–re* in order to interact with music where this was common. My labeling decisions for a few of the more common non-V dominants follow, with explanations of why I am using certain abbreviations. Some of the examples will have melody and chords, and some will use only the chord symbols. Ultimately, any primary function, whether T, P, D, or S, can have relatives and variants, and this increases the

²⁵ Doll, "Tonics and Pre-Tonics," 9.

²⁶ Nobile, "Harmonic Function," 14, Doll, *Listening to Rock Harmony*, 16, Doll, "Tonics and Pre-Tonics," 12. Doll focuses quite a bit on pitch membership when distinguishing different types of pre-tonics. In "Tonics and Pre-Tonics," he discusses designations of upper and lower subdominant based on *le* or *la* presence as well as lead/rogue dominants with *ti* or *te* (25–27). He also has classification for upper and lower mediant pre-tonics (30–31). All these can be described with Functional Analysis relationships: S and s (and relatives and variants), D and d, and mediant could be dV or Dr.

labeling possibilities to describe chords serving non-common-practice functions.²⁷ The following examples come from a wide variety of genres – pop, jazz, video games – because these chords can be used in multiple styles (including “classical” ones) and are quite common in many styles currently.

One common pre-tonic chord in many styles of music is the subdominant, which is a pre-tonic chord that pulls to tonic built on scale degree 4, *fa*. It has the same pitches as common-practice predominant but a different function. Sometimes *le-so* is substituted as an opposite direction leading tone for dualistic purposes, which leads to more plagal progressions and resolutions.²⁸ When this chord is not merely a cadential extension of a more traditional PAC, or the analyst wishes to highlight the plagal/dualist cadential potential, we can label *fa-la-do* or *fa-le-do* as subdominant (using S or s), a different type of dominant on the opposite side of tonic – the original meaning of Rameau’s term.²⁹ The Dvořák in Example 3.45 above also includes this type of cadence.

When any chord can be a pre-tonic, this also opens up possibilities for pre-dominants (or pre-pre-tonics, if you like³⁰). When S is being used as the pre-tonic chord, the chord built on *so* sometimes provides a pre-subdominant function, which I have abbreviated PS. What follows are some examples of S as a pre-tonic, as well as pre-subdominants.

²⁷ If, in the case such as where Nobile shows numerous examples which include almost every chord leading to tonic, even one Talking Heads example where *i*⁷ leads to *i*, (Harmonic Function,” 15–17) we needed to label a *do-me-so-te* chord as a dominant, we could extend relations further than two steps such as: *dVr* – the minor relative of minor dominant’s variant; or in some instances it may make sense to treat it similar to the *p*⁶: *dV*⁵₆ dominant variant with both sixth and fifth, but sixth in the bass (like Example 3.26). This issue certainly bears more exploration, but there are multiple possibilities, and each of those possibilities opens up other avenues of labeling and discussion.

²⁸ The plagal cadence is the “Amen” cadence that in CPP typically follows and reinforces the standard D–T cadence discussed in Chapter III.

²⁹ Joel Lester, “Rameau and eighteenth-century harmonic theory,” *The Cambridge History of Western Music Theory*, 768.

³⁰ Doll, *Listening to Rock Harmony*, 16.

Example 3.46 shows the chorus of the Beatles tune “Let it Be.”³¹ This chorus uses a *fa*-based subdominant as the pre-tonic chord, as well as the *so* based triad as the pre-subdominant chord. This example also shows that chords are can still be used in a prolongational manner in non-common-practice tonality idioms; at the final cadence, the C/E and the Dm7 provide a prolongational fill and smooth bass line from the structural subdominant (F) to the tonic (C).³²

Example 3.46

Example 3.47 shows the refrain of theme song from the video game *Portal*, “Still Alive,” by Jonathan Coulton.³³ The verses are in D major, but the cadence of the verse provides an unusual deceptive cadence, D–tR (A major to F major), that provides a tonic substitute while still taking our ears for a very unexpected turn. The chorus below is in F, and whether described as one phrase or three, the first four measures use PS and S to return to T. Measure 5 of the example also shows a non-cadential pre-tonic as the standard *so*-based dominant (C major), so that within five measures there have been two different pre-tonics

³¹ John Lennon and Paul McCartney, “Let it Be,” *The Beatles : Piano, Vocal, Guitar*, Hal Leonard Essential Songs, 218.

³² This is not necessarily the best example *structural* subdominants and presubdominants, but as a familiar musical example it helps show the expected pitch relationships.

³³ Jonathan Coulton, “Still Alive.”

on approximately the same prolongational level. The primary cadence of the chorus (B \flat -A-D) returns to D major is very tonal with pR-D-T.

Example 3.47

Example 3.47 shows two staves of music in a key with one flat (B-flat major). The first staff contains the following chords and Roman numerals: F: (T), F (T), C (PS), B \flat (S), F (T), F (T), C (PS). The second staff contains: B \flat (S), F (T), B \flat (P), C (D), F C/E Dm (T), B \flat (S), A (D), and D (T). The final measure of the second staff shows a key signature change to two sharps (D major) with a D chord.

Just as tonic and predominant can be replaced with substitute chords, such as the relative relation (see Example 3.3 and 3.4), some other common pre-tonic chords can be described as substitutions for either the standard *so* dominant or the *fa* plagal subdominant. One is dR: the major relative of the minor dominant, *te-re-fa*. This chord often uses *te* instead of *ti* to pull to *do*.³⁴ This is shown below in Example 3.48. (In this expanded harmonic vocabulary, minor v dominant is also a cadential possibility.)

Example 3.48

Example 3.48 shows a piano accompaniment. The right hand plays a C major chord (C-E-G) and a dR chord (D-F-A). The left hand plays a C major chord (C-E-G) and a dR chord (D-F-A). Below the notation, the chords are labeled as c: d dR.

³⁴ Examples of this are available in Biamonte, “Triadic Modal and Pentatonic Patterns in Rock Music,” 97, 101–102; Doll, “Tonics and Pre-tonics,” 27; and Allan Moore, “The So-Called ‘Flattened Seventh’ in Rock,” 185–201.

Pop songs that use dR as the pre-tonic chord include the chorus of “Living on a Prayer” by Bon Jovi:³⁵ (Last phrase of chorus, with tonic resolution on verse)

tR pR dR [t]
G C D7sus4 [Emin]
Wooo, livin' on a prayer

as well as Simon and Garfunkel’s “Scarborough Fair:”³⁶

t dR t
Emin D Emin
Are you going to Scarborough Fair?

Continuing with replacements, just as dR can be used, so can sR (*le-do-me*). The refrain from “Carry On My Wayward Son” by Kansas provides a good example of this.³⁷

This refrain also uses *te-re-fa* (VII) as a pre-tonic and a pre-pre-tonic (dR, psR).

t tR psR sR
Em G D C
Carry on my wayward son

t tR dR
Em G D
There'll be peace when you are done

t tR psR sR
Em G D C
Lay your weary head to rest

[t]
(N.C.)
Don't you cry no more

³⁵ Biamonte, “Triadic Modal and Pentatonic Patterns in Rock Music,” 103; Bon Jovi. “Living on a Prayer Chords.”

³⁶ Paul Simon, “Scarborough Fair,” 24.

³⁷ Kansas; Kansas.

Many modern pop songs are rotational or looping, repeating four chords over and over.³⁸ This repetition can lead to multiple interpretations. Depending on the context, you may hear no chord as most important (tonic), or more than one chord as the home base. Invite students to explore multiple interpretations! My favorite song that is an example of this is “Radioactive” by Imagine Dragons,³⁹ which repeats the progression A minor – C major – G major – D major.⁴⁰ This could be read as:

[Amin C G D]
 a: t – tR – dR – S
 C: Tr – T – D – DD
 a: t – tR – (D)[tR] – S

which might be heard as having common-practice-type dominants or more modal subdominants as the pre-tonic chord. My ears usually hear the first row, with A minor as tonic, but yours might be different!

The last pre-tonic chord I want to mention is the tritone substitution, using an excerpt from an arrangement of Duke Ellington’s “Satin Doll”.⁴¹ Shown below in Example 3.49, the chord in question is the D \flat ¹³, in m. 6. (The rest of the analysis is more or less common-practice functional plus tertian extensions, as is common in many styles of jazz.)

³⁸ Nobile, “Counterpoint in Rock Music,” 193–194. For a detailed look at the mechanics of looping see Chapters 11 and 12 of Phillip Tagg’s *Everyday Tonality*, “Chord loops 1” and “Modal loops and bimodality,” 199–240.

³⁹ Imagine Dragons, “Radioactive.”

⁴⁰ Green Day’s “Boulevard of Broken Dreams” amongst others uses a similar progression.

⁴¹ Duke Ellington, “Satin Doll,” 90.

Example 3.49

The image shows two systems of musical notation for piano accompaniment. Each system consists of a treble clef staff and a bass clef staff. Chord labels are placed above the treble staff, and functional analysis symbols are placed below the bass staff.

System 1:

- Chord labels: A¹³(b⁹), Dm⁷, G⁹(b⁵), Cmaj⁷(add⁹), Am⁹, A⁹
- Functional analysis symbols: C: (D), Pr, D, T, Tr, (D)

System 2:

- Chord labels: D⁹, Db¹³, C⁹, Em⁷, A¹³(b⁹)
- Functional analysis symbols: D^b, sV, T, (Pr, D)

This chord appears at a cadential point, as a pre-tonic, and is preceded by a dominant of the traditional dominant. It has all the proper chord qualities of a dominant function – major-minor seventh, extra 9 and 13 for emphasis. But we would be expecting G as the root, not Db, if this were traditional tonality. Jazz practitioners know this chord as the “tritone substitution,” a chord that takes a tritone relation away from the standard dominant and uses it in a dominant functioning place. For Functional Analysis purposes, some of the reason this works is because it uses a *le–so* tendency tone to replace the *ti–do*. Additionally, the b2 scale degree, or *ra–do*, reinforces the plagal *le–so* resolution. While some may argue that this chord includes the leading tone *ti*, *ti* does not resolve up as a leading tone in this instance – it is the seventh of the chord and is better described as *bdo*, which resolves down, conceptually, to *ti* in the next chord, even if they are the same key on the piano.

As a *le–so* pre-tonic chord, this chord is a variation of the s–T plagal resolution discussed earlier. With s as f–ab–c in this key, Db can be seen as a third relation – sV (similar

to the Neapolitan pV). This tritone sub is foreshadowed somewhat by the use of altered dominants that include lowered fifths earlier in the progression – the one time a G chord does appear as a dominant, it uses a voice-leading including D \flat .

3.4 Conclusion

This chapter has covered the manner of labeling many different types of harmonic concepts, provided a philosophy of their usage, and engaged with musical examples. From the most basic diatonic tonal ideals, to more challenging chromatic concepts, and even some topics beyond what is normally considered functional, all the labels aim to provide pedagogical clarity. While, as stated, I have not really expanded any theoretical view about function, I have elucidated all these labeling decisions in order to focus on how we teach harmony and function – and how we can do that better. In the next chapter we will delve more deeply into the specific teaching applications. These include observations from a class taught with Functional Analysis, hypothetical implementations for many different scenarios, and analyses of whole pieces from a pedagogical view.

CHAPTER IV

PEDAGOGICAL IMPLICATIONS

This chapter will discuss specific pedagogical applications and curricular implications of Functional Analysis, based in part on my own hands-on experience of using this system in the classroom. The latter part of the chapter will provide example syllabi and assignments, and then I will close with an in-depth analysis of three pieces: the exposition and development sections of the first movement of Beethoven's Piano Sonata in E \flat Major, op. 31 no. 3 (I), Chopin op. 28 no. 4, and The Beatles' "In My Life."

