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From the Previous Editor

This issue of the *Journal of Music Theory Pedagogy* marks a turning point in our evolution. After directing the editorial content for the first ten issues, I have decided to step aside and accept a reduced role as Consulting Editor. This move will give me the opportunity to return to some research projects that have been left simmering too long on the back burner (or in some cases stored in the deep freeze) and will also provide the journal with an opportunity to explore some new directions and ideas for content and format.

I am very excited to announce that Mary Wennerstrom, Chair of Music Theory at Indiana University and Chair of our own Editorial Review Board, has agreed to become the new Editor starting with this issue. Mary has been one of our guiding lights from the first issue and we are all looking forward to benefitting for many years to come from her insights into teaching and from her wealth of experience.

We will continue to operate from our Norman office at the University of Oklahoma for all business and editorial correspondence and for submissions, subscriptions, mailings, computer operations, design and layout, printing, etc. Potential authors should certainly feel free, however, to communicate directly with Mary at Indiana University about ideas or questions for possible future articles.

Beginning with this issue we have also changed our production schedule to one (larger) issue per year—to be published at the end of each Fall semester. This change will provide more efficient use of our time and operating resources and will help to keep our publication schedule more regular and predictable.

This journal would not be possible without many people working in cooperation and donating enormous amounts of time and energy. Certainly our Review Board has been fundamental in beginning a new publishing venture such as ours. Appreciation is also extended to Dr. James H. Faulconer for his leadership as Director of the Gail Boyd de Stwolinski Center for Music Theory Pedagogy, the larger framework that supports and sustains *JMTP*, and to Dr. Alice M. Lanning whose loyal service and thoughtful suggestions as Managing Editor help to keep our daily operations and many complex tasks in tuned order. A special thanks go to Dr. de Stwolinski whose vision of excellence for the teaching of music theory

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planted the seed for this journal's germination and who continues to look forward to each new issue with curiosity and enthusiasm.

To all of the people mentioned above I extend my heartfelt gratitude for making my job both possible and gratifying.

Michael R. Rogers
University of Oklahoma

From the New Editor

It is an honor to have been chosen as the next editor of the *Journal of Music Theory Pedagogy*. We are all grateful to Michael Rogers for his leadership as editor of the journal in the first five volumes, and I am pleased that he has agreed to remain as a consulting editor. In addition James Faulconer, Director of the Gail Boyd de Stwolinski Center for Music Theory Pedagogy, Alice Lanning, Managing Editor of the journal, and staff at the University of Oklahoma have contributed extensively to production and organization activities; and I am happy that their work will continue and that we will benefit from their ideas.

Starting with this issue [Volume Six 1992] the journal will be published just once a year, as we try to maintain a more up-to-date publication schedule. This issue includes substantial articles on a number of pedagogical subjects and initiates a bibliography of current books, a feature we will continue in subsequent volumes. In addition, we have a readers' response section, where authors of previous *JMTP* articles on solmization respond at length to each other. We hope that this sort of reader response (with short or long comments) can also become a regular feature of the journal.

In 1993 we will add several new members to the Editorial Review Board, as five members complete their term. Robert Hurwitz is the new Chair of the Board. We appreciate very much the work of the present board members and look forward to the contributions of the 1993 board. Next year's issue will include a new reviews section, under the direction of Reviews Editor Gary Karpinski. We have already planned reviews of some of the new books listed in the 1992 bibliography.

We encourage comments and submissions from our readers. In addition to articles, we are interested in shorter items, such as especially effective teaching strategies and useful exercises or musical materials. These shorter ideas may appear as a readers' forum, organized around topics such as approaches to aural skills in twentieth-century music, the relationship of theory pedagogy to performance, the teaching of counterpoint at all levels, or the structure of a course in theory pedagogy. We hope also to continue our curriculum studies, which have been a feature of the journal in the past.

We look forward to hearing from you. Please send your submissions and comments to *Journal of Music Theory Pedagogy*, School of Music, University of Oklahoma, Norman, OK 73019.

Mary Wennerstrom
Indiana University

AN ALTERNATE APPROACH TO AURAL TRAINING

KATE COVINGTON

EXAMINATION OF THE PROBLEMS

For centuries, music teachers and conductors have bemoaned the inadequate listening skills of performing musicians. Guido, in the eleventh century, channeled his frustrations positively by devising a kinesthetic representation of pitches, in the hope of improving his choir's accuracy in singing. And John Cotton, who flourished around 1100, expressed the feeling of many directors when he compared the practicing musician (the singer) with the theoretician (the true musician):

Whereas the musician always proceeds correctly and by calculation, the singer holds the right road intermittently, merely through habit. To whom should I better compare the singer than to a drunken man who does indeed get home but does not in the least know by what path he returns.¹

Today, those who direct ensembles or teach private lessons, or who intentionally or accidentally incur the occupational hazard of teaching aural skills, have discovered the problems with much current aural training.

First, most music students who do not have a perfect or near-perfect sense of pitch find ear training at best a dreaded, necessary evil. For a musician, developing aural acuity should be a positive experience, an anticipated class, but how many students view it that way? Instead, they find it distasteful and teachers are often forced to incorporate required attendance policies to make sure students are even there. Students may approach these courses with fear that certain musical weaknesses or ineptitudes will be exposed.

More troubling is that students find aural training to be irrelevant to their musical needs when they should be seeing the connections with

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everything they do as musicians. Professor George Pratt of Huddersfield Polytechnic in England has said that, "Everything taught [in aural training] should always be related immediately to real musical experience and thus be applicable by students to their everyday musical life."² Aural training should indeed be directed toward practical, needed skills. Most troubling to me has been the dilemma that good musicians sometimes demonstrate a rather low level of aural ability, as taught and tested with traditional materials. That seems to imply that either we are teaching the wrong things or we are not teaching well, certainly not in a way that is compatible with how students already perceive and relate to music.

An additional problem is that our approaches to aural training have been strongly influenced by tradition as well as by the necessity for grading. The same approaches and activities are perpetuated from teacher to student-who-becomes-a-teacher to student, etc. Roy Will, in his research on the history of dictation, discovered that dictation first appeared in classroom theory texts in the early nineteenth century.³ It began with the teacher's singing of intervals and patterns to be notated and was connected with the teaching of solfeggio. Several nineteenth-century teachers observed that solfeggio seemed easier for students to master than its counterpart, dictation. Will notes that Francois Fétis thought that students' difficulty with dictation was due to "sluggishness of the spirit."⁴

Traditionally, aural training has concentrated on the pitch and rhythmic domains of music, to the virtual exclusion of other aspects such as timbre, dynamics, register, articulation, and texture—aspects that are critically important for performers, directors, and composers. A glance at leading aural training textbooks will confirm that this is the case. Because we are required to assess achievement quantitatively in aural courses, we are forced to find mechanisms that can be readily evaluated. Thus the identification of an interval as a Major 6th or minor 2nd can be easily rated, whereas measuring something like a student's sensitivity to the in-tuneness of intervals is much more difficult.

Another problem in aural training is the lack of clear methodologies for teaching. A few years ago, Professor Pratt (with the assistance of Michael Henson) made a survey of British universities to determine the depth and breadth of their aural training curriculums. A few schools were integrating aspects of timbre, texture, and dynamics into a program of intervals, chord patterns, and dictation. Others emphasized dictation, having it occupy as much as 60% of the course. Some had stringent expectations: notation of a 4-part chorale; noting figured bass from a recording; notation of a twentieth-century piano piece, playing each phrase 3-4 times. Other schools, acknowledging that aural training seems to have little real relevance to music-making and that students do not seem to improve, have "thrown in the

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towel" and eliminated aural training from the music curriculum altogether. In some of the latter cases, sightsinging has been retained. One of the reasons cited for eliminating aural training was lack of a method to make it work with students.

While there are several methodologies for teaching sightsinging, no such plans really exist for aural training (dictation, listening activities, etc.). There are a number of manuals and workbooks available, but the differences among them basically concern isolated vs. short contextual examples, and literature vs. newly-composed examples. Nearly all include dictation as a sizeable component, and there seems to be universal agreement that items be played at the piano three times. But the questions these texts raise are WHAT (do we use) and WHEN (do we use it), instead of asking WHY (do we do this) and HOW (should it be done).⁵

Michael Rogers, in his book *Teaching Approaches in Music Theory*, sets forth his approach in a discussion of two stages of ear training: the "perception and labeling of individual events" and later the "comprehension of musical relationships."⁶ Rogers continues by saying that analytical listening to the structural relationships in music is not addressed in current teaching materials.⁷ In addition, he points out the importance of understanding how the brain works in processing musical phenomena, and in this reference, he touches upon one of the biggest failings of traditional approaches to aural training.⁸ And it is this: the workings of the brain and current learning theories seem to have little effect on the WHY and HOW of teaching aural training, and because of that we are still encountering the same frustrations observed by nineteenth-century teachers.

ANALYSIS OF MUSICIANS' AURAL NEEDS

As expressed earlier, aural training has been quite dependent on tradition. Sightsinging is still considered important, as it has been for centuries. And dictation, considered as the counterpart (sound to notation) of solfeggio, has occupied a prominent part in the aural curriculum since the early nineteenth century. Even then, isolated intervals were drilled; the inclusion of isolated sonorities and chord progressions would naturally follow. These elements, then, comprise a typical aural program, with occasional questions inserted about cadences and form. Measured according to Rogers' two-step approach, we spend two years "preparing" students to listen to music with an understanding of structural relationships, but the aural courses end just at the point when months of drills should be culminating in meaningful listening—listening awakened to the way all these isolated elements fit together in movements and entire compositions.

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But more elemental than curricular timing, or WHEN items should be taught, is the question of WHY we have aural training and WHAT should we be preparing our students to do. To begin addressing these questions, I make three assumptions: 1) a sharp sense of aural acuity is necessary for a musician; 2) this aural acuity can be developed and refined so the student acquires an increased aural awareness—a heightened sense of musical perception; and 3) a separate course for aural training is necessary. Ideally, aural training should be taught in every component of the music curriculum: applied lessons; small and large ensembles; conducting; written theory; music history; etc. But because training is done in only a minimal way in other areas, a separate course is necessary.

