Journal of Music Theory Pedagogy

Volume 31 Article 2

1-1-2017

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The college music classroom has changed in recent years. Amidst upheavals in curricula, technology, and student populations, many of us have altered the look and feel of our teaching in profound ways. This paper presents my version of "the change": a groupwork-based guided inquiry approach to teaching fundamental concepts in the core music theory sequence. My method shares features of its underlying philosophy with techniques of active learning proposed by previous scholarship and driven by a shift in our teaching towards the student-centered classroom and a pedagogical stance rooted in the theory of social constructivism. Many of these pedagogical methods hold it necessary for students to have a grasp of basic terminology and concepts before they can engage in active learning; here, I suggest that active learning can be most valuable when made part of the process of uncovering basic theory concepts itself and propose a protocol for doing so adapted from the teaching of science, technology, engineering, and mathematics (STEM) fields. I seek to make the process consistent with best practices for promoting student engagement and a deeper conceptual understanding of course content, particularly in classrooms that are heterogeneous with regard to students' academic ability. As well, by having students recreate the intellectual processes of music analysis as they are undertaken by scholars in the field, the guided inquiry method promotes an understanding of what it is, in Michael Rogers' formulation, to "do"—rather than simply to "learn"—music theory.

The college music classroom has changed in recent years; amidst upheavals in curricula, technology, and student populations, many of us have altered the look and feel of our teaching in profound ways. This paper presents my version of "the change": a groupwork-based guided inquiry approach to teaching fundamental concepts in the core music theory sequence. In the discussion below, I recount briefly the assumptions driving the shift in our teaching towards active learning, the student-centered classroom, and a pedagogical stance rooted in the theory of social constructivism. My guided inquiry approach shares features of its underlying philosophy with techniques of active learning proposed by previous scholarship. While many of these pedagogical methods hold it necessary for students to have a grasp of basic terminology and concepts *before* they can engage in active learning, my approach seeks to make active learning part of the process of uncovering basic theory concepts through a protocol for discovery learning adapted from the teaching of science, technology, engineering,

and mathematics (STEM) fields. In so doing, I make it consistent with best practices for promoting student engagement and a deeper conceptual understanding of course content, particularly in classrooms that are heterogeneous with regard to students' academic ability. By having students recreate the intellectual processes of music analysis as they are undertaken by scholars in the field, this method promotes an understanding of what it is to "do," rather than simply to "learn," music theory.

Active Learning, Student-Centered Pedagogy, and Social Constructivism

The shifting mindsets of college instructors—in particular, the ways we view our relationship to our students—have ushered in new pedagogical strategies by which these mindsets take concrete form. Despite the diverse look and feel of these pedagogical methods, they can all be classified as techniques for promoting *active learning*, in which, Elizabeth Barkley writes, "students are dynamic participants in their learning and…are reflecting on and monitoring both the processes and the results of their learning."[1] Active learning, Barkley notes, is also "an umbrella term that now refers to several models of instruction, including cooperative and collaborative learning, discovery learning, experiential learning, problem-based learning, and inquiry-based learning."[2]

The availability of rigorous studies documenting the effectiveness of these techniques varies by field, with the most extensive research concentrated in STEM fields.[3] In general, college faculty clearly find active learning methods to be useful in encouraging student participation and critical thinking, as demonstrated by their increasing use of them in higher education.[4] Although less voluminous, the literature on smaller scale studies in specifically musical contexts have indicated there are distinct advantages offered by a focus on active learning.[5] And there has been a

1Barkley (2010, 17).

2 Ibid., 16.

3 See Freeman et al. (2014); and Slunt and Giancarlo (2004). Although not wholly applicable to the arts and humanities, conclusions from pedagogical research in STEM fields may have special relevance for music theory, as indicated in the discussion below.

4 Eagan et al. (2014, 5-6).

5 Ravenscroft and Chen (2015), for instance, document the advantages of the flipped classroom and groupwork as active learning techniques, while Pike (2014) notes the benefits of collaboration in a keyboarding class.

veritable explosion of resources that provide an ever-expanding toolkit for the music teacher interested in active learning approaches.[6]

Many of the active learning models of instruction noted by Barkley have been implemented in music, with particularly notable contributions in the areas of collaborative/cooperative learning[7] and the integration of creative and experiential activities such as composition, performance, and improvisation,[8] as well as suggestions for use of technological applications.[9] Others have focused on activities that encourage students to metacognate on their own learning, thereby making them active participants in their learning, regardless of format.[10] Finally, special mention should be made of the "flipped classroom" format that has been widely adopted in many disciplines and which has proven popular in theory instruction. Flipped pedagogy is based on the assumption that with a wealth of reading and online resources at their disposal, students' time in class is best devoted to complex problem solving, critical thinking tasks, and identifying and clarifying misunderstandings.[11] In addition to its description in the scholarly literature,[12] implementation of the flipped classroom is increasingly supported by music course materials coming on the market.[13]

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6 The discussion of techniques for active learning music theory pedagogy in higher education has been particularly fruitful in three journals: *Journal of Music Theory Pedagogy*, *Engaging Students: Essays in Music Pedagogy*, and *College Music Symposium*.