4.1 Background And Results Of Previous Experiments

4.1.1 Motivations

While I have been working with projects related to Functional Analysis since 2008, teaching basic core Music Theory was the primary impetus for continuing my research. As I taught and observed classes, I noticed many times when I felt Functional Analysis could provide an improved learning experience. As noted by Ian Quinn: "It's my experience that students need all the help they can get in focusing on bass lines and harmonic function, and that Roman numerals encourage them to get lost in other details."¹

If students get sidetracked trying to reason out figured bass symbols for inversions, when instead they could just be hearing bass lines, separating the upper and bass voices can help. When texts and exercises struggle to integrate the horizontal and vertical dimensions of music, the different levels of Functional Analysis can provide context. When performance majors profess not to care about or need theory – they *need* to practice – I feel that a good sense of phrasing with the help of Functional Analysis can make practicing and memorizing easier, and that a thorough understanding of harmony makes intonation easier too. The

¹ Ian Quinn, "Harmonic Function without Primary Triads," 2.

philosophy behind the Functional Analysis system, with the big-to-small emphasis, is a philosophy of rewarding what information the students are grasping and not disciplining them for concepts we haven't reached yet, encouraging good errors – encouraging “errors” period, and framing many errors as differences of precision, as is often the case.

4.1.2 Class findings from Winter 2014

During the winter quarter of 2014, I had an opportunity to test-drive Functional Analysis with undergraduate students. Thanks to the help of my advising professors, I was able to teach a class of my own devising. After spending a quarter creating materials, assignments, and lesson plans, I recruited former students and other interested parties to participate. We met for an hour twice a week for the 10-week quarter. Much of the class was presenting core theory concepts to students already familiar with Roman numerals, but one student was a freshman and one was not a music major at all.

While the following conclusions are speculative and not measurement-based, initial results were positive. The class covered most diatonic and chromatic harmonic topics in ten weeks. While initially intended to be a translation course, mostly teaching new labels but not new constructs, the class found the new perspectives on harmony led to new connections between musical ideas. Not only did my students learn new labels for chords, but they also learned new things about various repertoire, started to get a better grasp on analysis in general, and explored how music works on multiple levels. I kept a record of lesson synopses and assignments on a blog.²

Because of the translation nature of the class, we were able to cover nearly a year's worth of harmonic topics in those 10 weeks. I believe that Functional Analysis also

² Krista Abrahamson, “Weekly Summaries,” *Functional Analysis*, <https://functionalanalysis.wordpress.com/category/weekly-summaries/>

contributed to the speed of topics, as even our less experienced students more or less kept up. I received positive feedback about Functional Analysis from all of my students.

These positive reactions of students manifest differently. Some are still using this system and prefer it to Roman numerals, because Functional Analysis is faster for them than using Roman numerals. Another said that it was making clear the chord and harmonic concepts he was learning in his core theory classes, especially Aural Skills, by emphasizing the functional pillars, clearly differentiating between stable and decorating chords, and having fewer categories into which to sort chords.³

Some excerpts from student feedback comments appear below [edited for grammar]:

- “I appreciated the opportunity to shed more light on how music ticks. I loved that I could apply this even without a great deal of music theory analysis experience.”
- “It helped give perspective to functional/structural aspects of music. Rather than trying to look at I and vi or ii6 and IV as separate things, it helps me to understand these as variations of a function.”
- “Helped me to put chord progressions in perspective, and helped me in my ear-training by listening first for functionality, rather than specific chord-types.”
- “It shows a much faster analysis of a piece of music.”⁴

Some new ways of looking at things were challenging at first (different conceptualizations of sixth chords and relations in minor, for example), but by the end of the quarter, all students wrote papers on a piece of their choosing, using Functional Analysis to help them uncover something new (to them) about the piece.

Throughout the course we worked with concrete examples from the music literature, finding functional pillars before describing their elaborations. Advanced students were also asked to write some progressions to consider how function affects voice-leading. One of the favorite homework assignments was one comparing various iterations of the chordal pattern of the

³ Ryan Ponto, personal communication, 6 June 2014.

⁴ Anonymous, Course Evaluations, March 2014.

Chaconne from the D minor Partita for Unaccompanied Violin. (A similar exercise was attempted with different versions of famous Bach Chorales such as *Herzlich tut mich verlangen*, and with Functional Analysis it was quite easy to analyze and track the changes to the functional pillars of the phrase.)

The following examples from the class, Examples 4.1 and 4.2, show how Functional Analysis helps lead to better phrase and motivic understanding. These two versions of a harmonic analysis of the Bach Chaconne from the Partita in D minor show the Chaconne analyzed with Roman numerals (Example 4.1) and Functional Analysis (Example 4.2). This comparison allows us to see the functions changing from the stable basis of the chaconne pattern. These analyses are the product of our class discussion, and other analysts may hear the chords changing at different times or wish to emphasize different sonorities based on their hearing. Even if one disagrees with the specific details of the analysis, I believe the comparison between the Roman numerals and the Functional Analysis still stands.

With Roman numerals, it is possible to see the changes as the chaconne pattern mutates. Different dominants are used; the V comes in different flavors and at slightly different times. In order to see these changes, students must first understand that ii and iv are both dominants, and have some concept of function and larger phrase structure.

However, with Functional Analysis, the functions are not hidden knowledge but present immediately in the label. The two short, low-level cycles through the primary functions (mm. 1–2 and 3–4) are easily apparent, and comparisons could be drawn within the phrase as well as across the phrases. Most changes noted with Roman numerals analysis can be seen as less drastic, for example, merely an added tone in m. 8. Additionally, since the functional areas of the phrase are clearer, it is easier to see when the dominant area changes length (mm. 10–11, 14–15) or the dominant starts early (mm. 12, 16). This can lead

to a discussion of how the different functional prolongations create tension or interact with melodic motives or bring out different contrapuntal inner voices, a specialty of this type of unaccompanied piece. Admittedly, these discussions can also be fostered with Roman numerals, but a quick, transparent understanding of harmony, harmonic rhythm, and phrase pillars moves the discussion away from vocabulary and naming and toward complex musical ideas sooner.

Example 4.1

Ciaccona

The musical score for "Ciaccona" is presented in five systems, each with a treble clef and a 3/4 time signature. The key signature has one flat (B-flat). The figured bass notation is as follows:

- System 1 (measures 1-4): $d: i \quad ii_3^{o4} \quad V_5^6 \quad i \quad VI \quad iv \quad V_6^8 \quad \frac{7}{5}$
- System 2 (measures 5-8): $i \quad ii_3^{o4} \quad V_5^6 \quad i \quad VI \quad ii_5^{o6} \quad V \quad 7$
- System 3 (measures 9-12): $i \quad ii_3^{o4} \quad V_5^6 \quad i \quad VI \quad ii^6 \quad iv^7 \quad V^4 \quad 3$
- System 4 (measures 13-16): $i \quad ii_3^{o4} \quad V_5^6 \quad i \quad VI \quad ii^{o6} \quad vii_2^{o4} \quad V_4^6 \quad \frac{5}{3}$
- System 5 (measures 17-18): i

Example 4.2

Ciaccona

Musical score for Ciaccona in 3/4 time. The score consists of five systems of music, each with a treble clef staff and a line of figured bass notation below it. The key signature has one flat (B-flat). The time signature is 3/4.

The first system (measures 1-4) has the following figured bass: $d: t$, p_5^6 , D_3^7 , t , tV , p , D_6^8 , 7_5 .

The second system (measures 5-8) has the following figured bass: t , p_5^6 , D_3^7 , t , tV , p_5^6 , D , 7 .

The third system (measures 9-12) has the following figured bass: t , p_5^6 , D_3^7 , t^9 , tV , p_8^6 , 7_7 , D^4 , 3 .

The fourth system (measures 13-16) has the following figured bass: t , p_5^6 , D_3^7 , t^9 , tV , p_9^6 , \emptyset_9 , D_8^4 , 7_7 , 5_4 , 3_8 .

The fifth system (measures 17-18) has the following figured bass: t .

4.1.3 Class Challenges

During this particular course, we encountered some concepts that were challenging for the students. These included the reversed relationship of substitute and primary functions in minor, relearning how P^6 works, chords with multiple labels, voice-leading, and for one of my most advanced students, using Functional Analysis on the edge of tonality – trying to analyze Reger. Many of these things were challenging to these students primarily because of their familiarity with Roman numerals, and I believe that many of these issues would be less problematic given a different starting point.

For example, the relationship between primary and substitute functions are complicated by learning Roman numerals first. On the one hand, we are used to commonly encountering vi and VI used in the same way – both can be the resolution of a deceptive cadence, and are often used similarly in tonic prolongations. On the other hand, having the tonic relative always be the same as the relative key provides an internal logic to hang on to. Then, it may also be argued that we definitely do not use iii and III the same way – since in minor the III is a relative key, where in major iii is an ambiguous less functional chord – so having those chords change from Tv (less common) to tR (more common) could provide an understanding of why those triads are different from the major mode to the minor mode.

The concept of P^6 (and other similar sonorities) was difficult, because students often learn to analyze Roman numerals by individually counting pitches, then manually undoing the spacing, and lastly restacking the pitches into an ideal, close-packed triad. Functional Analysis asks students to identify by their function first and their pitches second, not using the pitches first to determine what the function is second. This is why the idea of having a chord that is not strictly a triad, such as P^6 , works for Functional Analysis. Students who are more familiar with the third-stacking method sometimes find this challenging.

At first, my students were not comfortable with the fact that vi could be both Tr and Pv. However, this dual labeling ability actual highlights how vi often functions as a pivot from a tonic prolongation to a predominant prolongation. Other analyses found chords that could be T⁶ or Tr₃, for example. Eventually, the flexibility of chord labels became a tool for personal expression, once students became comfortable with the idea of more than one right answer.

After the quarter was over, I also got some questions on how one would teach voice-leading with Functional Analysis. After all, that's why we make students learn figured bass, right? I spent a couple hours with a friend trying to work out how to approach this problem,⁵ and we determined that Functional Analysis could take advantage of the split bass and upper voice numerals in the label, and one could decide to over-show detail in these numerals for the purposes of teaching voice-leading. Example 4.3 shows this excessive detail. Some voice-leading circumstances would prefer the third doubled in the tonic triad of the resolution, but the numbers match the doubled root instance. In the case of the double third, the tonic could be (bottom up) 3, 3, 1, 5.

Example 4.3

F: D $\begin{matrix} 1 \\ 3 \\ 5 \\ 7 \end{matrix}$ T $\begin{matrix} 5 \\ 1 \\ 3 \end{matrix}$

Additionally, the fact that those pitches which have certain resolutions are always the same sub/superscript numeral makes it easier to track these resolutions: the active leading

⁵ Milo Fultz, classroom brainstorm, 10 May 2014.

tone is always the 3 in a dominant chord, not sometimes a root of a vii^o; the seventh of any chord is always written 7, no matter the inversion, and can be identified that way in order to resolve down, usually to the third of the following chord.

As to the difficulties expanding Functional Analysis to wider repertoires, the adaptations in Section 3.3 and the example in Section 4.3.3 cover some instances I have explored. Suffice it to say that Functional Analysis was designed for a specific repertoire and may not be as powerful or comprehensive in other repertoires, but that for any musics that reference common-practice tonality implicitly or explicitly, it may be useful to analyze with Functional Analysis to show those interactions or to uncover some part of the musical structure.

