

Glad to hear that your thesis is coming along. Just a word of caution. If you are planning to state that Schenkerian and Riemannian approaches are unsuitable for analyzing the jazz-oriented classical compositions, you'll have to justify this conclusion. There were multiple attempts to analyze atonal classical music, traditional non-Western music, and jazz by using the Schenkerian method - especially amongst the American musicologists. Thus, Steve Larson left about a dozen publications on the Schenkerian analysis of jazz. The following 2 publications discuss the potentials of applying Schenkerian principles to non-classical music quite favorably:

Stock, Jonathan. 1993. "The Application of Schenkerian Analysis to Ethnomusicology: Problems and Possibilities." *Music Analysis* 12 (2): 215. <https://doi.org/10.2307/854273>.
Larson, Steve. 1998. "Schenkerian Analysis of Modern Jazz: Questions About Method." *Music Theory Spectrum* 20 (2): 209–41. <https://doi.org/10.2307/746048>.

In contrast, Narmour, despite having been brought up on the Schenkerian analysis, lists numerous objections against it.

Narmour, Eugene. 1980. *Beyond Schenkerism: The Need for Alternatives in Music Analysis*. New Ed edition. Univ of Chicago Pr.

I personally think that although generations of American theorists strove to patch Schenker's omissions and mistakes - Schenker denied any need to analyze rhythm, meter, texture, and thematic material (and also considered any music that did not follow the rigid textbook rules of Western harmony "defective") - Schenkerian analysis remains inadequate in identifying how exactly a musical composition conveys its expression. Lerdahl/Jackendoff and Narmour have squeezed the most from the Schenkerian approach (and deviated a lot from Schenker's original thought). However the Schenkerian approach still retains a number of unrepairable flaws. Most importantly, it relies on the assumption that music-users share some Gestalt idea of the tonal unity (what Schenker calls "Ursatz") for every "good" musical composition. This unity is supposedly manifested in the necessity of recapitulation that enables the "reduction" of the entire tonal plan of any composition to the transition from tonic to dominant and back to tonic functions. That is why Schenker rejected Riemannian functional differentiation and metric analyses, as well as his theory (and alternative theories) of musical form, musical rhetoric, and texture - seeing them as accidental byproducts of the melodic voice-leading chosen by the composer. And by "melody," he simplistically understood the upper part notated in a music score.

Even if to leave aside plentiful musicological arguments against Schenker's method and not to talk about the importance of functionality of typical sections of music form (e.g., introduction, exposition, development) and of the "metro-tectonic" powers that fuse a musical form (which both are the cornerstones of Riemann's theory), the very existence of Schenker's "Ursatz" has been challenged by a number of experimental studies:

Eitan, Zohar, and Roni Y. Granot. 2008. "Growing Oranges on Mozart's Apple Tree: 'Inner Form' and Aesthetic Judgment." *Music Perception* 25 (5): 397–418.

<https://doi.org/10.1525/mp.2008.25.5.397>.

Marvin, Elizabeth West, and Alexander Brinkman. 1999. "The Effect of Modulation and Formal Manipulation on Perception of Tonic Closure by Expert Listeners." *Music Perception* 16 (4): 389–407. <https://doi.org/10.2307/40285801>.

Even professional classical musicians, after years of ear-training, fail to recognize the tonal unity of a large musical composition (e.g., a movement in a sonata form).

Riemannian ideas, in contrary, found experimental support:

Krumhansl, Carol L. 1998. "Perceived Triad Distance: Evidence Supporting the Psychological Reality of Neo-Riemannian Transformations." *Journal of Music Theory* 42 (2): 265–81. <https://doi.org/10.2307/843878>.

Korsakova-Kreyn, Marina, and Walter Jay Dowling. 2014. "Emotional Processing in Music: Study in Affective Responses to Tonal Modulation in Controlled Harmonic Progressions and Real Music." *Psychomusicology: Music, Mind, and Brain* 24 (1): 4–20. <https://doi.org/10/gmnfhq>.