7 For discussions of cooperative and collaborative learning see Ravenscroft and Chen (2015); Rifkin (2013); Ripley (2016); and Segall (2009). For examples of peer-led learning, see Lyons (2015); Leupold and Snodgrass (2014); and Snodgrass (2013).

8 For general discussion of creativity and its integration in the music classroom, see Chenette (2016) and Rifkin (2014). For examples involving composition or recomposition, see Aziz, (2015); Hoag (2013); Johnson (2014); Rogers (2013); Stevens (2015a and 2015b). For the use of performance and improvisation in a theory context, see Callahan (2012); Michaelsen (2014); Ng (2014); Palmer (2014); Schubert (2013 and 2014); and Silberman (2012).

9 For discussion of software and hardware specifically developed for music and music pedagogy, see Green (2014); Latartara (2008); McConville (2012); Molumby (2014); and Peebles (2013). For innovative repurposing of general use technology specifically for music, see Renihan (2015); Duker (2013); Alegant (2008); Hoffman (2015); and Stephan-Robinson (2014).

10 See Alegant and Sawhill (2013); Ferenc (2017); and Marvel (2017).

11 Berrett (2015, 2-5).

12 Kris Shaffer (2013a) describes the "basic flip" in the theory classroom, while de Clerq (2013) proposes a flip of the aural skills classroom. McCandless and Stephan-Robinson (2014) offer ideas for technological applications that facilitate flipping the classroom.

13 See, for instance, the online tools developed by Anna Gawboy and Inessa Bazayev to accompany

Underlying all this active learning is *student-centered pedagogy*, a mindset that describes a change in professors' thinking from viewing ourselves less as givers of information than as facilitators of knowledge acquisition. Bransford et al. describe such a mindset as a bridge: "If teaching is conceived as constructing a bridge between the subject matter and the student, learner-centered teachers keep a constant eye on both ends of the bridge."[14] Pedagogical methods for producing active learning have thus changed, and almost certainly improved, the look and feel of our classrooms by reorienting our thinking towards the "bridge" and greatly reducing our reliance on traditional teaching methods such as the lecture and other forms of direct instruction, or "teaching as telling."[15]

If there is one area which is relatively *un*affected by the use of active learning techniques, it is the earliest stages of introducing basic theory concepts to students. Many active learning activities are often predicated upon some teaching as telling early in the discussion of a theory topic; this is intended to ensure that students have a grasp of the necessary vocabulary and skills, which can then be deployed in a variety of active learning activities. As Kris Shaffer notes, although the flipped classroom improves upon the lecture-then-homework format by more efficiently allocating the use of students' in-class time, it "still reflects the same pedagogical pattern: information then assimilation and application" of a more traditional approach, replacing an in-class lecture with an out-of-class video lecture or other direct instruction resource.[16]

There is a great deal of complex information to be covered in the theory sequence. It is not an unreasonable assumption to make that students cannot be asked to complete a collaborative or creative activity involving, for instance, mode mixture without first being given an understanding of what the concept entails. They must understand a set of terms, vocabulary such as "borrowed chord" and "mixture," and grasp conceptual

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Burstein and Straus (2016), as well as those for Holm-Hudson (2017). As typified by Heap (2017), other instructors may opt to design their own web-based resources tailored to their particular student populations.

14 Bransford et al. (1999, 136).

15 As Barkley points out, however, the lecture format and active learning are not mutually exclusive, nor is "activity" the same as "active": "highly skilled listeners who are involved in a lecture by self-questioning, analyzing, and incorporating new information into their existing knowledge are learning more actively than students who are participating in a small group discussion that is off-task, redundant, or superfluous" (2010, 17). Although active learning benefits all students, different student populations may benefit from different pedagogical methods to promote it, a topic I take up below.

16 Shaffer (2013b).

knowledge, including how parallel modes are blended in a piece and how the blending leaves harmonic function unchanged. Additionally, students must, at every stage, incorporate knowledge of new concepts with their pre-existing theory knowledge. For instance, mixture's placement in the curriculum means that it is often the first example of chromatic harmony *other* than applied chords that students have seen; so an additional piece of understanding the concept is sorting out how to differentiate the two types of chromaticism. Finally, students must understand how the system of Roman numeral analysis can be adapted to describe mode mixture harmonies. Some sort of direct instruction for getting all this information to students is appealing for the compactness and rapidity with which it can be conveyed.