4.1.4 Integration into curricula

I believe Functional Analysis can easily fill goals already present in the standard college musicianship curriculum. The goals of Functional Analysis from Section 3.1, emphasizing structure, function, and bass motion, are often primary or secondary goals of theory or aural skills courses. Additionally, the majority of music students use theory primarily to further other interests in performance or teaching, and Functional Analysis is designed with these types of musicians in mind. The simplicity and additive nature of Functional Analysis was in part designed as a reaction to freshmen difficulties, allowing students to tell me what they know and not worry about what we may not have gotten to yet. An ambitious program could use Functional Analysis for the entire theory core program, but I imagine that it may first find a home in graduate theory review courses or theory intensive seminars.

As the name implies, graduate theory review courses are designed for master's and doctoral students who need some refresher on skills they are assumed to have learned in the

theory core curriculum, and these students are most often not theory majors. This type of course could be an ideal first home, because Functional Analysis provides an easy-to-learn vocabulary for these students who are concentrating on other highly developed skills. Functional Analysis can help bring theory to relevance for these students, and if they no longer remember Roman numerals, they are unlikely to ever be tested on that again, so there is little downside to using a non-standard system.

Depending on the institution, a graduate review may focus primarily on harmony or it may focus on a wider range of music theory applications. In a Section 4.2.2, I present a review format where harmony is subsidiary to engaging with music relevant to the particular class of students, encouraging students to use their primary specialty to inform the goals of the class. For a harmony review class focusing on using Functional Analysis, the translation class format developed in Section 4.2.1 could work with little adjustment.

For graduate theory majors, Functional Analysis may not be as interesting, particularly for those students focused on non-common-practice tonality projects or not invested in pedagogy. These students would most likely be interested in Functional Analysis as it works in conjunction with other theories, analysis tools, or musical repertoires, such as Schenkerian analysis, Neo-Riemannian transformations, or modern pop music. I have yet to formally teach a seminar on any of these topics, but it is certainly a matter for further investigation.

For students of any level wishing to learn Functional Analysis after they have already learned Roman numerals, there are some short cuts that can be taken. Since most will already be familiar with some functional concepts and chord membership, many of the beginning topics (cadences, primary functions) can be introduced as review. However, topics that are conceptually different for those who learned Roman numerals first might bear a

more careful look, as previously mentioned with P⁶ or reversed substitute function relations in minor. The translation format discussed in Section 4.2.1 closely resembles the course I taught in 2014, also mentioned in Section 4.1.2.

As stated, I believe the simplicity of Functional Analysis makes it an ideal candidate for first year musicianship curricula. However, if students were to learn Functional Analysis from the beginning, they may also need to be conversant in Roman numerals to attend other institutions or communicate with other scholars. For this part of curricular integration, Roman numerals and figured bass can be taught as historical practices after solid analytical and conceptual foundations are built.

To teach Roman numerals to Functional Analysis students could be quite simple. Since Functional Analysis works well with moveable-*do* solfège, helping students draw a connection between root solfège and Roman numeral would be straightforward enough. Once the functional, analytical foundation is built and the second naming system introduced, it is just a matter of reminding students to watch carefully for chords that are different between the systems – ii⁶ and vii^{o6} are ones I personally botch consistently.

Readers may wonder if it is possible to partially use Functional Analysis in conjunction with a theory core curriculum they don't have complete control over, or a book that they are required to use. As discussed in Section 2.4.2, many current texts already use tonic, predominant or subdominant, and dominant terms for some concepts. Continuation of these ideas is sometimes useful and Functional Analysis could be used as a way to show your work when determining the Roman numeral for students who are still struggling through all the steps. First, identify the function – predominant. Second, identify the bass – *fa*. Third, identify other characteristic pitches or tendency tones elsewhere in the chord – both *re* and *do*. Answer: ii 6/5.

The bonus to using Functional Analysis instead of Roman numerals is that each of these steps contribute to the answer or analysis without having to translate; in each step, the student can write the information they have found and then rarely have to erase it, and thereby get some partial credit even if they did not get all the details. Some students might begrudge the extra work of learning two systems if one were to attempt to teach Functional Analysis alongside a Roman numeral text, but others may appreciate the opportunity to show their work and go through steps slowly.

In my experience, chord concepts that students must analyze with Roman numerals are also easier to identify in aural skills from a functional perspective. While students may write ii⁶ or IV, asking them to first listen for predominant-ness leads to more success. Also, identifying the vii^{o7} as “just a weird V chord,” helps them to connect which contexts it will most likely be found in, and on which bass notes it occurs. So while you may have your students submit dictations with Roman numeral analysis written underneath, the concepts can still be presented functionally: ii⁶ and IV are synonyms, vii^{o7} is dominant and should resolve to tonic. This type of presentation of these concepts is already fairly prevalent in my teaching experience. Functional Analysis just brings to the fore what we are often already more clumsily trying to explain.

4.1.5 Advantages and Disadvantages

I find that Functional Analysis has many advantages. Many were discussed in Section 3.1, but the flexibility of analysis, both for personal interpretation and for amount of detail is one of the biggest for me. Having a system of analysis labels that allows me to express what I personally hear happening in a piece makes it easier to collect my thoughts before writing a prose analysis. It helps to articulate why my hearing is different than another person’s hearing of the same piece. It allows me to connect to the music in a personal way, bringing

to the fore musical performance decisions I might be making instinctively. These flexible analyses have been highlighted throughout Section 3.2, but are particularly brought out in Example 3.41 and later in this chapter (Section 4.3.1) with the longer Beethoven analysis.

In addition to flexibility, I value the logical clarity with fewer levels of remove from the discussion that Functional Analysis provides. While Roman numerals do allow us to talk about function, I constantly feel like I'm fighting against the system. On the other hand, with Functional Analysis, one says what one means with little translation or distance between the concept and the label: if you mean tonic, say "tonic," instead of "one."

This logical clarity, combined with the flexibility in amount of detail shown, make for much faster analysis, allowing a harried professional to jot down functions as they hear them without having to worry about details or translating. This speed is a plus for busy people and short attention spans. Each piece of music and analysis situation will necessitate different levels of attention: the very finest detail to help memorize a Bach solo for a competition, a quick phrase and functional analysis in a hurry before that one rehearsal when subbing for a concert, or a middle-level analysis to explain a piece to a friend or colleague or to enhance listening and performance.

Additionally, as I explained in Section 3.2.4, the different levels of functionality provide a basis to work from for Schenkerian analysis, now one of the most common advanced tonal analytic techniques. Many students in music will at least need to know what Schenkerian analysis is, if not also how to use it, an overlap towards this type of analysis may be an advantage for many musicians.

With anything, disadvantages occur alongside the positives. While personally I believe the advantages outweigh the negatives, we must still discuss what these negatives are and how to mitigate them. Disadvantages I have discovered or heard of from other people's

opinions include lack of linearity or horizontality, flexibility, constrained repertoire, and simple inertia.

Some might find that systems other than Roman numerals do not have enough vertical logic. On the other hand, some find that Functional Analysis stresses harmony over melody more than they like. Roman numerals do indeed tend to focus harmonic thinking very vertically, which may be an advantage in certain situations, but music does have both vertical and horizontal dimensions, and I have tried to balance these. Since I have heard arguments that Functional Analysis is both too vertical and not vertical enough, I must conclude that I am in the middle and can perhaps meet some needs of both types of thinkers. I hope that Functional Analysis emphasizes harmony, but in a way that demands that musicians think over large time-scales, and have continued to add options for more linear/melodic detail (like the voice-leading of Example 4.3) for those who desire it.

In some cases, the flexibility of multiple right answers could be distressing or difficult as well. I have already listed flexibility as a positive aspect, but I understand the desire to always come up with the same answer given the same inputs. I will point out that there are multiple meanings of labels in Roman numeral analysis (for example the V 6/4) which were discussed in Chapter III, and reiterate that in contrast to those Roman numeral examples, in Functional Analysis a given label means only one collection of pitches. In fact, the multiple meaning of notes and chords or the flexibility of chords' functions comes from the context of the music, not the system of analysis. Music doesn't always fit in the boxes we want to put it in, and Functional Analysis may better help speak to the different ways chords are used in music.

As to constrained repertoire, Functional Analysis is designed primarily for common-practice tonality. To devise a system that can approach more types of music makes it less

powerful for all the types of music it encounters. Functional Analysis may only work maximally with common-practice tonality, but I hope it does it well, from a new angle, and in as detailed fashion as anyone could desire. Whether it is worth spending time on common-practice era music is a different debate; I cannot determine which music is relevant to study for whom, so we will not get into that here. However, much modern and pop music is related to or directly in dialogue with common-practice tonality, so I believe that at least some study of common-practice harmony is crucial.

Inertia is a problem for anyone doing something new. Theory exists partially or primarily to help musicians communicate. If some of us use an entirely different system, theory no longer meets that goal. To introduce a new system takes a long time and a lot of energy to combat that inertia. We are never going to please everyone, and Functional Analysis may not be as logical to other people as it is for me. Even if it does not become everyone's preferred system, I still believe that looking at music in more than one way is fruitful. I can only encourage as many musicians as possible to learn Functional Analysis in hopes that it does become a common vocabulary for musicians to communicate with.

4.2 Example Syllabi and Assignments

To demonstrate the application of these teaching concepts, I now present templates and examples of syllabi and assignments. In Appendix B, there are three syllabus templates. The first is for a translation class, for students who have already learned Roman numerals, the second adapts the translation class for a graduate theory review, and the final syllabus is for a year-long freshman theory sequence.

4.2.1 Translation Class

The syllabus on page 145 of Appendix B shows the schedule and premise of a class for translation of Roman numerals to Functional Analysis for those musicians who already

understand harmonic concepts. This class is based very closely on the course I taught in winter term 2014, as discussed in Section 4.1.2. It is designed to meet two days a week for ten weeks. Given a fifteen-week term or three days a week, I think I would add one more day to each topic, the better to solidify each concept.

This course is designed to focus on Functional Harmony, so very little time is spent on other theoretical topics. The schedule includes the repertoire selections used in 2014. As each functional concept or symbol is introduced, its use for prolongations is discussed. This class is repertoire-based, primarily dealing with actual music using many different pieces and not as many constructed examples.

A version of this class that has less repertoire but instead focuses on one piece to teach all the different concepts is also possible. Such a piece might be a Bach chorale with a couple different versions (*Nun ruhen alle Wälder, O Haupt voll Blut und Wunden*), a Schubert song cycle, or a Beethoven piano sonata such as the Op. 31 no. 3 explored later in this chapter. Other pieces might be referenced and examples constructed for clarity, but the class could get quite deep into one piece instead of skimming over many pieces. A cyclic analysis of the piece chosen for the class would first identify the largest functional pillars and cadences, and then zoom in each week on places where new topics occur to prolong and embellish the structural pillars.

4.2.2 Graduate Theory Review

This syllabus is found on page 148 of Appendix B. For the graduate theory review, I envision introducing or reviewing most of the labels in the first couple of weeks, and then reinforcing them as we cover other theory topics, such as form. Formal analysis is possibly the most commonly used tool for non-theory specialists, so I would be remiss to not include it in a graduate theory class intended primarily for performers. However, understanding

harmony well enough to determine cadences is crucial to formal analysis, and Functional Analysis revolves around cadences, as they define function. I also included a couple weeks on non-common-practice music, because I do not presume that everyone is interested in the same types of music.

Philosophically, this class is designed as a performance analysis class, focusing on how analysis impacts our performances of music and our perceptions of others' performances that we hear. Functional Analysis's flexibility of different interpretations is well suited for this type of endeavor, and I would encourage students to include music that they are working on for performances and recitals.