Next is the issue of the specific aural skills needed by different types of professional musicians, who can be divided into three broad categories. Musicians either *recreate* music, as performers or conductors; *create* music as composers or studio musicians; or respond in active *listening*, as scholars, critics, or those simply reacting to aesthetic experience. Teachers of music would probably represent all three activities. One could look at the specific skills needed by those who create and by those who recreate and by those who are active listeners, and consider tracking the aural training of students according to their professional goals. But this is not being proposed because there is quite a bit of overlap in the aural skills needed by each group. Also, these categories of musicians are not mutually exclusive for individuals, as most musicians are participants in two or all three of these broad categories. It is likewise true there are skills that all musicians should know and that transcend specific career choices or present interests.

The first aural skill needed by musicians is an awareness of musical structure, both small-scale structure (such as one or two phrases) and large-scale structure, such as a section or a movement. Such musical aspects as rhythm, texture and density, vertical and horizontal organization of pitches, timbre, dynamics, and formal segmentation and organization would be referenced. These aspects should be considered not only separately but also interactively (how they interrelate structurally) so that students are not only perceiving a window of the composition, but they are also seeing that part as it fits in the total section or work. There should be a continual integration of observing small-scale vs. large-scale structures, because it is often difficult for students to comprehend large structures after a lengthy details-only approach. They often see the methodologies as completely different, rather than as a continuum.

Next, musicians need to refine their awareness of intonation. Whether in ensemble of applied lessons or sight-singing, students should be chal-

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lenged to consider the in-tuneness of their performing as well as others' performing. At the same time, there needs to be a heightened realization that intonation issues are fraught with the difficulties of stylistic demands and ensemble constraints.

Musicians need to develop an aural awareness for performance adjustments in small and large ensembles, whether as performers or listeners. Such factors as balance, rhythmic and dynamic ebb and flow, and intonation should be considered. A musician needs to be aware of the individual lines of a composition, whether it is for one performer or multiple performers. As the student becomes more aware of the individual lines and how those lines fit together, the ebb and flow of those parts and the relative balance of the lines will become more evident.

There needs to be a heightened awareness of shades of nuance in students' own and in others' playing. Elements such as dynamics, articulation, timbre, and pace should be regarded.

Especially important is the ability to internally image music, and not just in the pitch and rhythmic dimensions. This ability is needed both with familiar and unfamiliar music, and in students' own performing mediums as well as other mediums. This is necessary for reviewing music, for studying scores, for copying sounds as a composer, for recognition of good vs. bad or correct vs. incorrect performances, for being able to copy performance nuances imagined, and for good intonation. Creators and recreators of music need to be able to copy and/or represent sounds as internally imaged.

Musicians should be able to sight read, and to do so in several clefs.

And finally, there is the ability to symbolize (record or notate) imagined sounds. This would translate into dictation, but the developed ability would not be limited to just rhythmic and pitch parameters, but would also include such factors as dynamics and articulation. This skill is especially important for composers and arrangers.

Of the aural skills needed by musicians, the awareness of performance adjustments and shades of performance nuance are probably the skills given the most attention in a student's ensemble experiences. For many students, intonation will also be stressed in lessons and ensembles. However, these skills could be a part of aural training as well because they overlap with the other skills and because by doing so the music curriculum avoids compartmentalization and the students perceive that the necessity for keen aural awareness doesn't cease when they walk out of the aural theory classroom.

No two-year program in aural training or even a four-year degree can adequately accomplish this complete aural training agenda. Aural training should be a lifelong endeavor, so that the college/university instructors are

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simply setting in motion a lifetime of aural development and the avenues, methodologies, and habits for that continued learning.

REVIEW OF SOME CURRENT LEARNING THEORIES

As Michael Rogers has pointed out, it is important that a knowledge of how the brain works in learning and processing musical phenomena be understood for successfully presenting and teaching aural training. In recent years there has been a profusion of articles and books dealing with the brain, its hemispheres and their functions, modalities of learning, learning by discovery and experience, brain-compatible learning, etc. This is partly because progress in brain research has been phenomenal due to advances in electron microscopy techniques and in molecular and neural chemistry. These descriptions and theories are challenging the ways in which we view brain processes in learning, and should have a profound effect on teaching at all levels. In fact they should turn current teaching approaches upside down. No area in the education of musicians is in greater need of the influence of these discoveries and theories than aural training.

Carl Rogers presents the approach of Experiential Learning and explains it as learning with a high degree of personal involvement on the part of the student.⁹ Experiential learning is learning by doing. A student is involved not only through hands-on activity but also through having a degree of control over the learning process and even the evaluation. David Kolb explains that there is a need for experiential educational approaches that "can translate the abstract ideas of academia into the concrete practical realities of these people's lives."¹⁰

In current ear training, students usually respond with pen and paper; seldom are they called upon to play back a melody or to harmonize it. Experiential learning must include problems that have a significant amount of relevance for the student, and a learning environment with a low degree of threat.¹¹ One of the most frequent complaints about aural training from students is that they fail to see activities such as isolated identifications and dictation as being relevant to their professional needs. The notion of threat is also significant because the fear of failure in aural training can have a profound effect on how successfully students perform as critical and analytical listeners.

Jerome Bruner presents the idea of Discovery Learning, by which insights are recognized through reasoning or experimentation, and hence a process of "discovering" information and concepts.¹² Bruner also empha-

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sizes the importance of a sense of reality about the learning, and discusses three stages in discovery learning: 1) an action stage (learning by doing); 2) an iconic stage in which a mental picture of the way things function is constructed; and 3) a symbolic stage, in which alternate applications and solutions are embraced.¹³ To relate these three stages to music learning, the action stage might involve playing back a bass line, the iconic stage could equate to the evaluation of the aural/mental image of that line, and the symbolic stage could refer to the notation of that line. Bruner further stresses that when students are actively learning, they are building on previously acquired knowledge—that is, the basis for successful learning should always be prior learning. We will have strengthened aural training when we include modes of interaction and music with which a student is already familiar.

One approach to learning is that of understanding and employing modalities, the channels through which learners receive and retain information.¹⁴ There are three modalities: 1) visual; 2) auditory; and 3) kinesthetic. Visual learners prefer to learn by reading, using documents such as handouts, and noticing visual cues; a visual learner responds to comments written on assignments and tests and may choose to sit in the front row. An auditory learner prefers listening to lectures and discussions and responds to verbal critiques; this learner may be the one to arrive at class late and with no paper or pencil. The kinesthetic learner may have fingers, knees, and feet in constant motion throughout class; this student may also doodle while in class and responds to a pat of encouragement.¹⁵

We all may exhibit visual, auditory, and kinesthetic traits at different times, but perhaps prefer a certain modality for specific kinds of learning. The challenge for teachers is to make use of all three modalities in learning to strengthen concepts and address topics meaningfully for all learners. It should also be emphasized that the kinesthetic mode is very powerful, yet virtually overlooked in higher education learning.

Much has been written about the brain hemispheres, their functions, and the integration of these functions. People have been characterized as being “left-brained” or “right-brained,” depending on whether they tend to be more analytical, organized, sequential and logical, or more oriented toward feelings, spontaneity, randomness, and intuition. We all exhibit a mix of traits in various arenas of our lives, although some people are more lateralized while others seem to be more integrated. There have been many studies dealing with dichotic listening: is music processed better in one ear than the other? Since music seems to be felt and understood emotionally in the right brain, should we therefore concentrate our music listening in the left ear? Or, if we are listening analytically, should we then shift to the right

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ear to give emphasis to the left brain's functions? Dichotic listening research findings have been mixed, with no conclusive trend toward the advantages of favoring one ear over the other.

But apart from the notion of dichotic listening, the hemispheric theories do suggest that the way our students think about music and the way theorists approach music may not be the same. Howard Gardner makes the distinction between aspects of music naturally perceived and those conceptualized in a more formal way. He cautions that certain aspects of music perceived naturally may be temporarily obscured as an individual attempts to classify music events according to a more formal mode of analysis.¹⁶

When students begin a music degree program, they bring primarily "right-brain" experiences with them. They have enjoyed performing and listening and responding to music. Then they enter the theory classroom and are expected to approach this cherished art form analytically, sequentially, and logically. The integration of the two approaches cannot happen instantly for most students, and unless we at least incorporate a sort of "right-brain" approach in theory classes, we end up with disenchanting and frustrated students who think that music must not be what they wanted to do after all. And, even worse, we disengage students from the wonders of understanding more about their art through aural comprehension and indirectly teach them that aural training is irrelevant and fearsome and is to be simply endured for two years.

Another, but not conflicting, theory of the brain is that of the Triune Brain by Paul MacLean.¹⁷ According to MacLean, there are three evolutionary brains, each having different processing and interpretive functions. The Reptilian Brain or the R-Complex is concerned with survival, safety, reproduction, and defense, and monitors the body's functions. The Paleomammalian brain or the Limbic System is concerned with emotional processing and imaging, the senses, values and morality. Interactive and kinesthetic responses to music are through the Limbic System. The Neomammalian Brain concerns advanced logic and thought, such as music analysis.

Control moves from the top down, or from the Neomammalian to the Paleomammalian to the R-Complex, but processing is bottom to top with the Limbic System receiving and processing information from the R-Complex and the Neo-Cortex receiving information from the Limbic System.¹⁸ When fear and threat are present, there is a down-shifting to a lower level of brain functioning. For example, if the brain is engaged in mathematical or analytical processing at the Neo-Cortex level and threat is introduced, there is a down-shifting to the Limbic System or even the R-Complex, and the brain seems to "shut down" with regard to the analytical activities. This would explain why some students seem to freeze on tests.

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Leslie Hart has put forth the most compelling argument for change in education through his approach to brain-compatible learning.¹⁹ His theories center on the brain and explain the learning process in terms of the brain's nature, history, and mode of operation. He considers the hemispheres, the model of the Triune Brain, and his own theory of learning through "program structures," or "prosters" as he calls them. In learning, the brain detects patterns, characteristics or features, and relationships among these features through the senses. As these patterns are repeated, they are strengthened and relationships of patterns are built; then learning takes place and programs are constructed.²⁰

Programs are sequences of events or instructions for events. When we learn to climb stairs, there are programs that must be constructed for the many muscular and balance tasks necessary for this operation. Through trial and error, the correct patterns are reinforced and pattern relationships are formed, and we "learn" a program for climbing stairs. Once the program is learned, it is implemented whenever we are faced with the need to navigate steps.