But there is evidence to suggest that the assumption students must be *given* conceptual information before they can begin to actively apply it reverses best practices. At its core, the student-centered classroom is predicated on certain beliefs about the way knowledge is attained. Active learning techniques are held to be effective because they assume that knowledge is built within the mind of the student, rather than a deficit model which sees knowledge as an external reality acquired from outside the mind. Active learning assists students in creating that knowledge, a view derived most directly from the theory of social constructivism. Peter Webster notes that the very process of knowing is an active one: "teachers who believe in constructivism generally believe that *knowledge* is formed as part of the learner's active interaction with the world, and that that knowledge exists less as abstract entities outside the learner than constructed anew through action."[17]

Eberlein et al. write that the implication of social constructivism is that "students must *actively build for themselves* a workable understanding of sophisticated concepts..."[18] (my emphasis). Conversely, they also note that direct instruction may fail to give students an adequate chance to incorporate new information alongside concepts they already understand: "Because the human mind has limitations on the rate and amount of new information it can accurately assimilate and comprehend, any strategy that attempts to transfer knowledge more or less directly from teacher to student—'teaching by telling'—is ineffective for many if not most students. As cognitive load increases, the need for student engagement increases."[19] In other words, rather

17 Webster (2011, 40). Webster (41) notes that the work of Jean Piaget and John Dewey has been particularly influential in shaping the music pedagogy community's current understanding of constructivism.

18 Eberlein et al. (2008, 263).

19 Ibid.

than saving active learning pedagogy for once students have acquired a grasp of the concept, active learning may be most effective at the very moment students are first learning that concept.

Active learning techniques have been shown to improve our teaching for many reasons, but most fundamentally because they place the student, rather than the instructor, at the center of our instruction. Doing so requires us to think carefully about the way our students gain understanding of course material and acknowledge that students must be willing, motivated participants in the classroom. And cognition and social constructivist theory tell us that this engagement is nowhere more crucial then when students are first introduced to fundamental skills and concepts.

Thus, the approach presented here seeks to introduce active learning as part of the earliest process of concept formation via groupwork-based guided inquiry. It shares some features with the approach described by Shaffer, who follows the work of Ramsey Musallam to propose an inquiry-driven classroom based on a modification of the "learning cycle" often used in active learning activities in STEM teaching. Below, I discuss two classroom activities that implement this approach. One, from my music fundamentals course, prompts students to uncover the principles of the minor mode (Example 1); the other, from my third semester theory course, centers on mode mixture (Example 2). In both activities, students are led through a process of scaffolded investigation in which they 1) explore several musical examples; 2) articulate how their current analytical skills are unequal to the task of describing the features of the passage in question; and 3) develop new analytical constructs that adequately describe those features.

Adapting Discovery Science Techniques to Teaching Music Theory

The inquiry-driven classroom formalizes something that many instructors do informally all the time: introduce a new subject in a spirit of investigation via the playing of a musical example and stimulating students' interest by drawing their attention to novel features of the work. Recent textbooks, too, have adopted this stance, exposing students first to musical examples, after which the theoretical principles at work are explicated.[20]

To combine this "music first" stance with an active learning method consistent

20 See, for instance, Jones, Shaftel, and Chattah (2014); Laitz (2016); and Clendinning and Marvin (2016).

with constructivist principles, my guided inquiry approach asks students to work in groups to carry out their own investigation of musical examples, thereby building their own knowledge of a new theory concept. My approach is modelled upon a common approach from STEM teaching in higher education, Process Oriented Guided Inquiry Learning (POGIL), which emphasizes a version of the three-part learning cycle.

Others have noted the resonances between STEM fields and music theory and suggested theorists may glean insights from STEM teaching methods. VanHandel (2012, 210) posits a link between mathematics and music fundamentals, saying "there may be a cognitive link between the abstract and systematic processes in mathematics and those in music. If that is the case, music theorists should consider the vast amounts of research done in mathematics education to see if we can learn anything about best practices in that discipline." Follet (2013) notes that the scientific method can be a useful tool for teaching listening and ear training because music is systematic and patterned. And Bribitzer-Stull (2003, 21) describes the descriptive portion of analysis in intentionally scientific terms, saying, "The quality of musical discourse is directly proportional to the quality of empiric evidence used to support it. That is, musical arguments should be supported by data."

The website for the POGIL Project created by the original developers of the method describes it as follows:

> A POGIL classroom or lab consists of 3-4 students working in small groups on specially designed guided inquiry materials. These materials supply students with data or information followed by leading questions designed to guide them toward formulation of their own valid conclusions—essentially a recapitulation of the scientific method. The instructor serves as facilitator, observing and periodically addressing individual and classroom-wide needs.[21]

When I first encountered POGIL, I was struck by the extent to which this methodology could be adapted to the discipline of theory, because as with in science, the basic tenets of music theory are not particularly open for reinvention: there is widespread agreement about the basic description and analysis of concepts like the minor scale and mode mixture.[22] Nevertheless, there is value in having students "discover" these concepts for themselves, rather than having the information handed to them, because of the benefits in comprehension and retention that accrue from actively building knowledge oneself.

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21 The POGIL Project, "POGIL: Process Oriented Guided Inquiry Learning," www.pogil.org. Accessed January 3, 2018.

22 I am grateful to Rebecca Van Tassell for introducing me to the POGIL method and providing valuable feedback on drafts of this article.