This class is again based on a ten-week quarter. Fifteen weeks would allow for more time on harmonic topics, possibly doubling the time spent on the topics of weeks 1 (Basic functions), 2 (Cadences and more diatonic chords), 3 (Applied dominants), and 5 (Chromatic chords), as well as more time for analysis of literature, leaving time for a week on late-Romantic music, or more 20th-century music, or a week on different forms – theme and variation, arch forms, etc. – as suited to any given set of students.

4.2.3 Freshman Curriculum

The slightly more extensive template for a freshman theory curriculum found on page 150 of Appendix B shows the full implementation and integration of Functional Analysis as a teaching tool. This syllabus is only for the written theory portion of the curriculum, but aural skills should be closely linked⁶ – particularly because Functional Analysis is aurally based – and would also work well in conjunction with a class piano or keyboard harmony course.

⁶ I think an approach to aural skills like the one Daniel Stevens uses would dovetail well with Functional Analysis. Stevens has materials for his methods forthcoming in *Music Theory Pedagogy Online*. Daniel Stevens, "Symphonic Hearing: Active Listening in the Music Theory Classroom."

The course sequence laid out here does not assume significant prerequisite knowledge. Some familiarity with musical staff notation is critical, but knowledge of triads, scales, or solfège is not assumed. Major and minor keys are introduced concurrently. The schedule provides a circling around topics, first introducing a topic very briefly before moving on, then coming back to go more in-depth; the emphasis is on identifying what pieces of information the students can already determine (instead of belaboring what they don't yet know) while slowly filling in the gaps with detail. For example, a focus on identifying tonic functions occurs in weeks 1, 4, 6, and 11, with quizzes on the functions in week 12 and on cadences in week 15.

Even before ensuring the students can read a staff, the first week begins with cadences. Primary functions are defined with open and closed cadences, with the differentiation between the aural signature of tonic and dominant being the most important concept of the week. Since cadences imply phrases, some very basic phrase structure will be handled, but not using complex terminology – primarily along the lines of recognizing repetition and sense of completion.

The week of notation review would work best in small focus groups. Students who struggle most with rhythm could work together on the difference between simple and compound meters, while a bass clef intensive group might help upper woodwind players, for example. For advanced students who are already fairly fluent note readers, a group on interesting C-clefs and their usage might be appropriate. Week 3's emphasis on solfège provides more time to solidify notation concepts for stragglers, and introduces the concepts of tendency tones and individual pitch function.

Week 4 starts to get into the meat of Functional Analysis. While tonic and dominant have been defined, this week focuses on seeing it on the staff, once your ears have found it.

What visual hints are available? This week also introduces major and minor triads and the concept of major and minor keys. The following week, the goal is to begin memorizing major and minor key signatures. To that end, students work with music in multiple keys to find T–P–D–T progressions, as well as spelling drills for tonic triads and the actual writing of key signatures. Relative major and minor keys are introduced concurrently, different from many current curricula, but logical for the presentation of relative chords later in the term. Reinforcement of solfège and individual pitch function coincide with learning the scales that go with the key signatures.

Circling back to cadences in week 6 focuses on the difference between an IAC and a PAC, which reinforces basic T P D and solfège concepts yet again. A repeat of week 5, except with more adventurous keys, occurs in week 7, with allowance for solidifying the difference between relative and parallel major and minor keys. Following that, week 8 circles back to focus on dominants, which provides a platform to introduce seventh chords. Dominant quality seventh chords will be stressed, but the other types of seventh chords can be mentioned, while detail on them comes later.

Another week of cadences comes in week 9, providing review of cadences already learned and adding some new ones, while continuing the dominant emphasis. Week 10 focuses on the basic predominants, not needing much more than finding *fa* in the bass. Now that all three functional pillars have been introduced, basic analyses of simple pieces are possible. For that reason, a brief foray into modulation occurs in week 11, not to learn the mechanics of modulation, but to acknowledge that it exists and that the students are already equipped to deal with it – if they can identify a tonic in a cadence, they can identify a local key. This will be crucial for analyzing interesting music earlier in the curriculum. This also

acknowledges that students are good musicians and already play music that modulates, and therefore avoiding this music is useless.

Weeks 12 and 13 (basic form and prolongation) introduce topics that are necessary to writing interesting projects but are not necessarily harmonically new. The idea that functional areas can last a while has existed since week 1, and week 13 begins the process of talking intelligently about what happens between the functional pillars other than just “stuff.” To that end, week 14 focuses on substitute functions. Students will have likely already begun to identify these triads with letter names and solfège, now they see how they relate functionally to work within prolongations. Week 15 introduces the specific terminology of inversion, but students will already have worked with the concept of a triad as a thing that has many forms. In a semester system, students at this point will be more concerned with final projects, and solidifying of inversion terminology would come after break.

The second semester focuses on voice-leading. Each week adds a new chord or concept that student will become familiar with through writing and analysis. Beginning with only primary functions allows students to grasp part writing ideals, like spacing and doubling, while reinforcing basic pitch tendencies. Because dry four-part chorale writing will likely not be directly useful to students,⁷ I envision alternating chorale-style exercises with other exercises that emphasize constructing a melody or writing an accompaniment to a pre-written melody.

The analysis of and concepts for more complicated chords begin to be added starting in week 4. Added Tones includes non-dominant sevenths, P⁶, and other similar scenarios. These are followed by the slash-D chord and then the cadential 6/4. These chords will be

⁷ For more see David Kulma and Meghan Naxer, “Beyond Part Writing: Modernizing the Curriculum,” *Engaging Students*, Vol. 2, 2015.

added to short writing exercises along with analytical identification. Week 7 focuses on embellishing chords, which circles back to put inversions into practice. Discussion of embellishing chords also continues the thread of structural levels that has been weaving in and out since the first week of the first semester.

Chordal embellishment leads naturally to melodic embellishment, and two weeks are allocated for introducing first stepwise common, unaccented non-chord tones, and then the slightly less common or accented types of non-chord tones. I would note here that the pedal is often included as a non-chord tone, but with Functional Analysis a pedal point would actually be explained as two different levels of musical structure competing; that is, the bass pedal emphasizing a more background level of the musical structure while the individual chords over the pedal are embellishment on the musical surface. The naming of these chords is just a different layer where inversion happens to be irrelevant, as the bass is static. I have yet to see this specific explanation used in core theory texts when covering non-chord tones.

Weeks 10 and 11 conclude the largest part of the music writing focus for the term, combining all the various concepts previously covered into harmonic and melodic writing exercises. The final third of the term covers sequences, explaining the functional, harmonic, and linear applications of such phenomena, and then introducing basic applied dominants.

Finally, the last week introduces Roman numerals as a historical tool and useful mechanism for talking with other musicians. Students who are interested in these sort of things can be encouraged to learn more on their own time, and translating the functional concepts back to a different set of labels is not too challenging. Figured bass concepts would only be taught in keyboard classes, where the hands-on approach is very conducive to learning those short-hands.

The basic format of each week would be spelling/writing drills, as well as identification out of context or on a score, as appropriate to the newness of the topic. Also, assignments would include prose writing in greater and greater chunks, to prepare for final projects. Musical repertoire would be primarily Bach–Brahms in the common-practice canon, but can also include crossover examples from pop, modern, renaissance, and other genres.

This curriculum does not expressly include counterpoint exercises or the specific terminology for phrase analysis. Counterpoint is purposefully left out because I feel that the voice-leading concepts it is meant to convey can be taught more simply in the contexts the students are going to be using them in – both for part writing and analysis, voice-leading can be built in from the beginning with solfège and tendency tones, rather than trying to transfer skills from a counterpoint unit to a harmonic part writing unit. This theoretically should work, but I have had little success with such transfers without much emphasis and work.

While there is no specific week dedicated to phrase terminology, students are introduced to the concept of the phrase in week 1, and as they build cadential and formal knowledge through the analyses week by week, such terminology can be introduced as needed for papers and common understanding in the class. Familiarity with terms like “phrase” and “period” would happen before the end of the first term. Also, because formal analysis is more open to interpretation than many pitch concepts, emphasis would be on clear communication rather than on everybody using precisely the same words the same way. A shared vocabulary can provide clear communications, but students will have to back up why this phrase is the same/different from another one no matter what formal label it is given, and I find that to be the more interesting part, rather than the label.

This course would then continue to a second year of core theory, which would include chromatic concepts, more in-depth formal and motivic analyses, and other types of analysis for less functional music. I imagine modulation and chromatic topics to take 5–10 weeks, motivic and formal analysis to take 10–15 weeks, and an introduction to 20th and 21st-century topics to take 10 weeks.

4.2.4 Sample Exercises for Assignments

In Appendix C, there are six example exercises. These could be used in class or as take-home assignments. I will explain in this section how each exercise could be adapted for either review courses or as a first introduction to the given concept.

The first example on pages 154–56 is designed to teach the concept of open and closed cadences, and along with it dominant and tonic functions. It would work best in a classroom setting for a class such as the freshman curriculum outlines, but could also be a good review at the beginning of a more advanced course. For more advanced students, ask them to be more specific in identifying cadences, and for a homework assignment, recordings must be made available. A discussion of phrase and motivic relations is also a good fit for some of these excerpts, identifying types of periods and phrase structures. For beginners it should probably be paired with spelling drills, but review students may not need those.

The second exercise, page 157, is a drill to practice identifying and writing inversions. This should be paired with score examples of inversions in context. For more experienced classes, ask them to connect the various inversion examples using what they know of part writing, even if that is not the focus of this exercise. For beginners, concentrate on what type of spacings and doublings are effective in which contexts without troubling them with chord connections: point out that inversions are more common on primary functions than on

substitute ones, advise them on where to put tendency tones in order to lead up to part writing later, explain the rationale for standard spacings and what musical reasons composers might have for frustrating those expectations.

For the third exercise, also on page 157, which teaches non-chord tones, the example is analysis-focused. Students should know how to indicate moving voices with Arabic numerals in the functional symbols. More advanced students may need less help with the changing keys. Using the names of passing, neighbor, and suspension for specific non-chord tones can help explain their behavior and give a shared vocabulary for discussion; however, the names are usually less important than the aural, musical aspect, and identifying the structural categories of part-of-the-chord versus not-part-of-the chord. With Functional Analysis there is a larger grey area for part-of-the-chord, as with the concepts such as P^6 , so this exercise is as much about voice-leading, embellishment numerals, and how to label them as about specifically identifying a pitch as in or out of a chordal unit. Remind students to find the function first, then the chord, before deciding which pitches are embellishing or structural.

Exercise 4 on page 158 shows brief part writing examples. For take home assignments, longer, 10 or more chord strings in a single key can also be devised. Beginners will need more repetition and reminders, but otherwise part writing is similar for most levels. However, part writing is less common in review classes that are focused on performance analysis. Remind students that chordal sevenths typically resolve to the third of the following chord, which they can analyze in the functional label if it helps them. Other tendency tones can be identified as specific numerals in the functional labels, such as the leading tone, which will always appear as a 3 in a Dominant label no matter whether it is in the upper voices or the bass.

More advanced part writing exercises could have students constructing the progression themselves before writing it, or allowing for non-chord tones and other melodic phenomena. Asking students to write their own progressions allows for discussion of harmonic rhythm and ebb and flow of musical phrase tension. Voice-leading can also be observed on scores of written music, particularly when expectations are not met, to illustrate the importance of tendency tones. Sing hymn tunes with everyone having to sing the frustrated leading tone in the alto at least once!