Some programs are more automatic (such as the program for walking down steps) and some are less so (the program for paying a bill). Automatic programs may operate simultaneously (we could climb steps and shift a parcel from one arm to another at the same time), but those that require conscious choices only operate one at a time. Clusters of related programs form the prosters. All programs are built on existing programs. Hart reminds his readers that when we learn to ride a bike or drive a car, we learn in a non-sequential way, in a random fashion. We don't study the vehicle's history and its mechanics, how to steer, then how to brake, etc. But our brains learn by detecting and relating patterns and putting these together to build programs.²¹

Hart goes on to describe two kinds of thinking: 1) symbolic selection and manipulation (SSM); and 2) perception, analysis, and choice (PAC).²² SSM requires a high degree of attention, unless the prosters are well-established, while PAC is intuitive, automatic, effortless, and subconscious.²³ Through PAC we can be playing a composition and thinking about something else such as the day's agenda, until there is a mistake and we are forced into the SSM mode and thus an aborting of that piece-playing program. In the PAC mode, learning begins with utter disorder but results in order in a faster, more accurate manner. Another factor is that the SSM type of thinking that prevails in theory analysis cannot function when fear and threat are present.

The impact of Hart's writings on teaching could be enormous. He states the necessity for change when he describes formal education as "obsessed with rational and logical processes, and heavily dependent on

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verbalization.”²⁴ We are furthermore dependent on teaching sequentially and in a parts-progressing-to-the-whole way. It would be like giving a student, who has never seen or operated a VCR, the individual components and expecting that student to assemble it correctly. Students must be allowed to learn patterns and build programs related to theory, to develop intuitive musical skills, to proceed at somewhat individual paces, and to see the relevance of their learning.

DESCRIPTION OF A POSSIBLE APPROACH

The aural skills needed by musicians, as stated earlier, include the following:

1. an awareness of musical structure, both large-scale and small-scale;
2. an awareness of intonation;
3. an awareness of performance adjustments in small and large ensembles;
4. a heightened awareness of shades of nuance in performance;
5. ability to internally image music;
6. ability to represent heard or imaged sounds in notation and performance;
7. ability to sight read in several clefs.

In this approach musical structure is investigated in horizontal and vertical planes. Included are pitch (melodic and harmonic) organization, rhythmic organization, and formal organization. While there are occasional directed listenings of isolated events such as intervals or modes, the majority of listening is in the context of complete pieces or movements or at least complete sections from various styles and genres. Students' observations about what is heard are refined over the course of the year. Timbre, dynamics, articulation, use of register, dramatic impact, and stylistic features are considered just as important as the pitch organization, sonorities, cadences, and formal structure. Not only does such a description more faithfully represent the heard phenomena, but the more expressive charac-

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teristics are also the ones that are most readily heard by students without formal theoretical training. And, it is not isolated events but rather how musical parameters are present and how they are integrated that become the focus of the listening.

Horizontal pitch organization is investigated more closely through melodies from movies and musicals, patriotic songs, folk tunes, hymns, and classical themes that are familiar to most students. These are listened to, played by ear on any instrument of the student's choosing, and then notated. Students have the option of hearing the melody numerous times and of having an instrument available when the notation is done. Some students can do this readily and others need time to solve the notational problems. For some, the problem is assessing the rhythmic structure and for others it is deciding the tonal structure and how the pitch events relate. At first students are on their own, with assistance from the instructors, to develop individual methods for transcribing sound into notation. Gradually they are encouraged to depend on their aural memory/imaging of these melodies and to relate the background structure of the melody to a tonal spectrum. Students with some keyboard skills are encouraged to harmonize these pieces, long before vertical pitch organization is formally introduced in the aural curriculum.

In this course of study improvisation of melodies is continually a part of the classroom experience. Students are more comfortable with this when certain parameters are set: key, meter, harmony, phrase length, perhaps a choice of one or two rhythmic patterns. Question-and-answer formats are helpful for intuitively teaching cadences, similarity and contrast, and symmetrical and asymmetrical phrasing. A non-judgmental environment, in which the instructor responds neither positively nor negatively, allows students to freely explore and discover facets of horizontal structure without the threat of "messing up." For students and instructors there is the inner delight of hearing the gradual refinement and increasing confidence in improvisation through the discovery of creation. Bruner's three stages in discovery learning (learning by doing; iconic or mental picture of concept; alternate applications of concept) are very much at work.

Vertical pitch organization, harmonic structure, is also taught under the influence of discovery learning, experiential learning, and the brain-compatible learning theory of Hart. A few harmonic structures are experienced through harmonization, playing by ear, and improvisation, and using repetition and alteration to allow the building of pattern-recognition programs. For example, one such pattern is the sequence from Pachelbel's "Canon in D," a pattern already recognized but not given symbolic representation by most students. In addition to the above activities, students learn single line "horizontalizations" of each pattern, and these can be sung

or played. This is especially helpful for single-line instrument performers and for gradually imaging these as vertical structures, a step toward imaging chords. Also, unique gestures or rhythmic movements for each harmonic function are taught as a part of the horizontalization and are readily applied by the students. Thus the hands-on experiences, the incorporation of intuitive learning, the repetition, and the wide variety of experiences (playing, singing, moving) insure the solid building of programs to perceive and understand harmonic organization.

Another emphasized skill is locating and identifying performance errors in a score, when performance and notation do not match. Every student immediately realized the applicability and the relevance of this ability. Errors may be in pitch, rhythm, harmony, dynamics, and articulation. The excerpts are typically prepared (more representative of reality) and this allows more involved examples of three staves and 20-30 measures in length. The skill of music imaging is very important here, and this is an excellent way, though not a perfect or all-encompassing one, to evaluate imaging skills of students.

Sightsinging skills are given much emphasis and taught through individual lessons for pairs of students. There are a multitude of problems in sightsinging, ranging from difficulty with the mechanics of producing vocal sounds, to poor sense of pitch, to poor feel of the rhythmic dimension, or inability to maintain pitch or tonal references, etc. These individual problems can best be attended to in private sessions. The personal attention is also a positive motivation for students and removes the threat and fear present in classroom evaluations. Sightsinging lessons are also opportunities to refine in-tune singing and imaging. Many students have had an "aha" experience of relating difficulty with intonation in sightsinging with that same problem in their performance mediums. Group ensemble singing is an important activity not only with students' partners, but also in class. Rounds are used initially because many students have never sung in an ensemble before. These ensemble experiences foster the ability to maintain an independent line, intonation awareness with another part, an intuitive understanding of multiple parts in a texture, as well as the resulting harmonic implications.

Throughout this aural curriculum, the emphasis is on learning through active experience, through the building and relating of these experiences to past learning, and through intuitive, repetitive learning. Fear is minimized through a low-key approach to grading that rewards active individual participation as well as accuracy, for aural training is an ongoing process and each person brings unique skills and develops at a unique pace. The best evidence for the merit of the approach comes not from the learning theorists but from the students themselves. They enjoy coming to aural

AURAL TRAINING

training, they recognize its importance and the relevance of the skills being developed, and some respond that aural training is their favorite class. And that is as it should be.

NOTES

¹Guido Hucbald and John on Music, *Three Medieval Treatises* (Yale University Press, 1978).

²Robert Cockroft, "Heard Instinct," *Classical Music* (Nov. 15, 1986):12.

³R.T. Will, "The History and Development of Musical Dictation" (M.M. thesis, Eastman School of Music, 1939), p. 2.

⁴Francois Fetis, *Premiere Annee*, trans. R. T. Will (see above note), pp. 52-53.

⁵There are at least two publications that challenge the way we approach aural training: *Aural Awareness* by George Pratt (Open University Press, 1990) and *Aural Awakening* by Rupert Thackray (published by the University of Western Australia Department of Music).

⁶Michael Rogers, *Teaching Approaches in Music Theory* (Southern Illinois University Press, 1984), p. 101.

⁷ibid., p. 103.

⁸ibid., p. 102.

⁹Carl R. Rogers, *Freedom to Learn* (Charles E. Merrill Publishing Co., 1969).

¹⁰David A. Kolb, *Experiential Learning* (Prentice-Hall, 1984), p.6.

¹¹Carl Rogers.

¹²Jerome S. Bruner, "The Act of Discovery," *Harvard Educational Review* 31 (1961): 21-32.

¹³ibid.

¹⁴Walter B. Barbe and Raymond H. Swassing, *Teaching Through Modality Strengths: Concepts and Practices* (Zaner-Bloser, Inc., 1979).

¹⁵Arthur Harvey, "Brain Research and Its Impact on the Learning and Teaching of Music," Workshop given at the University of Kentucky, June 1-2, 1988.

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¹⁶Howard Gardner, *Frames of Mind* (Basic Books, Inc., 1983), pp. 99-127.

¹⁷Paul D. MacLean, "A Mind of Three Minds: Educating the Triune Brain," *Education and the Brain*, 77th Yearbook of the National Society for the Study of Education (University of Chicago Press, 1978).

¹⁸Don W. Stacks and Peter A. Anderson, *Toward A Holistic Neuro-physiological Understanding of Intrapersonal Communication* (Speech Communication Association, Boston, November 1987), ED 289181.

¹⁹Leslie A. Hart, *Human Brain and Human Learning* (Village of Oak Creek, AZ: Books for Educators, 1983).

²⁰ibid.

²¹ibid.

²²ibid., pp. 132-139.

²³ibid.

²⁴ibid.

SOLFÈGE DRILLS

DANIEL KAZEZ

Scales and arpeggios constitute an ideal medium for teaching elements of instrumental music technique. When a particular technique is called for in a piece of music, students have less trouble when they have already mastered the technique in scales and arpeggios. It is unfortunate that there does not exist for sightsinging an analogous body of standard, easily memorized skills.

Students' efforts to master the pitch element of melodies in sightsinging texts are greatly facilitated by first practicing well-graded rote exercises designed specifically to teach the pitch "problem" contained in the melodies (e.g., "conjunct melodies in major keys," or "melodies with skip in the tonic triad.") The purpose of this article is to present a few simple solfège drills and to suggest ways they may be used in a classroom setting.

I teach in the music department of a small liberal arts college. Students enroll in a four-term sequence of sightsinging classes, along with independent classes in written theory, ear training, and keyboard harmony. Class size ranges from five to fifteen students. Sightsinging meets for two one-hour periods per week. Students use two textbooks: Robert Ottman's *Music for Sight Singing* (Englewood Cliffs, N.J.: Prentice Hall, 1986) and, not unexpectedly, my own book, *Rhythm Reading: Elementary Through Advanced Training* (Mountain View, CA.: Mayfield, 1989).