In Michael Rogers's formulation, there is a crucial distinction between "learning" and "doing" theory. Students, he argues, need practice in "making interpretational decisions—...about judging conflicting evidence, measuring significance, discovering appropriate supporting clues, sifting out clutter...and arguing convincingly for a particular point of view...[S]tudents who are never exposed to the dangers (and delights) of speculation may be *learning* theory but they will never be *doing* theory."[23] For Rogers, true analysis—the discovery of connections, relationships, patterns, and hierarchies in a work—cannot begin until the basic tools of description such as identification of keys, intervals, scale degrees, and harmony have been mastered.[24] But description and analysis exist along a continuum; the descriptive labels in common use today arise *from* the previous analyses of professional theorists who discover patterns and relationships consistent enough throughout the repertoire to codify them into descriptive terms. Students can usefully reprise this process, thereby gaining valuable insight into the way music-theoretical knowledge is generated.[25]

The three-part learning cycle in the POGIL method is delineated as follows: In the *Exploration* phase, students are given a model or analysis problem that contains elements that are recognizable to them, as well as elements that are, as yet, beyond their ability to explain. In the *Concept Formation* phase, students are led through the aspects of the problem that are new to them and asked to theorize how the new information they have can be placed in relation to their current analytical skills. Students try their hand at summarizing their new knowledge and in the *Application* phase, apply their new analytical skill to additional examples from the repertoire.[26] The cycle begins anew as students move forward to the next topic which, in turn, relies on skills built in the previous cycle.

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23 Rogers (2004, 80-81).

24 Ibid., 75-76.

25 Activities that resemble those undertaken by professional theorists, such as scholarly writing, gathering and/or analyzing primary sources, reading scholarly literature, and critical thinking/argumentation are common, and highly useful, active learning techniques. See Bakker and Chenette (2014); Bribitzer-Stull (2003); Colletti (2013); Dean (2015); Duker, Shaffer, and Stevens (2014); Ferenc (2015); and Johnson (2013). By contrast, the activities described in my approach may appear on their face to be *unlike* analyses as they would be done by a professional scholar, not least because they are scaffolded by a series of leading questions (which obviously would not be present in a "real" analysis). Instead, what I hope to replicate are the critical thinking skills deployed in true analysis.

26 Eberlein et al., (2008, 263).

Guided Inquiry Learning in the Theory Classroom

Table 1 illustrates how the two activities presented here lead students through the learning cycle. Each begins by asking students to think about the aural experience of the music. Simply put, students enter our classrooms because they love music and want to know more about it; the exploration phase of the model seeks to engage them by underlining the link between music's expressive power and the theoretical concepts to be explored.

Part 1: Exploration	
❖ Begins with "the music first," shows students the link between expressive effect of the music and theoretical concepts under examination.	
Minor mode activity: Presents four listening examples (questions 1 and 2): an original melody in c minor, the same melody in C major, and two well-known minor mode pieces from pop culture.	**Mode mixture activity:** Presents two versions of *Maple Leaf Rag* recomposed in diatonic A♭ major and diatonic A♭ minor. Students react to what appears to be "wrong" with the versions (questions 1-3).
❖ Pushes students towards "disequilibrium" by nudging them to see how they do not, yet, have the theory skills to explain the passage.	
Minor mode activity: Students are familiar with major mode key signatures and analysis of tendency tones. In the c minor excerpt, students discover the key signature "should" be E♭ major but that the tendency tones counteract this conclusion (questions 3-6).	**Mode mixture activity:** Students are familiar with analysis of applied chords but have not encountered another form of chromaticism. Questions 4-5 asks them to sort out how they can tell this chromaticism is *not* applied harmony based on chord quality and root motion in the passage.
Part 2: Concept Formation	
❖ The musical data described in the Exploration phase are constructed into a pattern that explains how the music is working.	
Minor mode activity: Students use aural and written theory information to form a hypothesis of the pitch acting as true tonic in this excerpt (questions 7-8). Students write out the new scale and examine tendency tones to confirm they are acting as expected in the new key (questions 9-10).	**Mode mixture activity:** Students uncover that overall harmonic function is not changed by mixture and the structure of the phrase remains unaltered (question 6). Students place the two recompositions into relationship with the actual piece to see how the piece's harmony is generated by overlaying the parallel keys (questions 7-8).
❖ Students define terminology and sum up the concept in their own words, synthesizing all of the different pieces of the activity.	
Minor mode activity: Students theorize the minor mode, tying together its expressive potential, and compare and contrast it with the major mode (question 11).	**Mode mixture activity:** Students theorize how the system of Roman numeral analysis may be logically extended to encompass the new chromatic harmony (question 9). Students synthesize their knowledge and propose definitions of key terminology.
Part 3: Application	
❖ Future homework and classroom activities may include analyses of more complicated examples, composition assignments, and extensions of theoretical principles.	

Table 1

Musical guided inquiry activities, based upon the Exploration – Concept Formation – Application learning cycle.

Work in groups of 2-3 students to answer the questions below. Audio for all examples may be found in the "Course Documents" section of CourseWeb.