Even non-musicians, lacking ear-training, hear changes of harmonic functions and recognize their expressions.

Like Schenker with his *Ursatz*, Riemann also made assumptions - he thought that music-users heard changes in harmony as fluctuations in relative stability (relaxation) and instability (tension) and expected these changes to abide by certain rules. However, there were principal differences between both assumptions. Schenker's assumption rested on nothing but the aesthetic preference of Western European composers who were active between 1750s-1890s, mostly of German-Austrian stock (for example, French composers like Alkan often were violating the rules of "classic" tonality). The rule of recapitulation was first formulated by Johann Albrechtsberger (Beethoven's teacher) in the 1790s and was never "proven" or tested against the common practice - instead, adopted as an "absolute" hermeneutic axiom that requires no proof. This is what motivated Schenker to declare any composition that violated "tonal unity" (e.g., even classic works by Mahler) "defective," no matter how much acclaim such works attained amongst musicians and audiences. And there is no shortage of the Common Period works that do not end on tonic: by Beethoven, Schubert, Schumann, Chopin, Liszt, etc..

In contrast, Riemannian assumption rests on the common practices of composition, performance, and teaching music during a much longer period - from circa 1620s to 1960s (and to the present days in some genres of music, such as film music, musicals, and Western folk music). The theory of harmonic functions had been evolving through the collective efforts of great many composers and theorists, from the times of Mersenne and Rameau. This theory was empirically examined (both Mersenne and Rameau followed the scientific method of investigation). It was tested by the analysis of non-Western music (Balkan, Greek, Russian, Caucasian). It was designed to "*describe*" the existing musical practices in a cross-cultural perspective (geographically and historically) rather than to "*prescribe*" a supposedly "superior" theoretic model - as Schenkerian *Ursatz* did.

Unlike Schenker with his explicit anti-scientific and anti-historic stance due to his blind belief in the universality of the *Ursatz*, Riemann was inspired by the German pioneers of psychoacoustics, like Wundt. Riemann's dissertation was dedicated to the auditory perception of music ("*Über das musikalische Hören*"). He left a number of publications on psychoacoustics, history of music (including Antiquity and the Middle Ages), harmony in folk music, and aesthetics - but most importantly - his famous *Musik-Lexikon* (more internationally renowned than the *Grove Dictionary*). All of this, along with the greater practicality and musicality of his method, must have been responsible for his global

recognition and influence in sharp contrast to Schenker, whose theory is recognized and followed only in the USA (for a number of political and economic reasons). By the way, Riemannian theory is supported by some important American theorists - for example, William Caplin.

I think that Riemannian theory applies to *any* music culture where *multi-part textures occupy an important role*, and music-users observe *harmonic intervals* or/and *chords*. Technically speaking, even West African indigenous cultures that utilize parallel motion of chords (as identified and described by Kubik in his many books on African harmony) possess at least some basic harmonic functions. Although their harmony is generated by the 3-part dubbing of a melody in parallel thirds, the interaction of such dubbings with the metric grid inevitably puts in place some hierarchical distinctions between chords that are built on different degrees of melodic modes. Chords on those degrees that systemically fall on weaker metric time are likely to become subordinated to those chords that fall on stronger metric time. This is exactly the foundation of Riemannian theory.

If you are interested, here is a thorough critical overview of Riemannian approach:

Rehding, Alexander. 2003. *Hugo Riemann and the Birth of Modern Musical Thought*. Cambridge University Press.

Below are a couple of reviews of the applicability of Riemannian principles to jazz:

McGowan, James. 2010. "Riemann's Functional Framework for Extended Jazz Harmony." *Intégral* 24: 115–33. <https://www.jstor.org/stable/41495296>.

Capuzzo, Guy Capuzzo. 2004. "Neo-Riemannian Theory and the Analysis of Pop-Rock Music." *Music Theory Spectrum* 26 (2): 177–200. <https://doi.org/10.1525/mts.2004.26.2.177>.