For each class period, I assign three to five exercises from *Music for Sight Singing* (using moveable Do), three to five exercises from *Rhythm Reading*, and two or three short solfège drills, as individuals or as a class, but always from memory. Students sing the drills in many permutations (see variants, later in this article).

THE DRILLS

Each set of solfège drills (following) is intended to help students master a specific melodic sightsinging concept. The drills may be sung with solfège, numbers (1 = Do) or, less successfully, with letter names or with a single neutral syllable such as "La." In class, all drills and variants should be performed from memory.

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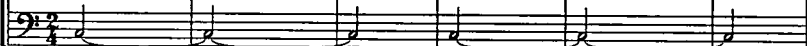
Figure 1.

Major Scale Drills

Purpose: Drills 1–3: To prepare students to sing melodies in major keys, using conjunct motion. Drills 4–8: To acquire agility in using solfège in major keys.

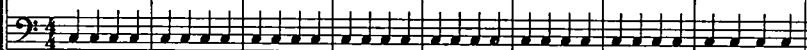
1. Basic scale

Sing: 

Play: 

2. Slow scale

Sing: 

Play: 

3. Fast scale



4. Intervals



5. Thirds



6. Broken thirds



7. Fourths



8. Broken fourths



Fifths and sixths: Add if desired and if students' vocal ranges permit.

SOLFEGE DRILLS

Figure 2.

Tonic Triad Drills in Major (I)

Purpose: To prepare students to sing melodies in major keys with leaps within the tonic triad.

Root position (A major)

1. Arpeggiated triad



2. Small leaps



3. Intervals



4. Large leaps



1st inversion (F major)

5. Arpeggiated triad



6. Small leaps



7. Intervals



8. Large leaps

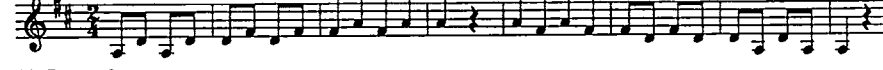


2nd inversion (D major)
 9. A major triad

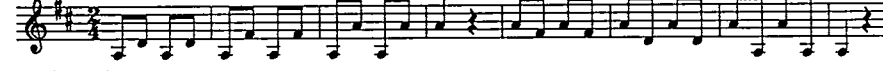
9. Arpeggiated triad



10. Small leaps



11. Intervals



12. Large lcaps



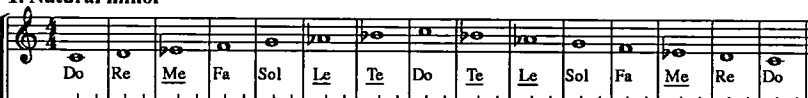
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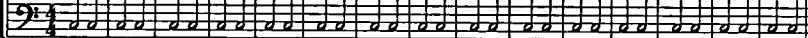
Figure 3.

Minor Scale Overview

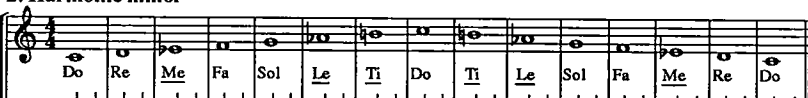
Purpose: An overview of the three “versions” of minor. This drill sheet supports learning in written theory more than learning in sight singing. Singing in natural minor, for example, is of limited value as a preparation for singing tonal (rather than modal) melodies.

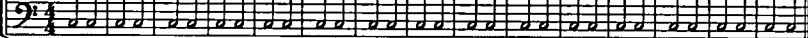
1. Natural minor

Sing: 

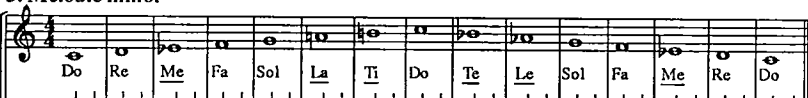
Play: 

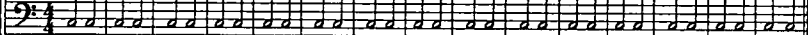
2. Harmonic minor

Sing: 

Play: 

3. Melodic minor

Sing: 

Play: 

SOLFEGE DRILLS

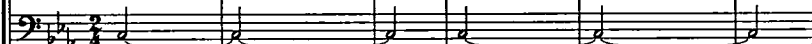
Figure 4.

(Melodic) Minor Scale Drills

Purpose: Drills 1–3: To prepare students to sing melodies in minor keys, using conjunct motion. Drills 4–8: To acquire agility in using solfège in minor keys.

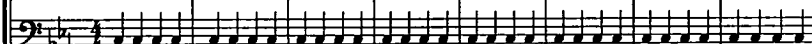
1. Basic scale

Play: 

Sing: 

2. Slow scale

Play: 

Sing: 

3. Fast scale



4. Intervals



5. Thirds



6. Broken thirds



7. Fourths



8. Broken fourths



Figure 5.

Tonic Triad Drills in Minor (i)

Purpose: To prepare students to sing melodies in minor keys with leaps within the tonic triad.

Root position (A minor)

1. Arpeggiated triad



2. Small leaps



3. Intervals



4. Large leaps



1st inversion (F minor)

5. Arpeggiated triad



6. Small leaps



7. Intervals



8. Large leaps



2nd inversion (D minor)

9. Arpeggiated triad



10. Small leaps



11. Intervals



12. Large leaps



SOLFEGE DRILLS

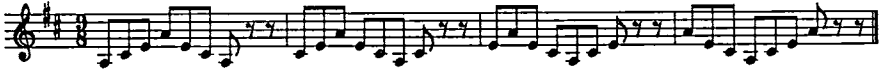
Figure 6.

Dominant Triad Drills (V)

Purpose: To prepare students to sing melodies with leaps within the dominant triad.

Root position (D major)

1. Arpeggiated triad



2. Small leaps



3. Intervals



4. Large leaps



1st inversion (Bb major)

5. Arpeggiated triad



6. Small leaps



7. Intervals

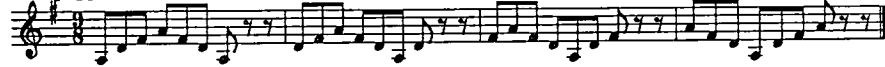


8. Large leaps



2nd inversion (G major)

9. Arpeggiated triad



10. Small leaps



11. Intervals



12. Large leaps



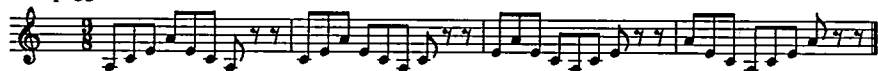
Figure 7.

Other Triad Drills

Purpose: To prepare students to sing melodies with leaps within other triads.

Root position ()

- ### 1. Arpeggiated triad



- ## 2. Small leaps



- ### 3. Intervals



- #### 4. Large leaps



1st inversion ()

- ### 5. Arpeggiated triad



- ## 6. Small leaps



- ## 7. Intervals



- ## 8. Large leaps



2nd inversion ()

- ### 9. Arpeggiated triad



- ## 10. Small leaps



- ## 11. Intervals



- ## 12. Large leaps



Instructions: To create a drill sheet for, e.g., “Subdominant Triad Drills in Major (IV),” use the following key signatures:

Root position: E major; 1st inversion: C major; 2nd inversion: A major.

SOLFEGE DRILLS

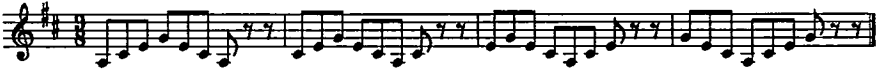
Figure 8.

Dominant Seventh Chord Drills (V7)

Purpose: To prepare students to sing melodies with leaps within the dominant seventh chord.

Root position (D major)

1. Arpeggiated triad



2. Small leaps



3. Intervals



4. Large leaps



1st inversion (Bb major)

5. Arpeggiated triad



6. Small leaps



7. Intervals



8. Large leaps



2nd inversion (G major)

9. Arpeggiated triad



10. Small leaps



11. Intervals



12. Large leaps



Figure 9.

Chromatic Solfège

Purpose: To prepare students to sing chromatic melodies.

1. Chromatic drill

Do Re Mi Fa So La Ti Do Do Do Do Re Do Di Re Re Mi Re Ri Mi Mi Fa Mi Fa Fa So Fa Fi So

So La So Si La La Ti La Li Ti Ti Do Ti Do Do Do Do Ti Do Ti Ti La Ti Te La

La So La Le So So Fa So Se Fa Fa Mi Fa Mi Mi Re Mi Me Re Re Do Re Ra Do Do

2. Chromatic scale

Do Di Re Ri Mi Fa Fi So Si La Li Ti Do Do Ti Te La Le So Se Fa Mi Me Re Ra Do

Modulation

Purpose: (1) To prepare students to sing melodies that modulate. (2) To practice changing solfège syllables at points of modulation.

Instructions: Sing a scale ascending or descending. Before beginning, choose a "pivot note," i.e., a note that will be sung as a syllable in one key and sung again as a syllable in a new key. Examples:

1. Sing a C major scale ascending. Turn La into Fa. The new key will be E major.

C: Do Re Mi Fa Sol La E: Fa Sol La Ti Do

2. Sing a D major scale descending. Turn Mi into La. The new key will be A major.

D: Do Ti La Sol Fa Mi A: La Sol Fa Mi Re Do

SOLFEGE DRILLS

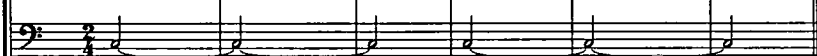
Figure 10.

Medieval Church Modes

Purpose: To prepare to students to sing melodies using medieval church modes.

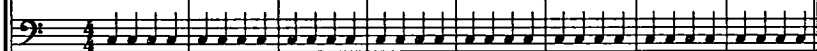
1. Basic scale

Sing: 

Play: 

2. Slow scale

Sing: 

Play: 

3. Fast scale



4. Intervals



5. Thirds



6. Broken thirds



7. Fourths



8. Broken fourths



Instructions: The drill sheet above may be adapted for use with authentic church modes—Dorian, Phrygian, Lydian, Mixolydian, Aeolian, Ionian (of course!) and, if desired, Locrian.