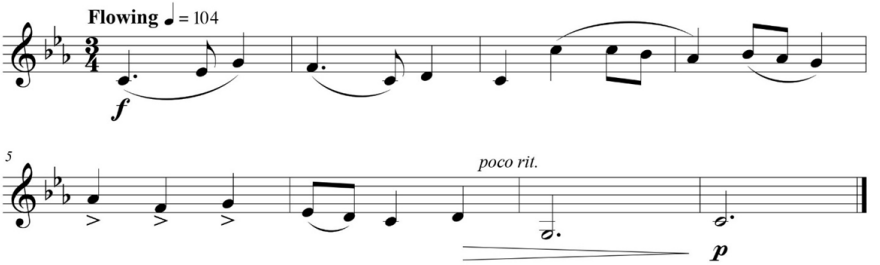
Exploration

1) Listen to excerpt 1 and excerpt 2 on CourseWeb and notice that while the two excerpts are similar in rhythm and melodic contour, the mood created by each is quite different. Use descriptive, plain-English language (no music terminology yet!) to characterize the difference between the two excerpts. What is the mood (or "affect") created by excerpt 1 and how is it altered in excerpt 2?

2) Listen to excerpt 3 ("Cry Me a River" by Justin Timberlake) and excerpt 4 ("Imperial March" from *Star Wars*) and use descriptive, plain-English language to describe the mood or affect of each excerpt. Does the affect in these two excerpts seem closer to that of excerpt 1 or excerpt 2? Explain your thinking.

Tonic & Tendency Tones

Now, examine the melody used in excerpt 2:



3) Write out your definition of what the "tonic" pitch in any given piece is.

4) When the tonic pitch is arrived at, how should it sound to the listener?

5) Based on what you know about the key signatures of major keys, what should the tonic of this piece be? On staff paper, write out the scale that corresponds to this tonic; be sure to indicate the correct key signature before writing out the scale. Label scale degrees.

6) Based on what major key signature you described in question 5, which pitches are the tendency tones in this melody, and to where should they progress? Are they acting as you would expect them to in this melody? Explain why or why not.

Example 1
Activity: Introduction to the Minor Mode.

Concept formation

7) This excerpt will turn out to have a tonic *other* than what we would expect based on what we know about key signatures so far. Use your listening, singing, and performance skills to determine what the tonic *actually* is by doing the following:
   - As a group, listen to the excerpt and then collectively hum the note that feels like tonic. Have a group member identify the pitch at the piano. Experiment to see if other pitches can feel like tonic or if the one you've identified is the best choice.
   - Examine the notated music and recall *where* in a melody we are *most likely* to hear/see the tonic pitch. Based on the tonic you identified above, does the notated music appear to confirm your hypothetical tonic?

8) What do you believe the tonic pitch in this excerpt to be?

9) Based on where you believe the tonic (i.e., scale degree 1) to be, write out all eight pitches of the scale; note that the key signature will remain the same as it did when you wrote out the major scale in question 5. Label scale degrees.

10) Based on what you now believe tonic to be and the scale you have written out, what pitches should be the tendency tones in this scale and how should they progress? Are these pitches acting as they normally would in the melody?

11) The scale you've written out is known as the *natural minor scale*. Write a brief paragraph that summarizes what you know so far. Include the following:
   - The affect created by the use of the minor scale.
   - How the key signature of a *major key* can also be the key signature of a *minor key* starting on a different tonic.
     - *Hint:* What scale degree of a major key becomes the tonic of the new minor key with the same key signature?
   - How tendency tones work to create a feeling of resolution and stability on tonic in both major and minor scales.
   - Work out the interval content of this natural minor scale (i.e., the alternation of half-steps and whole-steps) and explain how the natural minor scale differs from the major scale in terms of interval content.

Application (for homework)

12) Write a short melody (4 measures) using the major or natural minor scale. Why did you, as a composer, choose this scale? What mood or affect were you trying to create?

13) Write out the melody from Excerpt 2, but change it so that it now uses an *E♭ major scale* instead of a *c minor scale*.

14) Write out the melody from Excerpt 2, but change it so that it now uses a *C major scale* instead of a *c minor scale*.

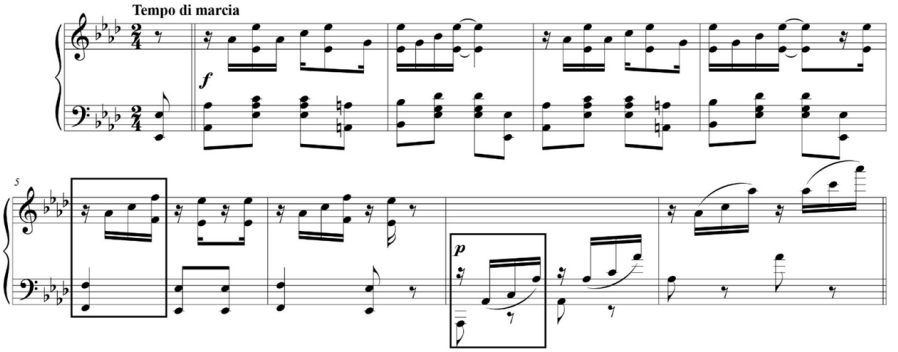
Example 1 (continued)
Activity: Introduction to the Minor Mode.