To practice applied dominants, Exercise 5 (page 159) has a Bach chorale analysis supplemented with some spell and resolve drills. Both applied dominants and slash-D chords are included, and applied to dominant as well as to other chords. Depending on the speed and level of the class, it may be advisable to introduce only double dominants, or only dominant chords that include their roots. On the other hand, double dominants are not conceptually different than other applied dominants and creating an artificial division between the two instances could be counter-productive. If separating either double dominants or slashed-Ds, try to keep continuity between the lessons and assignments. The next steps are to find extended tonicizations, with both applied P and D, and other interesting, non-standard resolutions – with deceptive resolutions, prior referents, or missing referents.

Like Exercise 2, Exercise 6 on page 160 is simple practice of identifying, spelling and resolving. However, this exercise focuses on chromatic predominants. Again, this should be supplemented with score and listening examples from the repertoire. Beginners to this topic should be reminded of the similarities to diatonic chords, while more advanced students can explore the formal, expectational, and other implications of these chromatic predominants.

4.3 Analyses

Since the primary goal of my work with Functional Analysis is to create a system which has logical applications for pedagogical purposes, this section will demonstrate a few full-blown analyses with various types of music. These analyses serve as larger examples for classroom use, whether that be in class, as homework, or the basis for larger student projects or papers.

The first long analysis (Section 4.3.1, Beethoven) starts with traditional tonality from the common-practice era. However, while Functional Analysis is best used with and designed for common-practice era functional tonality, much music exists in which functional tonality is present, but only some of the time, or in a different manifestation than the more narrow definitions of tonality during the Classical era. Therefore I have also included examples that stray from the strictest realms of functional tonality into more adventurous territory (Section 4.3.2 – Chopin and Section 4.3.3 – Beatles). We cannot pedagogically ignore this music merely because it does not perfectly fit our analytical system, thus I have endeavored to use Functional Analysis with these more diverse styles of music.

4.3.1 Beethoven op. 31 no. 3 (I)

This analysis is of the exposition and development from the first movement of Beethoven's Piano Sonata op. 31 no. 3, in Appendix D (pages 161–167). This movement is particularly interesting because my analysis often features predominants in positions where we typically expect structural dominants, in addition to concepts such as slash-D, D 6/4, sequences, chords with multiple interpretations, chromatic predominants, applied dominants, and showing detail versus showing big picture. A glossary of terms for readers unfamiliar with Sonata Theory formal terminology is available in Appendix A on page 143.

The movement opens with a P 6/5 instead of tonic, a detail which might only be known later, but as the initial sonority has the add-6 sound, it is hard to call it tonic in this genre. In addition, since the add-6 sonority is most commonly used as a predominant, many experienced listeners could get the subtle sense of predominant-ness even from the first sound waves. Invite students to listen to the instability of the first chord and have them explore their personal expectations and how that frames the emotional impact of the movement.

This P 6/5 gets manipulated through the movement as it changes with the themes and motives. Students can trace all the important predominants, which might be an interesting early essay topic. After the initial phrase and repetition, the next strong predominant is a borrowed p 6/5 in mm. 33–34. This calls to mind the opening, but the change of mode foreshadows developmental transformations, and its appearance right after a strong dominant (with preceding double dominant, mm. 30–31) upsets the first option for a medial caesura and thwarts expectations of an early second theme. This p 6/5 is directly transposed to the key of the dominant in m. 39, the earliest it is appropriate to modulate stably to the new key for the secondary theme. However, it is not p(B♭) but p(F), marking an extended tonicization of the dominant, which then morphs to a pR #6/5 before the emphatic B♭: HC for a proper medial caesura in m. 45.

Predominant does not feature as highly in the secondary theme, but returns at the opening of the development, in m. 89. The sonority from m. 1 is reimagined as pR 6/5 in c minor, and then expanded to pR #6/5 to more firmly express c minor. As the development cycles downward by fifth through keys, the next two keys (F m. 109, B♭ m. 117) are introduced with a predominant, pR #6/4. E♭ is not reintroduced with a predominant but a

dominant (m. 125), signaling that while the home key is stated as part of the sequence, it is still too early for it to be properly achieved, and therefore also too early for the primary theme. The $E\flat$ tonic quickly becomes $(D^7)P$ in m. 127, and the $A\flat$ triad slowly moves its 5 to 6 (mm. 129–130) and P^6 is drawn out as a pedal, as if it were the dominant in a typical retransition, reintroducing the Primary Theme in m. 137. The full $P\ 6/5$ is not completed until m. 139, two measures after the Primary Theme has been reintroduced.

This piece provides a jumping-off point for talking about multiple functional interpretations; there are several places where this is possible. In the transition between the primary and secondary themes, there is a verticality that could be thought of as an extension of the prevailing predominant (m. 36 beat 3), but could also be a slash-D with a suspension. However, this diminished seventh chord does not resolve any of the times it appears (mm. 36, 38, 40, 42) in any key, even belatedly. For me it makes more sense for the predominant to hold tension and resolve finally in m. 44, but there may be reasons to draw attention to its status as a fully diminished seventh chord as well.

Another flexible instance occurs in m. 49. A predominant has shifted from P^5 to P^6 . Commonly, I do not call a *fa-la-re* collection Pr_3 unless there is a $(D)Pr$ preceding it, but this case is a grey area. If the performance strongly highlights the $B\sharp$, some listeners may hear it as an applied leading tone to C, and hear the Pr_3 instead of the P^6 . This can lead to a discussion of how or why a performer might choose to accent any given embellishing tones.

An example of one passage which I find much easier to analyze or teach with Functional Analysis than with Roman numerals is the opening of the development, mm. 89–100. Functional Analysis helps clarify why the $pR\sharp 6/5$ resolves neatly to a $D6/4$, though the $D6/4$ itself never resolves to $5/3$ here, and then in m. 96–7, when an applied slash-D of

Dominant resolves to another slash-D, very little explanation is needed, whereas in Roman numerals explaining why (vii^{o7})V goes to vii^{o7} instead of V takes more time and words.

Other topics available for discussion in this piece are sequences and how to use LIPs, as well as applied dominants. Measures 68–70 have a falling thirds sequence with multiple applied dominants. This sequence can easily be analyzed functionally, but the harmony also interacts with a 10–7 LIP, highlighting the dominant seventh chord pull from each embellishing applied dominant to its referent. There is also the applied dominant to the double dominant, which is the same chord as (D)Pr, as Pr and double dominant have the same root. The double dominant replaces the Pr (which could have been one of the logical continuations of the sequence) in order to provide extra pull towards the cadence.

Throughout this excerpt, the figuration of the texture makes for many places where a chord every beat or even every bar is tedious or unhelpful. For example, mm. 17–21 are a tonic pedal, for which showing a new chord every bar could be helpful, but may also detract from identifying the tonic-ness of the passage. On the repeat of the passage, the analysis of mm. 21–25 demonstrates how the upper numerals can show the voice-leading over the tonic pedal. Additionally, compare m. 26 with m. 28. In some instances, the more detail of the moving bass line 5–3–1 may be useful. In a time crunch or a big-picture-focused analysis, D⁷ for the whole bar may be sufficient.

Different students might focus on (or be guided to focus on) different aspects if assigned this piece for an analysis and essay. Some may follow each instance of interesting predominant as it helps to articulate the form. Another may explore the sequences, both on a low-level chord fashion and on a larger level in the development. Regardless, this piece provides many interesting topics of conversation, whether used in class or as an assignment, in full, or in part.

4.3.2 Chopin Prelude op. 28 no. 4 in E minor

A great way to begin looking at this piece is to start from the analysis of it found in Rogers's book *Teaching Approaches in Music Theory*.⁸ His analysis purposely focuses on pedagogical questions, so it is a good example of the sort of questions we might want to ask. These questions include those that emphasize the harmonic: asking to distinguish between functional and non-functional harmony, or the particular chord in m. 23; the prolongational: to explain why the bass might start on G instead of E, to identify the large scale descent of the melody in the first phrase; and emotional: the ramifications of the missing tonic, comparing and contrasting the two halves of the piece, discussion of climax and stasis.

The following analysis covers most of these bases, starting with harmonic and prolongational analysis, which can then lead to a discussion of the more emotional aspects of the piece. My primary addition to Rogers's approach is to encourage a discussion of transformational theory in the details of the harmonic analysis, and of course to use Functional Analysis in place of Roman numerals. As the discussion of emotional impact of any piece changes from listener to listener and performance to performance, I will leave you to form your own conclusions with your students.

My Schenkerian analysis does not include a soprano line *Urlinie*, as that is not part of my main contribution to the analysis; with the harmonic/functional focus, I have included only the bass line. In a classroom setting, I would definitely included a full discussion of the various types of Schenkerian options. Since this piece has been analyzed by many, many scholars, have students read various different analyses by noted scholars and debate the

⁸ Michael Rogers, *Teaching Approaches in Music Theory*, 94–99.

merits of any particular reading.⁹ Do they hear the piece as two phrases with an interruption? Or do they hear it more from Schachter's view with a single descent?¹⁰ This piece is also a great example of an auxiliary cadence.¹¹ Other analyses read the *Urlinie* as being submerged into the tenor.¹² If you are planning to introduce transformational theory, also consider Cohn's analysis in *Audacious Euphony*.¹³

For me, Functional Analysis helps to frame this prelude's tonal structure much more quickly than with Roman numerals. The vertical tendencies of Roman numeral analysis make it easy to get bogged down in the chromatic, non-functional verticalities that prolong the structural functions. Since Functional Analysis encourages a zoomed-out look first, it would be fairly easy for even beginning students to take the score and, upon listening, identify the cadences and major structural functions. In fact, it is almost easier to identify the functions in this context because they are the isolated triads or diatonic/stable chords surrounded by interesting harmonies – providing a visual/aural cue to help separate structural and embellishing harmonies. Below, Example 4.4 shows the score with a Functional Analysis that is slightly more detailed than just cadences.

⁹ Some of these might include Fred Lehrdal's reductive but non-Schenkerian analysis in *Tonal Pitch Space*, 104–109; or Allan Forte and Steven Gilbert's analysis in *Introduction to Schenkerian Analysis*, 207; or Justin London and Ronald Rodman's "Musical Genre and Schenkerian Analysis," 101–124.

¹⁰ Carl Schachter, "The Triad as Place and Action," 150–153.

¹¹ Edward Laufer, "On the first movement of Sibelius's Fourth Symphony," *Schenker Studies* 2, 137.

¹² Eric Wen mentions this in his "Bass-line articulations of the *Urlinie*," *Schenker Studies* 2, 280, citing Carl Schachter, "The Prelude in E Minor Op. 28 No. 4: Autograph Sources and Interpretation," *Chopin Studies* 2, 167.

¹³ Richard Cohn, *Audacious Euphony*, 164–167. This analysis also mentions other transformational analyses that may be relevant if you are going that direction.

Example 4.4

Prelude Op 28 # 4

Chopin

Largo

5: t₃ p₆⁵

5 p₆⁵

9 P₃ D 3

13 t₃ p₆⁵ D_7^9 5

17 9 D 7 t₃ p D

21 tV =pR #6 pR #6⁵ D t

Finding these structural harmonies then allows us to move on to Schenkerian reductive analysis if desired. Below in Example 4.5 is the bass line of my Schenker graph representing the large-scale functionality of this prelude, with some of the important chords labeled. These chords are also shown on the score on the previous page. My reductive analysis of this piece might be different from traditional analyses, but my reduction highlights the structural predominants based on the parsimonious voice-leading. Of course, making a Schenkerian analysis of any piece is a journey, and often each analyst comes up with a slightly or even widely different answer. Make sure students are internally consistent between their choices for functional chord labels and structural Schenkerian points.