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VARIANTS

In a class setting, these drills can be performed in a variety of ways. While still teaching the specified melodic concept, each variant goes further: it trains intonation, rhythm, and sheer concentration. Following are a few useful variants:

Add a drone

With any drill: one student (or half the class, or all men, or all women, or all but one student) sing a drone on Do (or any other syllable) while the rest of the class sings the drill.

With a simple scale: student 1 sings a drone on Do. Student 2 sings Do-Re and holds Re until the professor cues that Re is in tune. Then student 2 stops singing and student 3 sings Re-Mi and holds Mi until the professor cues that Mi is in tune. And so on. (Figure 11.) This works best with fewer than ten students.

Figure 11.

The musical notation for Figure 11 is arranged in four staves, each labeled on the left: Student 1, Student 2, Student 3, and Student 4. The key signature has one sharp (F#) and the time signature is 2/4. Student 1's part is in the bass clef and consists of a continuous drone on the note D (Do). Student 2's part is in the treble clef and begins with a whole rest, followed by a half note D (Do) in the second measure, which is held over into the third measure. Student 3's part is in the treble clef and begins with a whole rest, followed by a half note E (Re) in the second measure, which is held over into the third measure. Student 4's part is in the treble clef and begins with a whole rest, followed by a half note F# (Mi) in the second measure, which is held over into the third measure. To the right of the staves, the text "etc." is written.

When all students have sung once, start again. This time, student 2 sings the drone, student 3 sings Do-Re and holds Re, etc.

With a simple scale, for an enlightening demonstration of good intonation and of difference tones:¹ choose two very competent singers, both women. One sings a drone, the other a simple scale. Both should sing very loudly. The difference tones indicated in Figure 12 will be heard most readily.

SOLFEGE DRILLS

Figure 12.

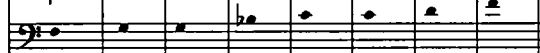
Singers: 

Diff. tone: 

This demonstration produces in-class enthusiasm bordering on hysteria. Cries of "I hear it" ripple across the classroom. If this demonstration works well, also try the demonstration shown in Figure 13.

Figure 13.

Singers: 

Diff. tone: 

Rhythm variations

Apply simple stock rhythms to each drill. For drills with duple division of the beat, use the two rhythm variants shown in Figure 14.

Figure 14.

6. Broken thirds (Major Scale Drills)

Original: 

Variant 1:  etc.

Variant 2: 

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For drills with triple division of the beat, practice the three variants shown in Figure 15.

Figure 15.

Root position (A major)
1. Arpeggiated triad (Major Scale Drills)

Original: 

Variant 1:  etc.

Variant 2: 

Variant 3: 

Within each grouping of two or three notes, the single long note (eighth or dotted eighth) is good for intonation and security. The one or two short note values (sixteenth) are for agility.

Canons

Some of the most successful variations are canons and other polyphonic treatments of drills. Perform the drills as canons as follows:

Number of parts: two up to as many students as are in the class.

Temporal distance between each entry: one measure, one beat, or, as an exercise in concentration, half a beat (Figure 16).

Figure 16.

1. Basic scale (Major Scale Drills)

Original: 

Variant: 

SOLFEGE DRILLS

Interval of imitation: the unison most often; other intervals if the students are able.

Other polyphonic variants

On several drill sheets, it is possible to combine two drills, using the same figure (Figure 17).

Figure 17.

2nd inversion (D major)
11. Intervals (Tonic Triad Drills in Major)

12. Large leaps

For a drill that includes an ascending and a descending portion, half the class starts at the beginning (the bottom of the scale) and half the class starts from the middle (Figure 18).

Figure 18.

6. Broken thirds (Major Scale Drills)

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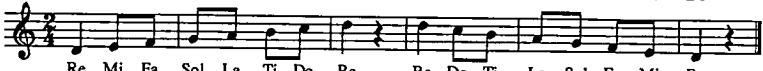
Variant for Scale Drills

Begin on a note other than the tonic (Figure 19).

Figure 19.

1. Basic scale (Major Scale Drills)

Original: 

Variant: 

Other variants

Sing all or part of a drill or variant silently: cue students when to sing out loud or to sing “in their heads.”

Sing any drill or variant with attention drawn to one or more of the following elements of music:

1. Dynamics: loud or soft; *cresc.* or *dim.* or a swell.
2. Tempo: slow or fast; *accel.* or *ritard.*
3. Articulation: *staccato* or *legato* or a gradual change between the two.

NOTES

¹A difference tone is, in a sense, an aural illusion. It occurs “as the result of a so-called nonlinear distortion of the acoustical signal in the ear” (Juan G. Roederer, *Introduction to the Physics and Psychophysics of Music*, 2nd ed. [New York: Springer-Verlag, 1979]: 34). When two pitches are heard together, the most clearly audible difference tone is the frequency representing the difference of the two frequencies sounding.

A REPORT ON THE 1992 CMS THEORY PEDAGOGY INSTITUTE

MICHAEL R. ROGERS

The Institute for Music Theory Pedagogy Studies III, sponsored by the College Music Society, was held at the University of Montana in Missoula from June 14-19, 1992. 65 participants attended the meetings including theory specialists; non-specialists who teach theory; college music teachers of other subjects; high school teachers; and graduate students. The Institute was planned and team taught by John Buccheri (Northwestern University), Gary Karpinski (University of Oregon), and Michael Rogers (University of Oklahoma). The special topic of focus was the teaching of aural skills.

Sessions on many different aspects of ear training and listening were presented including the goals of aural skills; melodic and harmonic dictation; sight-singing approaches; use of technology; and cognition and perception research. In addition, these traditional subjects were extended by devoting special attention to: a) the perception and understanding of rhythm and meter; b) those more elusive elements of aesthetic response (e.g., subtleties of musical expression and nuance in performance interpretation); and c) the discussion of both analytical and non-analytical listening.

The variety of formats included lecture presentations, small and large group discussion, and various audio and visual demonstrations. Discussion of philosophical frameworks was balanced by suggestions for practical application. Many questions were asked with animated discussion often spilling over into the breaks and meal times. The conference was permeated with an active interchange and sharing of concerns and teaching experiences by the participants as well as the faculty. A display table of various pedagogical materials and resources was provided as well as a notebook of handouts, bibliographies, and special practice materials and analyses.

One evening was set aside for members to make "show-and-tell" presentations of their own ideas and for group improvisatory activities. These sessions included a discussion led by Lathon Jernigan (University of Northern Iowa) on the special problems associated with teaching twentieth-century aural skills; a report on interval research conducted by John Hanson (SUNY/Binghamton); computer programs involving Hypercard

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routines developed by Tim Smith (Ball State University); and performances of improvised compositions directed by Sheldon Atovsky (Depaul University).

Gary Karpinski offered sessions on an unusually wide range of topics including a summary of the various kinds and categories of computer software available for ear-training practice (game formats, tutorials, drill and repetition, etc.) and the problems, limitations, and values of each. He especially favored directing students to computer-assisted practice as a supplement rather than as a substitute for the richer and more nuanced diagnosis available through human interaction in the classroom and in one-to-one remedial instruction. He argued that the best use is made of computer software when practice is provided on an individualized basis for a very specific problem (e.g., scale-degree function) rather than simply running everyone in a class routinely through the same series of exercises or course of study.

Karpinski also presented a summary of research in music cognition (see the concluding paragraph of this article for additional information about a related CMS institute in the summer of 1993) that would be relevant to teaching aural skills. A detailed bibliography was provided with a synopsis-style commentary highlighting especially practical studies in such areas of perception and thinking as short-term memory and chunking; extractive listening, interference, and forgetting; functional vs. intervallic listening; shadowing; inference of tonic; and the inadequacy of paper and pencil tests of cognition.

Karpinski's major presentations focussed on a detailed "nuts-and-bolts" methodology for teaching dictation. The core of his program applies a four-fold model for distinguishing at which stage a student may go "off the track" in translating a performed example into encoded music. A wrong answer could be the result of 1) problems in hearing (lack of concentration, for example, or actual neuro- or psycho-physiological impairment); 2) problems in remembering (materials were heard but cannot be recalled); 3) problems in conceptual understanding (the example was heard and memorized but cannot be positioned accurately, for instance, into the context of a tonality); or finally, 4) a pattern that is fully understood sometimes cannot be symbolized in actual musical notation (perhaps because of gaps in theoretical knowledge). The main work of the teacher, then, is to locate the true source(s) of student error through interactive diagnosis (best accomplished through individual tutorials or a testing environment that is carefully enough conceived to pinpoint mistakes in the pedagogical chain passing from *hearing* to *memory* to *understanding* to *notation*). Appropriate

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remediation activities can vary considerably depending on where in the chain a student experiences difficulty.

Actual diagnostic sessions from Karpinski's research were presented on audio tape for the Institute. These "question-and-answer" dialogues between teacher (i.e., Karpinski) and student were extremely impressive and convincing in their ability to reveal the particularity of individual impediments on a case-by-case basis and were persuasive testimony to the efficacy of Karpinski's model—and to the power of the "Aha" principle as a pedagogical tool. Time and again the proverbial "flash of insight" in the student's mind was demonstrated as the student was lead to discover the reason for a given mistake and, more importantly, by inference the implications for future practice so as to eventually eliminate the problem(s) from one's response repertoire of faulty habits. Such a finely tuned "cause-and-effect" approach to teaching could profitably be applied to other areas of theory pedagogy besides dictation or could even be proffered as a paradigm for teaching any subject. [For additional information see the article by Karpinski in this journal, "A Model for Music Perception and Its Implication in Melodic Dictation," 4/2 (Fall 1990): 191-229.]

Additional notions raised by Karpinski included the idea that the most foundational starting point for teaching tonal hearing should be the ability to infer tonic from a set of patterned pitches and durations rather than the more conventional view that posits aural knowledge of the discrete interval as the appropriate point of pedagogical departure. [The relative value of isolated interval study vs. interval approaches involving scale-degree function emerged several times during the conference as a controversial topic. No definitive answer to this issue seems possible until a more clear description of what practicing (and hearing) intervals in isolation really means. Does this involve some kind of abstract listening to raw distance or quality outside of any tonal context or does it mean that single intervals (melodic or harmonic) could be practised by themselves through supplying imagined contexts—differing tonal grids or frameworks or scaffoldings—and noting the differing psychological and musical effects (e.g., tension provocation vs. stability) that result from placing the same acoustical event (as measured in frequency ratios) into a variety of environments?] Regarding harmonic dictation, Karpinski also spoke about studies indicating that expertise at recognizing the quality of individual chords does not necessarily lead to success in hearing chords within a tonal progression; the two, evidently, are different skills.