Work in groups of 2-3 to answer the questions below. Audio of the three examples may be found on the "Pages" section of CourseWeb for Theory III.

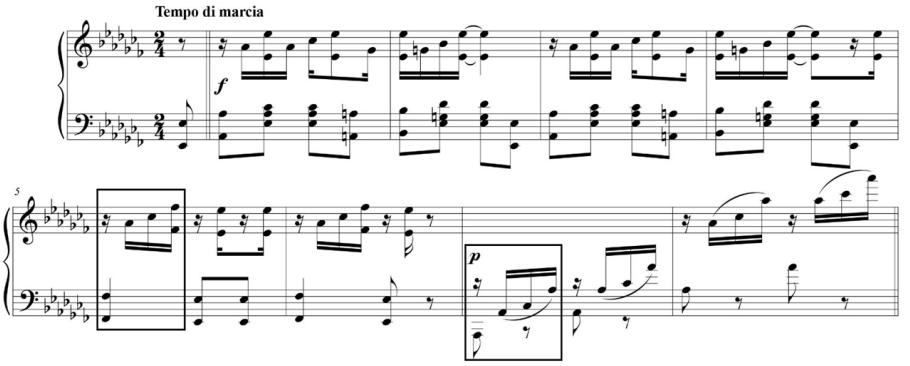
Exploration

1) Listen to and look at two versions of Scott Joplin's *Maple Leaf Rag* (1899). Both are "recompositions"—neither is the real version, which you'll examine shortly. If you know this piece, jot down a sentence or two about what appears to be "wrong" with these two versions; if you don't know the piece, provide a sentence or two on how one or both versions might be improved to more accurately reflect the ragtime style.

Joplin, "Maple Leaf Rag," mm. 1-8, RECOMPOSITION No. 1



Joplin, "Maple Leaf Rag," mm. 1-8, RECOMPOSITION No. 2



Example 2
Activity: Mode Mixture and Borrowed Chords.

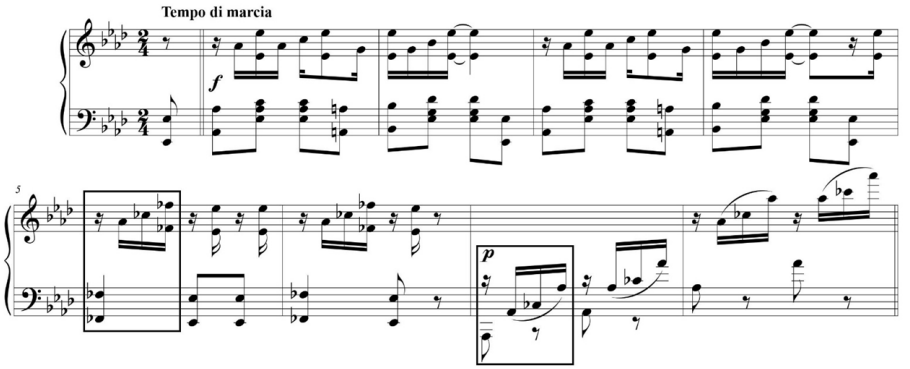
2) What is the term for the relationship between the keys of the two versions?

3) List the qualities of all diatonic chords in both major and minor keys:

	Major key	**Minor key (natural minor)**
"one" chord:		
"two" chord:		
"three" chord:		
"four" chord		
"five" chord		
"six" chord		
"seven" chord		

4) Note the sonorities marked with boxes in each excerpt. Label the function (T, PD, or D) of each of these chords.

5) Examine the original version of *Maple Leaf Rag* below and note in particular the two chords marked with boxes.



These two chords contain chromatic pitches but they are not applied dominant chords. Explain how you can tell this is true, based on chord quality and/or root motion.

a)

b)

Concept Formation

6) What appears to be the function of each of these two chords in the original piece? Label them with T, PD, or D.

Example 2 (continued)
Activity: Mode Mixture and Borrowed Chords.

7) These two chords are known as *borrowed chords*. Look back at your answers to questions 1 and 2 and the two recomposed versions of *Maple Leaf Rag.* Explain where these chords are "borrowed" from.

8) Related to the idea of borrowed chords is the concept of *mode mixture*. Which two modes are being "mixed" in the original version of *Maple Leaf Rag*?

9) Label the two borrowed chords in the original version of *Maple Leaf Rag* with Roman numerals. Remember, two factors go into a Roman numeral label:
   a) the scale degree upon which the chord has its root
   b) the quality of the chord

10) Define "mode mixture."

11) Define "borrowed chord."