Example 4.5

Example 4.5 shows a bass line with Schenkerian analysis. The notation includes a staff with a treble clef and a key signature of one sharp (F#). Above the staff, numbers indicate half-step changes: -2, -2, -1, -2, -2, -2, +2, -2, +3, -2, -1, +1, +1, +1, +2. Below the staff, chord labels are provided: t₃, P₆⁵, P₅⁶, P₃, D, t₃, P₆⁵, D₇⁹₅, D⁷, t₃, P, D, tV = pR_{#6}⁵, D⁷, t.

There is a strong emphasis on *le/la* in the bass line, particularly before cadential motions, such as mm. 9 or 16. A strong root position p–D upsets the parsimonious voice-leading (PVL is shown above the staff in Example 4.5 with numbers of half steps plus or minus) and leads to a deceptive cadence. The tV of the deceptive cadence then morphs to an augmented sixth in inversion – again showing importance of *le* as a predominant bass pitch (even if later *fi* is in the bass on the surface). This finally leads to the D–t and the only root position tonic – the last chord.

The prolongations, which are where in this piece Functional Analysis does not work, can be described by tracking half step changes in each voice – parsimonious voice-leading. This prelude uses predominantly half-step down motions as the prolongational driver, but

there are instances where that is not the case. As previously mentioned, some important moments in the parsimonious voice-leading (PVL) motions are shown between the staves in Example 4.5. Since breaks in the PVL (numbers greater than 1) highlight shifts to return to functional harmonic workings (cadences) and important predominant chords, I hear the PVL as prolonging the predominant area. Students can use these half step motions to help inform their Functional Analysis, to describe emotional aspects of their analysis, or as I have done, to inform their reductive analysis.

More advanced students could use this most basic PVL analysis as a jumping off point to look at different types of transformational theories – LPR cycles, sum classes¹⁴ – and how these things help reinforce or undermine a feeling of tonality, both in this piece and other contexts. Since it has a high level tonal structure, but the surface details are not as functional, it provides an interesting piece to get students talking about how and why we hear or don't hear tonality on different levels, in addition to giving them a glimpse of new tools, theories, and possibilities for analysis.

4.3.3 “In My Life”

For my last analysis, I have chosen a Beatles song that caught my attention over 10 years ago. “In My Life” straddles a boundary between traditional functional tonal harmony and modern pop harmony. It is fairly indicative of the Beatles harmonic vocabulary, which is different enough from standard common-practice tonality to provide an example of where the adaptations of Functional Analysis from Section 3.3.2 could lead.

I first learned this tune on guitar, before I ever heard the original recording, thanks to the collection of Beatles sheet music my parents kept in the piano bench. The chords

¹⁴ These are described in articles such as Cohn “Square Dances with Cubes,” and Maximally Smooth Cycles,” or Hyer, “Reimag(in)ing Riemann.”

from that version¹⁵ are the same as those from the original recording,¹⁶ and since Functional Analysis is still primarily harmonic and chord based, the melody and chords provides enough of a starting place for analysis. A deeper analysis would cover instrumentation, texture, timbre, lyrics, harmony, and form. This could in turn lead to a discussion of how these elements interact and if those interactions differ between common-practice music and pop music. It could also be an opportunity to simply add a little color to a standard harmonic analysis week.

Example 4.6 below shows my annotated lead-sheet. The overall form of this song is verse–chorus–verse–chorus–bridge–chorus–coda, with the bridge based chordally on the verse. The students should at least touch on the lyrics, even if text-painting may not be as obvious as it might be in a Schubert *Lied*, due to its strophic nature. I might also ask them to think about how this song is different when heard as a recording of the Beatles, sung solo with only guitar for accompaniment, or even karaoke.

The intro clearly sets up traditional, common-practice functional expectations, with T–D⁷–T easily giving context for the key. But outside of the intro and the coda, E⁷ is a rare chord in this song. For the verses, the primary chord that pulls to tonic is Dm (iv), which functions as a dualistic or plagal subdominant: instead of the leading tone pulling up, *ti-do*, we have a different tone pulling down, *le-so*. That means that the analysis of the verse would be T–Tr–(D)–S–s–T, as you can see on the score. This uses both a traditional applied dominant and a non-traditional subdominant.

For the chorus starting m. 13, some more complicated relationships appear. The chorus starts out as if it were going to use similar functions to the verse, but then we get a G

¹⁵ Lennon and McCartney, “In My Life,” *The Beatles : Piano, Vocal, Guitar*. Hal Leonard Essential Songs, 212–214.

¹⁶ *The Beatles Complete Scores*, 512–515.

major triad as the pre-tonic chord. This is an alteration common in rock songs where *te* pulls up to tonic, even though the half step is not present. The first phrase of chorus is then Tr–P–dR–T, but the second phrase changes again.

It begins similarly, but sets up our common-practice functional expectations by moving to B⁷, the dominant of E⁷ – the dominant that is only present in the intro – but instead of resolving to E as expected, this double dominant pulls to the subdominant which was the standard pre-tonic in the verse: Tr–DD–s–T. This maneuver makes me feel even more sure that the subdominant is functioning as the primary, structural, cadential pre-tonic chord for this piece.

The bridge is in a more classical style and was played with a keyboard sound and baroque-style ornaments in the original recording.¹⁷ Therefore the chord progression is adjusted slightly to include a more standard, historical dominant reflecting that style, with the melody emphasizing *so* in the first ending. However, the pop influence stays in the bass, emphasizing *do* there in both endings. Because of the style change, it is logical to me to hear the more traditional functions of the chords. However, to me the larger scale T–Tr–P–D harkens back to relate this bridge to the verse, even if they sound somewhat less related on the surface.

¹⁷ John Lennon, Paul McCartney, George Harrison, and Ringo Starr, “In My Life,” *Rubber Soul*.

The coda emphasizes the more modern sound and functions of chords again by arriving at the structural ending (where the singer finishes) with an s–T cadence. In fact, in the last couple bars the E⁷ does reappear, but the “traditional” D–T cadence is treated almost as earlier composers would a plagal tag – as an afterthought that helps solidify the key.

This piece allows students to test out their recognition of non-V dominants, and perhaps also to discuss what qualities provide certain chords with that dominant feel. Encourage them to think about how a traditional tonal dominant can provide a historical feel in certain contexts, by implying a whole different sound world.

4.4 Conclusion

This chapter has covered my personal, hands-on experience with teaching Functional Analysis, and how that has informed its pedagogical implications. The long-form demonstrations help put the functional, harmonic analysis in the context of other types of musical analysis and show possibilities of where a better-informed harmonic understanding could lead. The syllabi and curricular discussion put into context my greater goals for Functional Analysis: to make harmonic analysis approachable for any people it could help – whether for professional musical performance purposes, theoretical discoveries, teaching of other musicians, or simply enriching one’s personal listening experience.

CHAPTER V

CONCLUSION

I have updated a system of labeling for Functional Analysis in hopes of providing a pedagogical tool for the efficient learning of common-practice harmonic analysis. To that end, I have followed the history of functional ideas and their pedagogy, illuminated with many examples the implementation of my updated system of Functional Analysis, and discussed the pedagogical implications that this updated system implies. While I have not added to the theoretical discussion of the specifics of how function works, I never intended to.

The goal was always to update a system of labeling to be as pedagogically friendly as possible, in order to assist students and teachers of harmony to more easily and enjoyably learn, teach, and engage with common-practice-era tonal harmonic practice. Therefore, I included examples of syllabi and assignments, classroom demonstrations or long projects, and carefully discussed each aspect of the labeling as I presented it.

By surveying the history of functional ideas and their evolution, we find that the desire to analyze music for harmonic function is not a new idea, and indeed that this has been a goal of many theorists and harmony teachers for centuries. However, the current methods for instructing in harmonic function often still leave students confused or baffled, as they struggle to match functional concepts to labels that don't exemplify their analytical goals, and to methods that insist on starting from tiny detail instead of beginning from a more complete musical perspective.

Functional Analysis is designed to focus the analysts' attention on function in a different way than current systems. The elaboration of each detail of my Functional Analysis system shows how I have designed each part of Functional Analysis in hopes of making

harmonic analysis more closely related to the musical perception; and that while all conclusions are speculative and not empirically based, I hope that this closer relation makes harmonic analysis quicker, easier, more intuitive, and more personalized. I have also covered the greater pedagogical implications on a larger scale (involving courses and curricula), informed by my experience both as a teacher of today's standard system and from teaching Functional Analysis in the classroom.

These greater curricular concerns lead us to wonder what we should do with music that isn't perfectly common-practice-era tonal. A few suggestions for extensions and adaptations are provided at the end of Chapters III and IV – by no means a complete look at modern pop music or complex chromaticism, but certainly providing a starting place for further study.

These future avenues for research could include an in-depth exploration of how function does and does not apply to late-Romantic-era music, possibly using a hybrid analysis of transformational theory and Functional Analysis to show the inner workings of that type of music. Pieces similar to the Chopin prelude of Section 4.3.2 – those that are tonal on a large scale, but not on a small scale – might be the most fruitful for this type of study. I, for one, previously have written a paper for a class on the aforementioned Chopin prelude involving an in-depth sum class analysis and tracing the journey on the chicken-wire torus.¹ I imagine this type of hybrid analysis would work well, or at least show interesting connections and issues, for many pieces in this era – Liszt, Wagner, and such.

¹ This paper used a combination of techniques from Richard Cohn, "Square Dances with Cubes," *Journal of Music Theory*, Vol. 42 no. 2 and "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions," *Music Analysis*, Vol. 15 no. 1, as well as Jack Douthett and Peter Steinbach, "Parsimonious Graphs: A Study in Parsimony, Contextual Transformations, and Modes of Limited Transposition," *Journal of Music Theory*, Vol. 42 no. 2, Brian Hyer, "Reimag(in)ing Riemann," *Journal of Music Theory*, Vol. 39 no. 1, and Joseph Straus, "Voice Leading in Set-Class Space," *Journal of Music Theory*, Vol. 49 no. 1.

As a highly descriptive (not prescriptive) system, Functional Analysis could help understand what harmonies are present even in very chromatic music, with a little adaptation. Similar to the Dvořák of Example 3.45, music with even distantly related chromatic thirds may still be understood in a functional framework. An analysis of music of this type could lead to interesting discussions of if we hear function in chromatic music at all, how and how strongly we hear that function, and what this sort of analysis tells us about the music. Does having a functional framework help understand any given piece? Does that make the listening experience more rich or enjoyable? Does it help in performance expression? The answers to these questions may be less obvious depending on the level of chromaticism or functional structural strength.

Functional Analysis may also expand into more modern popular music genres. The examples I showed in Sections 3.3.2 and 4.3.3 are admittedly only “non-standard” from a very basic point of view, and there are many examples of more complicated harmonic relationships in modern genres. Functional Analysis might work best where pitch-identity function works in concert with syntax function, since that was how I originally designed Functional Analysis for common-practice-era music. However, I can easily imagine interesting analyses and discussions that use Functional Analysis to highlight where pitch-identity, progression, and syntax types of function are or are not in sync – using the struggle of defining a label for a given chord to describe our hearing of it, much as struggle of deciding which pitches to keep before moving up to the next reductive level in a Schenkerian analysis is the most interesting part of that type of analysis.