John Buccheri shared with the Institute his considerable involvement with teaching students how to experience rhythm and meter more musically. These sessions were especially appreciated since they served as an

effective antidote to the preoccupation with pitch that so many of us operate under when teaching aural skills. His wonderful collection of quotes was shared as well, including everyone's favorite by Messiaen, "There was no time. Then God hit the gong and there was a *before* and *after*. Then he hit the gong again and there was duration."

In a presentation, "Meter Builds Character," a case in favor of the powerful role that meter contributes to musical expression was advanced. Factors such as tempo, motives, harmony, and accent and pattern (i.e., regularly recurring changes in any dimension of music—instrumentation, dynamics, density, registration, speech sounds, etc.) were all discussed as contributors that affect metric structure. Detailed analytical routines including lists of appropriate questions to ask of pieces about rhythm and meter were provided as well as specific applications to actual listening experiences with real compositions.

A fascinating analysis of the 4th movement of Mozart's Symphony #39 was given involving a detailed discussion of the connection between phrase structure and hypermeter. The possibility of multiple interpretations of given passages was of special interest—not just the possibility of different understandings in an intellectual way (although this was present, too), but the possibility of how different listenings can arise from the analytic process itself. Perhaps, in fact, what made the analysis memorable was a demonstration of how one's processing filters can be adjusted or calibrated to color the listening experience—i.e., it is the *interaction* and *relationship* of "thinking about" and "hearing in a particular way" that is significant in teaching this topic. These adjustments can be allowed to emerge on their own or can be experimented with at will to consciously select how one chooses to hear—and often including options of aural paradox or illusion. Some contrived pedagogical counterpoint exercises were performed also to demonstrate (on a scale less sophisticated than in Mozart) how tiny details of adding or subtracting a measure (to create or eliminate elisions, for example) can drastically influence one's perception of phrase structure and continuity.

The slow movement from Mozart's Prague Symphony was used to demonstrate how body movement exercises might be used in a class to sensitize one's awareness to the multifarious counterbalances and paired oppositions found in this composition (e.g., melodic imitations; directional changes; strings vs. woodwinds; antecedent vs. consequent; sectional lengths; registral pairings; dynamic contrasts; etc.). Not only the occurrences of such events were identified, but their timing and pacing as well. Throughout Buccheri's presentations, the focus was relentlessly on soaking in the musical richness and purposeful ambiguities of his examples with the result that, in this approach, students could not help but be led to a deepened

appreciation for the intricate interplay of both local and global durational factors in any conceivable kind of music. Whether or not starting with technical discussion, the emphasis always ended up being about musical expression and possibilities for listener response.

With regard to temporal matters, the importance of carefully considered terminology and clear definitions was demonstrated over and over again. The murky problem of trying to distinguish meaningfully between simple and compound meter was used as an example of the pitfalls associated with even the most basic vocabulary for rhythm.

Buccheri also dealt with other pedagogical topics such as how to ask provoking questions, "learning by discovery" through techniques for stimulating classroom discussion, and leading students to explore their own thought processes. And finally, the idea of analytical listening as learning was addressed. An especially innovative term coined by Buccheri was introduced to represent the ear-training equivalent of "imaging" for visual analysis. Buccheri argued that if the conventional term "imaging" (for the eye-training aspects of analysis) involves producing mental pictures of theoretical constructs, then his special term "audaging" can be defined as the internal hearing of theoretical constructs. None of the more standard terms (like "audiation" or just "internal hearing") seems to quite capture the combination of imaging, singing, and mental rehearsal that his own term implies.

Michael Rogers discussed approaches to sight-singing. Among a list of tips for how to practice (e.g., brief but frequent sessions; working with a "buddy"; use of cassette recorder; silent singing; etc.), Rogers recommended the desirability of some kind of "organized routine" for examining and performing a melody at testing time (presumably the student would be rehearsing with this same routine as part of her practice sessions as well)—a routine that eventually becomes ingrained and automatic through repetition and habit. Many versions are possible but the particular system presented was a six-step adaptation by Rogers of a plan favored and originally designed by Gary Potter (Indiana University): 1) analyzing the given tune—key/scale, meter/tempo, phrases/cadences, recurring motives, key defining vs. decorative pitches, high/low points, tonality frame (relative positioning of tonic/dominant), harmonic implications, contour (skips vs. steps), sequences, archetypical patterns, long-range step progressions, etc.; 2) orienting to the key (tonal grounding for the mind's ear and for the physical production of sound) through vocal warm-ups using arpeggios of the tonic triad, a scale, or some simple outline of a cadence pattern; 3) "silentsinging" (in the real key) of the melody, noting trouble spots; 4) finally, only after all the preceding steps, singing the tune aloud (the "first

reading"); 5) mentally evaluating (further "figuring out of the solution"; comparing the sung version with the imagined correct version: the "second analysis"); and 6) singing a corrected version (the "second reading").

Also discussed were summaries and comparisons of five different pedagogical methods for designing a sightsinging program. In actual practice, of course, many teachers incorporate aspects of several approaches. The five methods identified were: 1) intervallic (e.g., as found in Samuel Adler, *Sight Singing*, Norton, 1979); 2) harmonic (e.g., Robert Ottman, *Music for Sight Singing*, Prentice-Hall, 1986); 3) structural reductions (e.g., Leland Bland, *Sight Singing Through Melodic Analysis*, Nelson-Hall, 1984); 4) Solfege systems (e.g., Micheal Houlahan and Philip Tacka, *Sound Thinking*, Boosey & Hawkes, 1990); and 5) scale-degree function (e.g., George Wedge, *Ear Training and Sight Singing*, Schirmer, 1921).

Regarding solfege systems, the various "pros and cons" of fixed vs. moveable approaches were discussed as well as the more controversial "pros and cons" of do-based minor vs. la-based minor within the moveable systems [for an extremely interesting, detailed—even exhaustive—and heated exchange of viewpoints on this topic see the "Reader's Response/ Author's Reply" section of this issue of this journal]. Regarding scale-degree function methodology, Rogers discussed in some detail the "Jersild Method," a Scandinavian approach, not well-known in this country, developed at the Royal Conservatory in Copenhagen by the Danish composer, Jorgen Jersild [see his *Ear Training*, Wilhelm Hansen, 1966]. This method uses an intricate, yet highly efficient, series of exercises to enculturate the performer into the tugs and pulls of various tendency-tone patterns.

In a series of lectures, "Beyond the Right Notes," Rogers discussed various ways to practice aural skills that pick up where hearing the correct pitch and rhythm leave off [see George Pratt, *Aural Awareness*, Open University Press, 1990 for a text on this topic]. These were presented as supplements to more conventional dictation practice, not as substitutes, and included such things as pitch bendings; timing adjustments; balance; articulation; dynamics; timbre; and the subtle shadings of phrasing as represented in side-by-side comparisons of different interpretations. All of these topics were illustrated with a wide variety of recorded examples.

Rogers also presented his concept of "Just Listening," a purposeful play on words with the double meaning of "only or merely" listening and/or "authentic or genuine or real" listening—listening that is free from the sort of label-pasting (naming of events) so commonly found in the music theory classroom. His focus was on the value of the non-analytical listening found more often in the concert hall done purely for the pleasure of contact with music's expressive core—its mystical or spiritual component, if you will. The problem for theory teaching is how to establish the proper

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relationship between these two modes of perception. An important question is "Does the analytical approach 'inform' or 'contaminate' our hearing of music or do the two approaches simply serve different pedagogical purposes at different points in one's training?" Recorded examples included some particularly haunting interpretations of Bach fugues from the "Art of the Fugue" as performed on the piano by Glenn Gould at a live recital in Moscow on May 12, 1957 (compact disc: Le Chant du Monde, LDC 278 799)—pieces that are often not listened to as "just music" in the theory classroom but rather as repositories of compositional devices and contrapuntal procedures.

The smooth support of the College Music Society, the hospitality of the University of Montana School of Music, and the beautiful Northwest setting were appreciated by all (after a few initial days of drizzle and grayness). A spectacular bus tour of the surrounding mountain and lake areas was made available to participants at the end of the week as an option. More importantly, the overall pedagogical value and stimulation provided by such an institute is not possible to measure by any tangible yardstick, yet for most of those in attendance something real, I think, took place. Something synergistic happens when a bunch of music theory teachers gather to argue, share, compare, and synthesize their belief systems. After all the events are described, after all the statistical tabulations are listed, Gary Karpinski's final statement best summarizes the feelings of the group: "And it was a lot of fun."

Next summer (June 20-25, 1993) a related institute in Music Cognition will be offered—again in Montana. All of those interested can receive details by writing to or calling the College Music Society at 202 West Spruce St; Missoula, MT 59802 (406-721-9616).

CANTUS FIRMI FOR SPECIES COUNTERPOINT: CATALOG AND CHARACTERISTICS

JOHN HANSON

INTRODUCTION

In counterpoint texts (and perhaps courses) based on the species approach, the cantus firmus itself often appears as a magical fixed force to which further melodic strands are to be added. Seldom is the cantus the subject of discussion; at best it may be linked with aspects of melodic motion that are classified as typical of the counterpoint line(s). (And there is a wide diversity of opinion about what is or is not appropriate for each particular species, especially second through fifth.) While an author occasionally encourages a student to write some cantus firmi, generally there is little said about specific characteristics and, while some cantus firmi may be given as model examples, there is seldom a collection of several to serve as models.

Therefore this paper has two objectives. The first is to provide a catalog of 191 cantus firmi (appropriate for species counterpoint), found in eight selected counterpoint books, to give an overview of possibilities from diverse sources. Each of the cantus firmi was numerically encoded and assigned a catalog entry number. The catalog (Table 1) and further explanations appear later. The catalog presents an interesting perspective on cantus firmus melodic practice; in addition, documentation of those tunes that appear in more than one book is included. Further, the catalog provides a reference to which other cantus firmi (from texts, or those composed by teachers or students) may be compared, or from which examples may be selected.

The second objective is to compare characteristics of the catalogued cantus firmi with the principles governing the writing of cantus firmi encountered in the text by Salzer and Schachter—a source book that does indeed contain a thorough presentation of preferred attributes. Thus the list of principles taken from their text is provided and each principle is given an identifying letter label (Table 2).