Application (for homework)

a) Write two short chord progressions (8-10 harmonies) in a major key for the instrumentation of your choice. Each progression should include at least one example of mode mixture. Explain what the expressive effect is for each example of mode mixture—that is, how does the emotional/narrative effect of the progression change compared to its diatonic version?

b) Listen to and transcribe the opening chord progression to Death Cab for Cutie's "I Will Follow You Into the Dark." Locate the mode mixture in the progression.

c) Analyze the opening passage for brass and winds in the second movement of Dvorak's "New World" symphony (mm. 1-5). The passage is highly chromatic and difficult to analyze with functional harmony. Nevertheless, mm. 3-5 can be analyzed in D♭ major, *if* we account for mode mixture. Complete a Roman numeral analysis of those two measures.

Example 2 (continued)
Activity: Mode Mixture and Borrowed Chords.

Activity 1 gives students four listening examples that demonstrate how minor mode pieces create a generally negative affective valence, while intertwining subtly with rhythm, timbre, and texture to create the specific "feel" of the piece. Activity 2 takes a similar tack, deriving its examples from two recompositions of the opening passage of Scott Joplin's *Maple Leaf Rag* (1899).[27] Measures 1-8 derive much of their punch from mode mixture, creating a juxtaposition between the jaunty rhythms and bright opening theme in mm. 1-4 with the sudden dark shift in mm 5-8. The first recomposition places the passage entirely in diatonic A♭ major, thereby depriving it of any of the tongue-in-cheek drama of the original; the second recomposition in diatonic A♭ minor sounds hopelessly melodramatic. Recomposition, as Shersten Johnson notes, "directs attention to the original passage, sparking new understanding of relationships within the piece."[28] Students can see here that what they are investigating is the very crux of the sound of this most well-known of rag tunes.

The exploration phase must also develop a productive tension that lies at the heart of the guided inquiry exercise: it stimulates students' interest by nudging them to see how they do not, yet, have the theory skills to explain the passage, presenting it to them as a mystery to be solved by investigation. It thus duplicates the "pull" of the scientific method and captures something of the feeling researchers have when pursuing their own professional work. In doing this, it provides motivation to learn through the concept of "disequilibrium," described by Donald Finkel this way: "The frustration or disequilibrium that arises from the disruption of an ongoing interaction with our world is what motivates learning. We are trying to do something and we have been stopped. We *need* to find our way around the obstacle and continue toward our goal. Suddenly we have become *interested* in solving a problem (how to get around the obstacle)."[29]

In the minor mode activity, students arrive at an impasse: what they know so far of major key signatures tells them that E♭ should be tonic, but their knowledge of tendency tones clearly counteracts this. This is a moment in which students can do theory, rather than simply learn it. Having used the descriptive tools they possess (i.e., identification of scale degrees and tendency tones), students can now articulate where the gaps in their knowledge are. In the concept formation phase, they will think

27 As a useful by-product, the activity therefore introduces students to the idea of recomposition as an analytical tool. See BaileyShea (2007) for a more detailed discussion of successful uses of recomposition as analysis in the professional literature.

28 Johnson (2014).

29 Finkel (2000, 53).

analytically to describe the relationships and patterns which form the minor mode.

If the two diatonic recompositions of *Maple Leaf Rag* sound distinctly uninspiring, they are, at least, easy enough to analyze. The real version of the piece is altogether more thorny. As mentioned above, this activity is likely to be the first example students have seen of chromaticism other than an applied dominant—how are we to tell them apart? After the prelude of listening and thinking expressively about the excerpts, students are oriented towards the analytical tools they will need to bring to bear on these passages. Using their knowledge of diatonic Roman numeral analysis, chord function, and chord qualities in major and minor keys, students make a distinction between a concept with which they are already familiar, applied chords, and the new concept of mixture chords, thereby incorporating it alongside the older one. What at first may have seemed like a threatening jumble of chromaticism begins to resolve into something more manageable and patterned. Again, as students complete the exploration phase, they are left with a mystery: we know what is *not* happening in this piece (applied harmony), but we have so far only begun to glimpse what *is*.

The concept formation phase begins a process of higher-level analysis. The exploration phase of the learning cycle is akin to (borrowing from the scientific method) a "data gathering phase" in which students use their descriptive tools to take in what they can about the model under investigation.[30] Now, the data are constructed into a pattern by pointing students to particular elements of the composition and asking them to theorize how they are working. Ultimately the prompts ask students to uncover how the principles of music theory can be extended to encompass a description of the passages under investigation. Students are given terminology only in the final stage of the activity and asked to sum up the concept in their own words, integrating all of the different pieces of the activity.

In the minor mode activity, students use aural and conceptual information to form a hypothesis of the true tonic in the excerpt, which is confirmed by the action of tendency tones. They then theorize the minor mode, tying together its expressive potential and its similarities and differences to the major mode. In the mixture activity, students begin the concept formation phase by synthesizing their investigation and posing their own definitions and Roman numeral analyses for the new chords.

The "application" begins in homework assignments and subsequent class meetings. Armed with a solid conceptual understanding of the topic, students explore more complex examples that ask them to demonstrate their understanding in different ways via analysis, composition, performance, or any of the active learning techniques developed by other scholars.