At one point, I envisioned expanding this project to include an empirical study with statistics and data to see if one could, in fact, correlate Functional Analysis with faster and better learning outcomes for beginning harmony and aural skills, but I quickly decided that

was outside the scope of this dissertation and my research expertise. I would love to see side-by-side trials of Functional Analysis with randomized Roman numeral controls, in addition to more hands-on testing with students to get feedback and keep improving the system as much as possible.

As mentioned in Chapter IV, my goals for the continuation of Functional Analysis lie less in research, but more in teaching application. I hope that Functional Analysis can find a home in various courses throughout the music theory curriculum, whether they be review courses or core curricula. I particularly hope that Functional Analysis can provide musicians of many types new and fruitful ways of looking at harmony to enrich their listening, performing, and teaching of music.

APPENDIX A

DEFINITIONS AND EXPLANATIONS

Basic Harmony Terminology

We use **solfège** syllables to refer to notes in a scale and to help remember melodic relationships. The syllables *do*, *re*, *mi*, *fa*, *so*, *la*, and *ti* are also sometimes called scale degree numbers 1, 2, 3, 4, 5, 6, and 7. (Think of “Do, a deer” from *Sound of Music* for an example of these syllables in context.) **Intervals** are the space between these numbers, including the starting number, so the interval from *do* to *mi* (1 to 3) is a third – counting all the notes *do*, *re*, *mi* = 3. The **leading tone**, *ti* or 7, is a pitch with functional significance (and therefore a special name).

A **triad** is the primary type of chord that we deal with in common-practice tonal music. It has three notes, and is built from stacked thirds. There are several qualities of triads, but the two most common are major and minor. In speaking and writing, we usually refer to a triad by a note name and its quality; such as “C major chord” or “A minor triad.”

The **root** of the chord is the note that gives its functional drive, usually the lowest note when the chord is spaced in a close-packed position. It is important to keep this separate from the **bass**, which is the lowest sounding note of a chord in a musical context. (There may be some debate of what the root is for certain chords, particularly in cases where we might describe the root as missing, or if we are using an interval other than thirds to describe a chord.)

In harmonic analysis, we use the word **cadence** to refer to specific harmonic gestures that provide closure, which is different from the way the word cadence is used in rhythmic contexts, such as a drum line or speech analysis.

A **phrase** is a unit of musical form with structural harmonic motion ending in a cadence. It is a grouping of musical time that feels like a complete unit. These units can end with an open or closed feeling depending on the type of cadence. In common-practice music, cadences are closely associated with specific chords. The most closed cadence is called a **perfect authentic cadence** (PAC), and the most open cadence is called a **half cadence** (HC). Functional Analysis derives its definitions of function from the chords of the PAC and the feeling of completion that it provides.

The PAC and its feeling of functional closure also helps us identify the **key** of the music (indicated in analysis as C:), which circles back and lets us know what scale and solfège to use. When music changes key in the middle of a piece, it is said to **modulate**; when this is referred to in noun form, it is a **modulation**.

The **common-practice era** was from approximately 1650 to 1900. The music of this time period is referred to as common-practice music. The basic harmonic structure and behavior of chords of most music written in western Europe (or its colonies) for these years is essentially similar, so common-practice music is said to exhibit common-practice tonality or harmony. This is the type of music which Functional Analysis is primarily intended to describe.

The words **voice-leading** are used to describe the linear connections between chords.

Roman numerals are currently used to label chords in harmonic analysis, with each Roman numeral matching the scale degree number of the root of the triad; for example a triad based on scale degree 1 is labeled I.

The word **diatonic** indicates that all pitches are contained within a key; **chromatic** pitches are pitches outside of a key or collection of pitches. Chromatic pitches are usually notated with a sharp (#) for raised and a flat (b) for lowered. Some useful chromatic solfège syllables are *fi* – raised *fa*, *le* – lowered *la*, *te* – lowered *ti*, *ra* – lowered *re*, *me* – lowered *mi*.

Sonata Theory

Much of the Sonata Theory currently in use is based on Hepokoski and Darcy's book.¹ This is the terminology I am familiar with, and have used when referring to the musical form in the Beethoven analysis in Chapter IV. The following is merely a rough overview, so readers who may be unfamiliar with this terminology can at least have some point of reference.

A movement which is based on a **sonata form** has three large parts, the **exposition**, the **development**, and the **recapitulation**. The exposition introduces a variety of themes – how many varies on the length and type of sonata, the development usually has some sort of motivic transformation of the opening themes, and the recapitulation restates the exposition's themes.

The exposition's themes are referred to as **primary** and **secondary** themes (abb. P and S), merely by their order of arrival in time. There is often a **transition** (T) from the P to the S theme which helps the music modulate to the new key, and the cadence at the end of the transition is called the **medial caesura** (MC). These MCs can be many different types of cadences, in either the key of the P theme or the key of the S theme.

¹ James Hepokoski and Warren Darcy, *Elements of Sonata Theory: Norms, Types, and Deformations in the late eighteenth-century sonata*, Oxford University Press, 2006.

APPENDIX B

SYLLABI

Translation class

Objectives

In this course we will explore tonal analysis from a functional perspective. By the end of the quarter, you should be able to analyze any music just as confidently with functional labels as with Roman numerals. This will lead to a more thorough understanding of music and thereby more enriching and enjoyable performances.

Some specific skills we hope to improve include fluency with functional symbols, talking and writing clearly about music, and middleground scanning.

Materials

Scores and handouts will be provided in class and available on Blackboard.

Assignments

All assignments will be pass/no pass. They are designed to help you become comfortable with the new system and give you practice writing and analyzing in ways required of you on the midterm exam and final project. Each assignment will be assigned on a Thursday and due on a Tuesday. There are 8 assignments, which will be graded according to completion and a good faith effort. A "pass" quality assignment is completed, shows care, thought, and effort, and also shows understanding of the concepts, if not mastery. A "no pass" assignment has evidence of being done in haste, carelessness, and lack of understanding of the concept. I will allow redos for up to 3 assignments.

Midterm

There will be a brief exam during week 5. This is to ensure mastery of fundamental topics before getting deeper into analyses.

Final Project

You will analyze a piece/movement of your choosing – we will discuss topics in week 6 and you will tell me by week 8 what you're planning on doing. You will use functional labels in your analysis, but other tools may also be of use. You will give a 10-minute presentation on your project in week 10, and turn in a minimum 5 page write-up (not including annotated scores) by Wednesday of finals week.

Grades

Assignments (8) – 40%
Midterm – 10%

Final Project – 30%
Class Participation – 20%

Policies

- Attendance. Attendance is mandatory. There are only twenty class periods. If you have more than three unexcused absences, it will impact your grade negatively.
- Assignments. Assignments are due at the beginning of the class period. You must email me BEFORE the class period in which an assignment is due for me to CONSIDER accepting it late.

- All dates, assignments, and grades are subject to change

Schedule

Week 1 Introduction and Basic Functions

Introduction, Basic Functions, Middleground Scanning

Mozart K. 332 i

Basic Functions continued

Mozart K. 331 iii, Clementi op. 36 no. 1 i

Week 2 Basic Prolongations and Substitute Functions

Substitute Functions

My Country Tis of Thee

Basic Prolongations

Old Hundredth, *Neue Liebe, Neues Leben* – Fanny Hensel

Week 3 Inversions and other Arabic numbers

Inversions and Added Tones

Bach WTC book 1 I, Mozart K. 545 iii

Chords missing roots

Hensel, Bach Violin Partita #2: Chaconne

Week 4 Embellishment and Levels

Chordal Embellishments and NCT's

Mozart K. 331 i & K. 330 iii

Bach Chorale Day, putting concepts together

Aus meines Herzens Grunde, An Wasserflüssen Babylon

Week 5 Review

Review, practice midterm

Beethoven op. 28 iii

Midterm

Week 6 Applied Dominants, More Levels

Applied Dominants, Structural Levels, hand out final project parameters

Beethoven op. 13 ii and op. 31 no. 3 i

Applied Dominants, Structural levels

Beethoven op. 14 no. 2 ii, Bach Violin Sonata in A minor ii

Week 7 Tonicization and More Prolongations

Extended Tonicizations, Sequences

Schubert – *Mit dem Grünen Lautenbände*, Bach Gavotte from BWV 808

More Prolongations and Sequences

Bach Violin Sonata in A minor ii, Beethoven op. 31 no. 3 i, Mozart K. 332 i

Week 8 Chromaticism

Borrowed chords and Augmented 6ths

Selections from Schubert *Winterreise*

Neapolitans, Show and tell of final project ideas

Schubert – *Die Liebe hat gelogen*, Beethoven op. 31 no. 3 i,

Week 9 Structure and other wider views

More Structural levels, Compare variations

Chopin op. 28 no. 4, Mozart K. 550 menuett, Beethoven op. 26

Bach Chorales II! Compare different versions

Nun ruhen alle Wälder, O Haupt voll Blut und Wunden

Week 10 final presentations

Graduate Review Course

Objectives

This course is designed to cover analysis tools that may be useful to you as accomplished musicians and primarily performers. Most analysis topics reviewed will be from the second year of the theory core, and the focus will be on analysis and writing.

Materials

Scores, recordings, and assignments posted to Blackboard. A good eraser and colored pencils may also be useful.

Assignments

Pass/no pass assignments are designed to give a low-stakes interaction with and practice for various concepts. They will be primarily analysis based, each with a prose component. Pass quality assignments will show mastery of the material. No pass quality assignments will be assignments done in haste/carelessly. If you do not pass an assignment on the first try, it will be returned to you and you will have one opportunity to correct your mistakes and resubmit each assignment for a pass grade. As incentive to get it right on the first try, extra credit will be given to students who receive a pass on the first try for a majority of assignments. NO LATE ASSIGNMENTS. If you can't be in class, turn it in early.

Projects

This assignment is to write program notes for a concert or CD or a mock concert review as if for a newspaper. Keep in mind your audience when writing! Some historical context and secondary sources will be employed, but the largest portion will be analytical. You will write approximately 10 pages and include an annotated score. Please choose a piece that is relevant to your discipline and degree. During week 10, you will present your analysis to your classmates, which may include a partial performance. Papers due at 5pm Wednesday of Finals. Grade breakdown:

- 5% – Concept approval (week 4)
- 15% – First draft (week 8)
- 35% – Presentation (week 10)
- 45% – Paper (finals)

Grades

- 40% – Assignments
- 50% – Final Project, see above
- 10% – Attendance/Participation

Tentative Schedule of Topics

Week 1: Functional Tonality, baseline assessment

This is an introduction to the course, a quick review of what is tonality, how to use functions, and will include an assessment so I can determine the strengths of each student. Student input as to musical repertoire for study is welcome.

Week 2: Cadences, diatonic chords, inversions

A review of analytical topics from the first year of theory.

Week 3: Applied Dominants, Tonicization

Basic chromaticism

Week 4: Basic Form, Modulation

Binary and Ternary forms, mechanics of modulation

Week 5: Sequences, Chromatic Chords

This week covers common chromatic chords (N6, Aug 6) and the vertical/horizontal struggle of sequences.

Week 6: Structure vs. Embellishment

After having covered most musical vocabulary, we will turn to applying to more detailed analysis. How do we know what chords/pitches are structural vs. embellishing? Why does it matter?

Week 7: Sonata Form

An overview of current Sonata Theory. Fluency with Hepokoski and Darcy will not be expected, but be aware that more theoretically inclined colleagues will use this vocabulary.

Week 8: 20th and 21st -century Analysis

While most of our tools are designed for common-practice era music analysis, this week explores strategies for understanding more recent music. Set-class and 12-tone analysis not included.