Cross references between the cantus firmi in the catalog and exceptions to the stated principles also are provided. Comments regarding details of the various characteristics and comparisons between the essen-

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tially *a priori* principles in Salzer and Schachter and the *a posteriori* observation of data from the catalogued cantus firmi follow Table 2. As simple as cantus firmi sometime appear, delineating their attributes proves to be a provocative challenge. The comparison of the cantus firmi to the Salzer/Schachter principles supplies a basis for this problem, and leads to suggestions for possible modifications to or clarifications of some of the principles.

SOURCES

The eight books from which the cantus firmi are taken represent broad historical, philosophical, and pedagogical spectra. They are all predicated on the species approach. While not meant to be exhaustive, the choices reflect reasonably likely sources for teachers seeking examples. In chronological order, the works are those by Fux (1943, original 1725), Albrechtsberger (1955, original 1790), Cherubini (190-?, original 1835), Schenker (1910), Jeppesen (1939), Roberts and Fischer (1967), Davis and Lybbert (1969), and Salzer and Schachter (1969). Abbreviated references employed in the catalog, with numbers of cantus firmi from each, are Fux (8), Alb (3), Che (37), Sch (5), Jep (20), R/F (106), D/L (10), S/S (23).

QUALIFICATIONS FOR CANTUS FIRMI

The cantus firmi chosen for the catalog are those dealing with species counterpoint. Further requirements for inclusion are that the tunes either 1) exemplify complete, valid cantus firmi; 2) serve as possibilities for employment, by a student, in species exercises; or 3) serve as the cantus in models of completed species exercises. To stay within a practical pedagogical length, I decided to exclude tunes having more than 21 notes; this eliminated 15 of the tunes listed in the Cherubini appendix of subjects.

INFORMATION IN THE CATALOG

The catalog (Table 1) is presented in a typical two-dimensional format of rows and columns. Each row contains information about one cantus. The information appears in the respective columns, left-to-right, and includes:

Entry Number. The tunes are encoded numerically, ordered (explanation of procedure follows), and numbered (#1-191; when tunes are referred to in this article the numbers are preceded with the # sign). If a tune appears in two (or more) of the selected sources, it is credited to the author of the

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earlier-published work. Its appearance in a later book is acknowledged by listing that source also, but it is not given another entry number and it is not re-written in the encoded version. For example, see catalog entry #21. The original source (Schenker) is indicated, and since the tune is also in another book (Salzer and Schachter), this is acknowledged on the next line. If a citation appears in the later-published book, it is indicated—otherwise “No Source Cited” is printed in the catalog.

If a tune appears in two (or more) sources but the later source includes either a modal or chromatic variant, the entry number of the original is followed by a lower-case a and the variant is labeled b. For example see #12a, a Lydian tune (by Fux) that is followed by b since, in this case, it appears in three other sources with modal variation from an Ionian signature. For an example followed by a chromatic variant see #43a and b, noting that the encoded tune is written out for both.

Author. A designation appears in each row of the catalog, using the aforementioned abbreviated references.

Use. Entries in this column present information on the context in which each cantus appears in its source book. The letter “C” indicates that the cantus appears alone (without an accompanying counterpoint) as a complete, appropriate cantus or that it is for a student to employ in species exercises. “X” indicates that it serves as the cantus of a completed species exercise and “Xs” signify that it appears as the cantus of two or more such exercises.

Mode. The assignment of mode is based on the relationship between the author’s given key signature and the tonic, or final. Abbreviations employed for Dorian, Phrygian, Lydian, Mixolydian, Aeolian, and Ionian are DR, PH, LY, MX, AO, and IO.

Cantus. (Encoding and Ordering). To facilitate ordering and comparison, scale-degree numbers, using Arabic numerals, are used to display each cantus in the catalog. The tonal center is assigned 1. (In this article, scale degrees will be underlined digits.) If a tonic appears in both a lower and higher register, the lower octave is 1 and the higher is 8. Pitches in the register below the assigned 1 are preceded with a minus sign; thus, assuming C is tonic, the succession C4 D4 E4 C4 A3 B3 C4 is encoded 1 2 3 1 -6 -7 1. The lowest note found in relation to a 1 is a -2; the highest is 10. When accidentals are found within cantus firmi they also precede the numerical scale degree in the encoded version (but do not influence the designation of mode). Indication of the specific tonal centers or octave registers is not included in the catalog.

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The determination of the placement order of each cantus firmus (and thus the resulting catalog entry number) is based on a set of priorities for each note in a cantus, taken one at a time, left to right:

1. Scale degree 1 has precedence over any other.
2. A note higher than 1 has precedence over a note lower than 1.
3. A degree number closer to 1 has precedence over one farther from 1. Application of these priorities results in the following ordering, for example, of initial three-note segments: 1 2 3 precedes 1 2 4, which precedes 1 -7 1, which precedes 1 -6 1, which precedes 5 3 4.

Further considerations:

4. In appearances of a tune in two or more sources, the listing order is chronological, by date of publication, from earlier to later. As mentioned in the Mode category, lower-case letters follow the catalog entry number when a tune is duplicated but the mode is changed.
5. Chromatic variants are disregarded except where a complete tune is duplicated; then the unaltered form appears before the altered, unless priority 4 supersedes.
6. Modal variants, by one author, of a single tune appear in the order Dorian, Phrygian, Lydian, Mixolydian, Aeolian, Ionian.

Exceptions. For any exceptions to one or more of the Salzer and Schachter principles (as listed in Table 2), the letter label of the respective principle appears in the right-most column of the catalog (labeled Exceptions). If there is more than one exception to a principle within a tune, the number of exceptions precedes the letter label. For an example see catalog #12 where "2M" indicates that there are two places in the cantus where an exception to principle M (avoid two consecutive leaps in the same direction) occurs.

Table 1 (the catalog) appears next. It is followed by Table 2, in which the principles from Salzer and Schachter are listed and labeled. Table 2 also includes cross references from Table 1 since information about cantus firmi is provided when exceptions to any principle are noted.

TABLE 1.
Catalog of Cantus Firmi

Entry Number	Author	Use	Mode	Cantus																				Exceptions	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		21
1	R/F	X	IO	1	2	1	3	2	5	4	3	1	2	1											I, M, N, V
2	R/F	C	PH	1	2	1	3	2	6	4	1	3	2	1											M
3	R/F	X	PH	1	2	1	3	6	5	4	3	1	2	1											H, I, M, N, W
4	Che	C	IO	1	2	1	4	3	6	5	3	4	2	6	4	2	3	2	1						W
5	Che	C	IO	1	2	1	4	3	6	5	4	3	4	3	2	1									L
6	R/F	C	IO	1	2	1	4	5	3	4	3	2	1												I
7	Jep	C	DR	1	2	1	5	4	3	2	1														
8	R/F	C	PH	1	2	1	8	7	5	6	4	3	2	1											M, N
9	Che	C	IO	1	2	1	-6	1	4	3	2	1													I, M, N, W
10	Che	C	IO	1	2	1	-6	1	4	3	6	5	2	3	2	1									H, L, V
11	R/F	X	DR	1	2	3	1	-7	-5	1	2	3	2	1											I, 2M, N, P, Q, R, U
12a	Fux	Xs	LY	1	2	3	1	-6	-7	1	5	3	1	2	1										
12b	Che	C	IO	No source cited																					
	Sch	C, Xs		Fux cited																					
	S/S	C		Fux cited																					
13	R/F	C	PH	1	2	3	1	-6	-7	1	-7	3	2	1											H, M
14	R/F	C	PH	1	2	3	1	-6	-7	2	4	3	1	2	1										I, 2M
15	R/F	X	PH	1	2	3	1	-6	-7	-5	1	2	-7	3	2	1									H, I, L, M
16	R/F	X	LY	1	2	3	1	-6	-5	1	2	1													L
17	Che	C, Xs	IO	1	2	3	4	2	3	1	-7	2	-7	1	2	3	4	2	3	2	1				C, H, I, R, U, V
18	R/F	C	DR	1	2	3	4	2	3	4	5	3	2	1											W
19	R/F	X	PH	1	2	3	4	2	b5	3	4	2	1												N, V
20	R/F	X	PH	1	2	3	4	2	-6	6	2	4	3	2	1										I, M, N, U
21	Sch	C	IO	1	2	3	4	5	2	4	3	2	1												
	S/S	C		No source cited																					
22	S/S	Xs	IO	1	2	3	4	5	3	4	2	1													
23	Che	C	IO	1	2	3	4	5	6	2	5	3	6	5	4	3	2	1							H, N, 20

TABLE 1. continued

Entry Number	Author	Use	Mode	Cantus																					Exceptions
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
24	R/F	C	IO	1	2	3	4	5	6	4	2	3	2	1										M, O	
25	D/L	C, Xs	AO	1	2	3	4	5	6	5	3	2	1											I, J, O	
26	R/F	X	DR	1	2	3	4	-7	1	-4	-5	1	2	1										L	
27	D/L	C, Xs	IO	1	2	3	5	6	4	3	2	1												J	
28	R/F	X	AO	1	2	3	5	6	4	5	3	2	1												
29	Che	C	AO	1	2	3	6	4	5	4	3	2	1												
	R/F	X		No source cited																					
	S/S	X		No source cited																					
30	S/S	C, Xs	IO	1	2	3	6	5	1	2	4	3	2	1										P	
31	R/F	X	PH	1	2	3	6	5	3	4	2	1													
32	S/S	C	AO	1	2	3	-3	-4	-6	-5	2	1	-7	1											
33	Sch	C, Xs	IO	1	2	4	3	4	5	6	5	3	2	1											
	S/S			Schenker cited in 7 of 9 instances																					
34	Sch	C, Xs	AO	1	2	4	3	4	8	7	6	5	4	6	5	3	2	1						P	
35	Fux	Xs	IO	1	2	4	3	5	4	3	2	1													
	Che	C		No source cited																					
36	S/S	X	IO	1	2	4	3	6	4	3	2	1													
37	S/S	C	AO	1	2	4	3	6	5	4	1	3	2	1											
38	S/S	C, Xs	AO	1	2	4	3	6	5	4	2	3	2	1											
39	R/F	C	IO	1	2	4	3	6	5	4	3	2	1											O	
40	Che	C	IO	1	2	4	3	6	5	4	3	2	5	4	3	6	4	5	4	3	2	1		C, H, I, V	
41	R/F	X	LY	1	2	4	6	5	3	2	1													J, M	
42	Alb	C, Xs	IO	1	2	5	3	1	8	6	7	3	6	4	5	1	2	1						I, K, M, 2N	
	Sch	C		Albrechtsberger cited																					
43a	Jep	C, Xs	AO	1	2	-7	1	2	1	4	3	2	1												
43b	R/F	Xs	AO	1	2	-7	1	b2	1	4	3	2	1	No source cited											
44	Che	C	IO	1	2	-5	1	2	3	-6	-5	-7	-6	2	3	2	1							H, I, 3L	
45a	Fux	C, Xs	DR	1	3	2	1	4	3	5	4	3	2	1											
	Jep	C, Xs		Fux cited																					
	R/F	C, Xs		No source cited																					