30 Abraham (1997).

Student Engagement in the Heterogeneous Classroom

I believe the root goal of our pedagogy must be that of *student engagement*, emerging at the intersection of a student's active learning and motivation.[31] As discussed above, the groupwork-based guided inquiry method creates an environment for active learning in keeping with best practices as described by current research. I hope I have shown, too, that it promotes student motivation by linking theory concepts to the sound and feel of music, as well as by stimulating students' curiosity in their thinking around theory by pushing them towards disequilibrium. A final element to be addressed is the groupwork design of the activities, which is also useful in motivating students. Groupwork is a central component of many active learning activities, taking advantage of students' enjoyment of collaborative and social learning opportunities, as well as being consistent with a constructivist stance that sees knowledge as socially constructed.[32]

Of particular interest is groupwork's ability to stimulate active learning and motivation in a classroom that is heterogeneous with regard to academic ability.[33] Students who are used to achieving success in a traditional, lecture-based classroom often have no difficulty supplying both their own motivation and active learning. Such students, too, are often comfortable approaching a professor if they are having trouble with course material. Weaker students may not follow and synthesize a lecture as readily and may also struggle to remediate their lack of understanding, particularly if they are "failure avoiders," who are unwilling to ask questions in front of the class at large.[34]

Groupwork can begin to address these issues. Pamela Pike notes that in her own use of collaborative learning, the "small group became a safe space for subjects to

31 Barkley (2010, 7).

32 Schubert (2015). See note 7, above, for previous work on collaborative and groupwork-based approaches to music pedagogy.

33 A complete discussion of the heterogeneous classroom is beyond the scope of this paper, but it should be noted that the techniques described by Cohen et al. (2014) can be usefully implemented in any situation in which an instructor is working with a population that is heterogeneous in terms of academic ability, class, race, ethnicity, or other measures. Furthermore, as college populations grow more diverse, the urgency and opportunity to make our teaching more inclusive grows. In advocating a post-structuralist analysis of higher education, Kezar (2011) urges us as faculty to be aware of how pedagogical approaches, among other things, may be creating structures which exclude non-majority culture students who are not normed to the traditional policies and practices of higher education.

34 Barkley (2010, 19).

experiment, make mistakes, and persist."[35] Moreover, if a groupwork activity provides opportunities for contribution from all group members, it can greatly increase low-achieving students' confidence and enthusiasm for learning. In discussing the concept of the *multiple ability classroom* Cohen et al. stress the importance of designing groupwork activities which rely on multiple skills, of which the professor can say: "None of us have all of these abilities; all of us have some of these abilities."[36] Because success in music encompasses so much more than traditional academic skills such as fact recall and note-taking, the study of music provides a powerful opportunity to empower students all along the spectrum of academic ability.

The two activities presented here take advantage of music's multiplicity by encouraging students with different strengths to explore the music in different ways. In addition to having access to musical examples as they are written on the page, students can hear recordings of them from their phones on the course management website and play them at the piano if they wish (I generally reserve practice rooms during class time to allow groups to break out into different workspaces). A student possessed of well-developed interpersonal skills may become a natural leader and spokesperson for her group, while an introspective student usefully aware of his thoughts and feelings can more readily identify his own confusions about the topic and raise them as a subject for group discussion. Students with strengths in logical and linguistic prose writing contribute toward the group synthesis and definition of new terminology at the end of the task.

The benefits of implementing a guided inquiry approach can, I believe, be felt throughout students' time in the core theory sequence. Gordon Sly notes that as students move forward in this sequence, they often have difficulty making the transition from description to analysis, saying: "for the sort of analysis whose goals are less clearly prescribed—when we ask students to make an argument about a work's striking qualities, its particularly beautiful or eccentric events, about what gives it its special character—here, I would maintain…the typical Freshman-Sophomore sequence proves largely inadequate as a preparation for analysis."[37]

The approach described here provides a remedy to this problem by recreating the experience of analysis even at the early stages of the curriculum. As students uncover basic concepts, they are gaining a sense of how the discipline functions,

35 Pike (2014, 84).

36 Cohen et al. (2014, 123-27).

37 Sly (2005, 51).

what its standards and burdens of proof are, the language used to justify arguments. Webster points out that social constructivism sees disciplines, like all forms of knowledge, as social constructs.[38] Emphasizing the constructed nature of disciplines and disciplinary knowledge allows students to understand how theory is positioned within the constellation of fields they encounter in their college study.

As they progress through the theory curriculum, Elizabeth West Marvin writes, "we want students to internalize musical structure through study of masterworks, through style composition and improvisation, by speaking and writing about music, and through performance; and we want their structural understanding to translate into performance decisions that influence interpretation and foster ever greater artistry."[39] By making learning active, by asking students to think analytically even as they grapple with the most basic concepts in the apparatus of description, and by empowering those with different abilities to participate in their learning, this approach builds an expansive, nuanced view of what the discipline of theory has to offer: far from a set of rules to be memorized or a game of plug-and-chug, analysis is revealed to be a creative and fulfilling practice, deeply integrated with that pursuit of "ever greater artistry" we all seek.

38 Webster (2011, 38).

39 Marvin (2012, 263).

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