All Soviet and Russian musicology is based on Riemann - including the analysis of harmony and music form of various non-Western folk ethnic traditions, modernist and avant-garde music, rock and jazz. Riemann's errors, such as his theories of Unterton and iambic meter, were corrected by Russian music theorists in the beginning of the 20th century (starting from Georgy Catoire). An accurate evaluation of the Russian Riemannian schools of analysis of music versus the American Schenkerian school is provided by Khannanov in his thesis at the UCSB:

Khannanov, Ildar. 2005. "Russian Methodology of Musical Form and Analysis." Santa Barbara, CA: University of California, Santa Barbara. https://scholar.google.com/scholar?q=Russian+methodology+of+musical+form+and+analysis+&btnG=&hl=en&as_sdt=0%2C5.

As far as jazz and Riemann goes, I can personally attest to the effectiveness of his theory in teaching and practicing jazz. The jazz explosions in Russia, Ukraine, Azerbaijan, Armenia, Georgia, Kazakhstan, and Uzbekistan in the 1970-90s were all based on implementing harmony in terms of Riemann's functions: tonic, subdominant, dominant, double-dominant (a dominant to the dominant), relative, and parallel. Russian theorists added a double-subdominant function (a subdominant to the subdominant - it is very common for English folk and rock music) and defined "groups" of chords in a key for each of the above-mentioned functions. For instance, the subdominant group is made of the chords built on the

II, IV, and VI degrees (in the order from stronger to weaker subdominants), while the dominant group is VII, V, and III (the same order).

Yet another expansion of Riemann was done in the domain of *modal* theory: all keys were theorized to have modal variants - diatonic (so-called church modes) and mixodiatonic (conceptualized by Catoire in 1924: e.g., harmonic or double-harmonic minor modes that cannot be defined through the circle of fifths). Major keys were theorized to have a harmonic mode (conceptualized by Rimsky-Korsakov in the late 1880s) and a melodic mode (conceptualized by Tiulin and Privano in 1956 - but used by earlier composers, starting from J.S.Bach). For instance, all major Azeri jazz players constantly use diatonic and mixodiatonic modes of keys according to the Riemannian functional principles: Vagif and Aziza Mustafa Zadeh, Rafiq Babayev, Amina Figarova, Isfar Sarabski, and Shahin Novrasli. They do it in a more obvious way as compared to Russian or Ukrainian jazz players.

I myself studied jazz harmony in a Riemannian way under Alexander Rogachyov, when he was writing his "Systematic Course of Jazz Harmony" - the first Russian textbook on jazz harmony. All students found it very intuitive and easy to think of harmonic progressions in terms of stable "tonic", unstable "dominant" (that is eager to resolve into tonic), and neutral "subdominant" (that is eager to take you away from tonic). All other functions are defined in the same easily understandable "functional" way as to how they influence the expression of harmonic progressions. These expressions reflect the existing conventions of jazz and *not* classical music: for example, the progression D-S-T constitutes one of the jazz basics (the staple of all blues-related forms), but is rather rare in classical music.

Here are the main Russian sources on Riemannian harmony and jazz:

Chugunov, Yurii N. 1988. Harmony in Jazz. Educational and Methodological Aid for Piano Performance [Гармония в Джазе. Учебно-Методическое Пособие Для Фортепиано]. 3rd ed. Moscow: Soviet Composer.

Kozyrev, Yurii P. 1997. Functional Harmony for Jazz Improvisation. Part I [Функциональная Гармония Для Джазовой Импровизации, Часть 1]. Moscow: The International Association of Jazz Education, Moscow College of improvisational music.

Rogachyov, Alexander G. 2000. A Systematic Course of Jazz Harmony. Theory and Practice [Системный Курс Гармонии Джаза. Теория и Практика]. Moscow: Vlado.