Week 9: Students' choice

Either a continuation of 20th/21st-century topics or perhaps a digression to Renaissance and early music. A more in-depth look at common-practice music from earlier in the quarter is also an option.

Week 10: Presentations

Finals: Papers due

Freshman Theory Curriculum (2 semesters)

Objectives

This year we will focus on the vocabulary, mechanics, and structure of Functional Tonal Harmony. While the heyday of this music takes up a relatively small time period in history, it has a wide range of expressive effect and is a common reference point for many musicians and types of music. Additionally, many skills you learn with Tonal Music will apply with other genres.

This class will be reinforced by your concurrent Aural Skills course, though we will be moving at a faster pace in Theory than in Aural Skills. Since the auditory component of music is the most important, all concepts will be reinforced and explained aurally; however, you will not be required to write or sing concepts as quickly as you will be asked to identify them on paper.

Some students will be interested in writing music, some in performing it. The ability to look at written music and understand it is crucial to writing music, and writing is crucial to understanding written music. Therefore, class will be a balance of identifying concepts in pre-existing music and writing them on a blank staff.

Materials

Course packet: This contains assignments, extra practice, and reference sheets.

Scores and recordings: Available on blackboard.

Staff paper: Whether you buy it or print it is up to you.

A pencil and a good eraser!

Assignments

Assignments will be weekly. Most assignments will be pass/no pass. Pass assignments will demonstrate mastery of the concept, while no pass assignments will be assignments done in haste/carelessly. If you do not pass an assignment on the first try, it will be returned to you and you will have one opportunity to correct your mistakes and resubmit each assignment for a pass grade. If you submit at least 10 pass quality assignments (per semester) without resubmission, you will receive one assignment's worth of points in extra credit. NO LATE ASSIGNMENTS. If you can't be in class, turn it in early.

Quizzes

Because you will not always encounter musical concepts in laid-back situations, quizzes will ensure that you have not only mastered the concepts but can reproduce them under pressure and quickly. See the schedule for quiz topics and times.

Attendance

Attendance is mandatory. You cannot gain experience with these concepts without time in the saddle. If you have more than five absences, it will impact your grade negatively. If you are ill or traveling for ensembles, contact me and your TA as soon as you know so that we can help you make arrangements.

Projects

In lieu of a final exam, you will write a short (3 pages in the fall, 5 pages in the spring) paper on an analysis of a piece or movement from the list below. If you have a

comparable piece that you would like to do instead, please send me an email before week 8. Your paper should identify and explain concepts that we have learned this quarter and how knowledge of these concepts has impacted your impression of the piece as a performer or listener. Include an annotated score. Due at 5pm on Thursday of Finals Week.

Fall:

Clementi op. 36 no. 1–6 (any movement)
Beethoven op. 26 I theme
Hensel “*Neues Liebe, Neues Leben*”
Mozart K. 331 I (theme and 2 variations) or III

Spring:

Bach chorales (choose several related)
Beethoven op. 13 II,
 op. 14 no. 2 II,
 op. 28 III
Mozart K. 330 I

Grades

40% – 12 assignments
20% – 4 quizzes
25% – final project
15% – attendance (1% per week)

Schedule of Topics

Fall

Week 1: Open/closed cadences, basic phrase concepts, TPD

We begin with the intertwined concepts of cadence and phrase in order to define the basic functions, Tonic, Predominant, and Dominant.

Week 2: Notation reading review, clefs, rhythm and meter

Some students may be more familiar with note reading than others. This is a chance to identify your strengths and work on your weaknesses.

Week 3: Solfège

While you will use solfège more in your Aural Skills classes, we will use moveable *do* to refer to functions of individual pitches in theory as well.

Week 4: Major and minor triads, identifying tonics

This week covers spelling and identifying major and minor triads out of context, as well as determining what the tonic of a piece is and what parameters to use for that determination. (Hint: cadences)

Week 5: Major and minor key signatures, scales: up to 4# / b s

Fluency and immediacy of key signatures is very important. To help with memorization, we will continue working with the basic TPD functions and individual pitch solfège functions.

Week 6: Cadences – IAC vs. PAC

Quiz: first Key signatures in bass and treble clefs

We began with a very rough idea of a cadence, now we start to add details.

Week 7: All major and minor key signatures and scales

Continuing practice with more keys.

Week 8: Identifying dominants, seventh chords

Now that we have practiced identifying tonics, we move on to identifying Dominants. Since dominants are often seventh chords, an intro to seventh chord qualities will be included.

Week 9: Cadences – HC, Phrygian HC

Quiz: all key signatures bass and treble clefs

Continuing with the dominant theme, this week focuses on half cadences and their uses.

Week 10: Basic predominants, plagal cadence

As we mastered Tonic and Dominants, now we identify and spell Predominants.

Week 11: Intro to modulation

While modulation is a second year topic, you all play and listen to music that changes keys. You will not be asked the specifics of how the key changed, but this is an extension of identifying Tonics: if you have found a new Tonic, you have a new key!

Week 12: Basic Forms [no assignment]

Quiz: Spell and Identify basic functions, major and minor triads

As you begin to focus on writing your papers, a discussion of small forms is necessary.

Week 13: Basic Prolongations (levels), [no assignment]

We've often been talking about music from a zoomed out perspective, now we start to talk about the details of how to zoom in. We will also have a day to workshop papers and get feedback from classmates.

Week 14: Substitute Functions, deceptive cadence

So far we've been dealing primarily with only 3 chords in a key, here we begin to expand our vocabulary.

Week 15: Inversions [no assignment]

Quiz: Identify cadences visually and aurally, but out of musical context

You will continue to focus on your projects, but inversions will probably help you with your analysis.

Spring

Week 1: Review inversions, Substitute functions

Dust off the cobwebs after eating all the tasty holiday sweets! Review the previous semester and solidify any concepts still in question.

Week 2: Harmonic Voice-leading T D, T P, P D

Now we start writing music in earnest. First we look at the harmonic, vertical dimension in a controlled environment, with just a few functions.

Week 3: Writing melody and intro to motives

To complement the harmonic concepts of last week, now we look at what makes a melody easily singable and some basic motivic operations.

Week 4: Added tones

Building on the review of inversions and seventh chords (among other topics), this week is primarily analyzing chords that may be changed from the prototypical major or minor triads. This includes non-Dominant seventh chords and add-6 chords.

Week 5: slash D-9

One common variation to dominant is to have notes missing! We explore how the dominant functions without its root.

Week 6: Cadential 6/4s

Quiz: spell/ID substitute functions and inversions

The cadential 6/4 is a common sonority that has an interesting pedagogical history.

Week 7: Identifying chords that embellish other chords

This week concentrates on finding inversions in context and exploring different levels of musical structure.

Week 8: NonChordTones I

For a melody focused week, we introduce NCTs, particularly the unaccented and stepwise types. (P, N, sus, ret, ant)

Week 9: NCTs II

Quiz: Spell and identify types of seventh chords and their functions

We further explore NCTs, including the accented and not stepwise types. (IN, AP/N, DN, pedal)

Week 10: VL/melodic writing with all diatonic chords [no assignment]

Combining the preceding concepts, we revisit harmonic voice-leading and melodic writing. Start thinking about your papers!

Week 11: VL/melodic writing with inversions and added tones

Continuing from the previous week, we will work on writing small melodies and forms.

Week 12: Sequences

This topic is an interesting interaction between vertical and horizontal forces.

Week 13: Double Dominants [no assignment]

Quiz: obvious NCTs (no ambiguous examples)

As we near the end of the year, we will start learning about the mechanics of chromaticism with the dominant of the dominant.

Week 14: Applied dominants to other chords

Our final concept extends the previous week to other chords.

Week 15: Intro to RNs [no assignment]

Quiz: Identify applied dominants

Methods of describing music are constantly changing. Many people you encounter will use different vocabulary to transmit the same concepts. Roman numerals are still a common chord analysis tool, and awareness of them is important to communicate with other musicians.

Clementi, op. 39 no. 1, first movement

24

p

28

cresc.

f

32

35

Exercise 2: Inversions

Identify the inversions, and then practice spelling them. Try different spacings!

a: G: F:

a: D: T₃ P₅ Tr₃ Bb: D₇ T₃
C:

f#: t₃ p t₅ D₇ c: D₃ p₅ D₅ t₃

Exercise 3: Non Chord Tones

63. Nun ruhen alle Wälder.

- 1) Do a harmonic analysis of this Bach chorale.
- 2) Circle all non chord tones. When appropriate, include an extra numeral in your chord label.

Hint: Most bars are in A major. Switch to F# minor for m. 2, C# minor for m. 4, F# minor for most of m. 7, B minor for m. 8, and E major for mm. 9–10.

Exercise 4: Voice-leading

Practice connecting chords with the least movement possible. Remember that 7ths go down and LT's go up!

b: p₃ D tV d: t D₇ t₃ A: T₃ D₅⁷ T

E_b: P D T G:Pr D Tr g: p D⁷ t

Exercise 5: Applied Dominants

Do a harmonic analysis of this Bach chorale. Watch for applied Dominants! Most phrases can be understood in D major or B minor.

Below, practice spelling and resolving some applied Dominants.

b: D^7 D d: D^7_3 D^7 e: (D) p g: (D^7) tR

f#: (D^7) Pr a: (D) Tr Ab: D^7_3 D F: D D^7

Exercise 6: Chromatic Predominants

Practice identifying, spelling, and resolving chromatically altered predominants.

d: pR D c#: pR^{#6} D f: pR^{#6}₅ D⁶₄

e: pR^{#6}₄ D g: p^{#6} D a:

b: c: G:

APPENDIX D: BEETHOVEN OP. 31 NO. 3 (I)

Op 31 no 3

L v Beethoven

Allegro

p *rit* *cresc.* *a tempo* *p*

Eb: P⁶ D⁶ 5/3

8

T P⁶ *rit*

14

cresc. *sf* *p* *a tempo* T

D⁶ 5/3 T

20

T 8/4 7/3 8/2 7/b6/4/2

Bb: D⁷ $(\overset{\flat 9}{\cancel{D}7})_3$ Tr P⁶ D⁷

T

T₃

P

P⁶

$\overset{\flat 9}{\cancel{D}7}_3$

D⁷

$(\overset{\flat 9}{\cancel{D}7})_3$

63

Bb: Tr P⁶ D⁷ T D₃ T

67

D₃ T (D₃⁷) Tr (D₃⁷) P (D₃⁷) D₃ D₃⁷ T D₃⁷ T D₃⁷

72

T D⁶

76

D⁶ 5/3

82

Bb: T P₃ P⁶ D T Bb: [P
Eb: [T

89

Eb: ⁶p⁵ c: ⁶pR⁵ #⁶/₅ D⁶/₄ ⁹/₇/₃

97

C: ^{b9}/₇ t₃ ^b/₇/₃ D₅ t ⁸/₄ ⁷/₅/₃

103

⁸/₆/₄/₂ ⁸/_{b6}/₄/₂ ⁷/₅/₄/₂ T ⁸/₆/₄ ⁷/₅/₃ ⁸/₆/₄/₂ ⁸/_{b6}/₄/₂ ⁷/₅/₄/₂

108

C: T f: pR^{#6/4} D pR^{#6/4}

112

D pR^{#6/4} D

116

f: T
bb: D

pR^{#6/4} D pR^{#6/4}

120

bb: D pR^{#6/4} D

124

bb: t Eb: D T (D⁷)

128

Eb: P

133

p⁶

137

p⁶

$\text{D}^{\flat 9} \text{7}_3$ D⁶₄

APPENDIX E: SUPPLEMENTAL SOURCES

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