Shashero, Yevgenii. 2007. "The Blues Mode as a Plagal Mixodiatony [Блюзовый Лад Как Плагальная Миксодиафоника]." In The Articles by Young Musicologists [Статьи Молодых Музыковедов], edited by Aelita V. Guseva, 4:103–15. Saint Petersburg: Saint Petersburg Conservatory named after Rimsky-Korsakov, Sudarynia.

To answer your question about register, register *does* belong to the domain of timbre but differs from instrumentation that also belongs to timbre. I understand that in organ music the word "register" is synonymous to characteristic timbres of musical instruments. But confusion like this is inevitable with any of the 11 aspects: "melody" can have its own "harmony" (e.g., solo flute sonatas by CPE Bach), rhythm can be "metric" (e.g., compositions written in the genre of "perpetuum mobile", e.g., Paganini or Weber), articulation can be dynamic (e.g., accent), etc..

The distinction between register and instrumentation is that register is bound to pitch and underlies instrumentation. Every instrument and vocal usually breaks into 3 registers that can be classified in 2 general types: intensity growing towards the top (vocals and brass) or

towards the bottom (reed woodwinds and strings). This typology goes against and across the distinctions between different timbres of the instruments. However, the distinctions between registers can be greatly reduced. For instance, the bel canto training can completely conceal a breaking point between neighboring registers. Also, the timbral differences between different instruments (and vocals) greatly exceed the timbral differences between different registers of the same instrument (or voice type).

Yet another important distinction is that register plays a formative role for tonal organization of modes of timbre-oriented music that are characterized by indefinite pitch (relative and variable pitch values), such as ekmelic and khasmatonal modes. In such modes, the degrees are defined in regards to their position within a vocal register(s). It is possible that the same principles are in play in the instrumental forms of music of the same ethnicities that keep cultivating such vocal music (e.g., music for Jaw Harp or musical bow). The aspect of instrumentation completely misses this formative melodic modal function. Combinations of timbral colors of different instruments do *not* form specific musical modes. Timbral coloration is known to be modally formative only in instrumental ensembles consisting of the *same* instrumental types - e.g., a set of gongs. But then, such cases fall within the domain of register rather than instrumentation.

On the other hand, instrumental timbres often blend, forming new composite colors (for example, clarinet + oboe). There is nothing remotely similar in the domain of register - registers don't blend.

It can be generalized that register fundamentally opposes instrumentation: register is based on timbral *similarity*, whereas instrumentation - on timbral *contrasts*. Composers select a specific instrument to "color" constituent sounds in a musical composition in different colors. Singers (and possibly instrumental players) usually select a specific register to secure *unity* in timbral coloration for the pitch-classes of a musical mode. Timbral contrasts are important in khasmatonal music, where a mode is defined by the group of pitch classes of one register contrasting the other register (e.g., falsetto or rasping). However, such music is rather rare and is still operated by the principle of *integrating* timbral colors into a melodic phrase rather than by differentiation of timbral color to color the music textures, as it occurs in instrumentation. The only exception is Schoenberg's experiments with Klangfarbenmelodie that did not work - and could not work, because changes of instrumental timbres within the same melodic stream has been demonstrated to segregate this stream into fragments that obstruct phrasing.

Your idea of "atomic level aspects" seems to be pretty constructive and helpful in describing and comparing various musical idioms of melodic pitch, harmonic progressions, rhythmic figures, metric grooves, etc.. Once you define such an idiom (e.g., "swing"), you can indeed comfortably link its structural characteristics to certain semantic characteristics, and then relate specific composer's notations and/or verbal remarks (e.g., "with swing") directly to the corresponding semantic features without reiterating the multitude of structural features of each of the 11 aspects. Only the deviations from the idiomatic norm would need to be named. This should make your analysis more reader-friendly.

I recently created an appendix "Key musicological terms for the research of the evolution of music" (aka "Glossary of some important musical terms") for my essay that is in print for the Physics of Life Review. This glossary might come handy for you in drawing clearer distinctions between different theoretic terms. Here is the link:

<https://psyarxiv.com/jxkev/>

I hope this helps!
All the best,
Aleksey