TABLE 1. continued

Entry Number	Author	Use	Mode	Cantus																	Exceptions			
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		18	19	20
45b	Che	C	AO	No source cited																				
	Sch	Xs		Fux cited in 11 of 12 instances																				
	S/S	C, Xs		Fux cited in 4 of 12 instances																				
45c	R/F	X	PH	No source cited																				
45d	R/F	C	MX	No source cited																				
46	Che	C	AO	1	3	2	1	4	3	6	4	2	3	1	4	3	4	3	2	1			C, I, M, N, R, U, V	
47	R/F	C	AO	1	3	2	1	5	3	4	3	2	1											
48	R/F	X	AO	1	3	2	1	5	4	3	6	3	2	1									L	
49	Sch	C, X	AO	1	3	2	1	5	#6	7	4	3	2	5	4	3	2	1					2L, Q, R, V	
50	S/S	C	AO	1	3	2	3	4	5	3	2	1												
51	Jep	C	IO	1	3	2	3	4	5	6	2	3	2	1										
52	Fux	X	AO	1	3	2	3	5	6	5	4	3	2	1									O	
	R/F	C		No source cited																				
53	D/L	C, Xs	AO	1	3	2	4	3	1	5	4	3	2	1									W	
54	Che	C	IO	1	3	2	4	3	1	-6	1	-7	-5	-6	-7	1	2	3	2	1			C, I, M, N, O, W	
55	Fux	Xs	AO	1	3	2	4	3	5	6	5	4	3	2	1								O, W	
	Che	C		No source cited																				
	Sch	C		Fux cited																				
56	R/F	C	AO	1	3	2	4	3	6	5	4	3	2	1									O, W	
57	R/F	X	IO	1	3	2	5	3	4	3	2	1	-6	2	1								I, Z	
58	R/F	X	LY	1	3	2	5	3	6	4	5	3	2	1									I, N, W	
59	Che	C, Xs	IO	1	3	2	5	3	6	5	4	3	6	4	2	1							H, I, M, 2N	
	Sch	C, Xs		Cherubini cited																				
60	R/F	X	MX	1	3	2	5	6	4	5	3	2	1										L	
61	D/L	C, Xs	IO	1	3	2	5	6	5	3	4	2	1										L	
62	S/S	C, X	IO	1	3	2	6	5	3	4	3	2	1											
63	S/S	X	IO	1	3	2	6	5	4	3	5	4	2	1										
64	R/F	X	PH	1	3	2	-7	1	4	5	3	2	1										L	
65	R/F	C	PH	1	3	4	2	1	-6	-4	4	2	1										H, I, M, N, O	
66	S/S	Xs	AO	1	3	4	2	3	6	4	5	3	2	1	Roth cited								I	

TABLE 1. continued

Entry Number	Author	Use	Mode	Cantus																				Exceptions		
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		21	
67	R/F	X	LY	1	3	b4	2	-7	1	3	2	1													M, R	
68	R/F	X	LY	1	3	b4	3	2	5	6	b4	3	2	1											L, V	
69	R/F	X	DR	1	3	4	3	2	-5	-7	1	4	3	2	1										H, P, 2Q, 2R, V	
70	R/F	C	JO	1	3	4	3	5	-5	1	2	1													L, N	
71	R/F	C	AO	1	3	4	3	6	5	3	4	3	2	1											U, V	
72	R/F	C	PH	1	3	4	3	6	5	4	3	2	1												O	
73	R/F	X	JO	1	3	4	5	3	6	5	3	4	2	1											I	
74a	Fux	Xs	JO	1	3	4	5	3	6	5	3	4	3	2	1										U	
	Che	C		No source cited																						
	Sch	C, Xs		Fux cited																						
	Jep	C, Xs		Fux cited (misprint in Jep. on p. 107; footnote 1: "Cantus firmi numbers 1, 6, and 20" should read "1, 6, and 19.")																						
	S/S	C, Xs		Fux cited in 1 of 3 instances																						
74b	R/F	C	DR	1	3	4	5	3	b6	5	3	4	3	2	1	No source cited										
75	R/F	C	JO	1	3	4	5	3	6	5	4	3	2	1											O	
76a	Jep	C, Xs	DR	1	3	4	5	4	3	2	1														I, J	
	R/F	Xs		No source cited																						
76b	R/F	X	AO	No source cited																						
77	D/L	C, X	JO	1	3	4	5	6	5	3	4	2	1													
78	R/F	C	MX	1	3	4	6	5	7	6	4	3	2	1											Q, R	
79	R/F	C	DR	1	3	4	7	6	7	4	5	4	3	2	1										H, Q, R	
80	R/F	X	JO	1	3	5	3	6	5	3	4	3	2	1											I, M, N, U	
81	R/F	X	AO	1	3	6	5	2	4	3	2	1	(from Prout; no source cited)												M	
82	R/F	X	LY	1	3	6	5	3	2	3	b4	3	2	1											M, U	
83	R/F	Xs	DR	1	3	b6	5	4	1	3	2	1													M	
84	R/F	X	JO	1	3	6	5	4	3	2	1	(from Prout; no source cited)												J, M, O		
85	R/F	X	DR	1	4	2	3	1	5	4	3	2	1													
86	Che	C	AO	1	4	2	3	2	5	4	2	-7	1	2	3	2	1								I, M, U, V	
87a	S/S	Xs	AO	1	4	2	3	4	5	3	2	1														
87b	S/S	X	JO																							
88	R/F	Xs	MX	1	4	2	5	3	4	3	2	1	-6	2	1										I, N, W, Z	

TABLE 1. continued

Entry Number	Author	Use	Mode	Cantus																				Exceptions	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		21
89	Che	C, Xs	IO	1	4	2	5	3	6	5	#4	5	3	4	2	3	4	3	2	1				C, I, N, 2W	
	Sch	C, X		Cherubini cited																					
90	R/F	C	MX	1	4	2	5	-5	-6	1	2	3	2	1										I, N	
91	R/F	C	DR	1	4	3	1	2	3	4	5	3	2	1											
92a	Fux	Xs	MX	1	4	3	1	4	6	5	8	6	4	5	3	2	1							I, L, 2M, 2N	
92b	Che	C	IO	No source cited																					
	Sch	C, X		Fux cited																					
93	R/F	C	DR	1	4	3	2	1	5	b6	5	4	1	3	2	1								L	
94	S/S	C	AO	1	4	3	2	1	-7	3	2	1													
95a	R/F	X	MX	1	4	3	2	3	4	6	5	1	3	2	1									P	
95b	R/F	X	AO																						
96	Sch	C	IO	1	4	3	2	3	6	5	7	8	6	3	5	4	3	2	1					I, M, N, V	
97a	R/F	X	PH	1	4	3	2	3	-6	2	1													Z	
97b	R/F	X	MX																						
98	R/F	C	MX	1	4	3	2	4	5	6	5	3	2	1											
99a	R/F	X	MX	1	4	3	2	5	3	4	5	6	3	2	1									L	
99b	R/F	X	PH	1	4	3	2	b5	3	4	5	6	3	2	1										
100	R/F	X	MX	1	4	3	2	5	4	2	3	1	2	1										W	
101	Alb	Xs	AO	1	4	3	2	5	4	2	3	1	5	4	3	1	2	1						H, I	
	Sch	C, Xs		Albrechtsberger cited																					
102	R/F	X	MX	1	4	3	4	6	5	1	3	2	1											P	
103	R/F	C	PH	1	4	3	4	6	5	7	6	4	3	2	1									Q, R	
104	R/F	C	MX	1	4	3	4	6	5	8	6	4	3	2	1									M, N, Q	
105	Che	C	IO	1	4	3	5	1	-7	-6	2	3	2	-7	1	-6	-7	-5	-6	2	1	3	2	1	C, I, 2L, Q, R
106	Che	C	IO	1	4	3	5	6	5	#4	5	3	4	2	-7	1	-6	2	3	4	2	1		C, I, L, M, R, V	
107	Che	C	IO	1	4	3	6	5	2	-7	3	-6	-7	1	4	3	2	1						I, L, M, N, Q, R, V, W	
108	S/S	C, Xs	IO	1	4	3	6	5	3	4	3	2	1											W	
109	Che	C	AO	1	4	3	6	5	8	7	6	5	6	4	3	2	5	3	2	1				C, I, W	
110	Che	C, Xs	IO	1	4	3	-6	2	3	4	3	1	5	#4	6	5	5	3	4	2	1			C, I, L, P, T	
111	Che	C	IO	1	4	5	1	2	5	6	2	3	6	7	8	9	8							I, 3L, Q, W, X	

TABLE 1. continued

Entry Number	Author	Use	Mode	Cantus																				Exceptions	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		21
112	R/F	C	IO	1	4	5	1	4	3	2	-7	3	2	1											I, L, R
113	Che	C	AO	1	4	5	3	1	2	3	6	4	5	4	3	2	1								I, L, M
114	Che	C	AO	1	4	5	3	1	2	3	6	4	5	4	#3	4	7	6	5	6	4	3	2	1	C, I, L, R
115	R/F	C	IO	1	4	5	3	5	4	3	2	1													H, L
116	D/L	C, X	AO	1	4	5	3	6	4	5	3	2	1												I, L, N, V
117	R/F	X	IO	1	4	5	6	4	2	3	4	2	1												L, M
118	R/F	X	IO	1	4	5	6	b7	5	8	10	9	8												2L, M, N, Q, R, X
119	R/F	X	LY	1	5	2	3	6	5	3	4	2	3	2	1										I, W
120	Jep	C, Xs	AO	1	5	2	4	3	2	1															C, N
121	R/F	X	AO	1	5	3	1	2	3	4	3	2	1												M, N
122	D/L	C, Xs	AO	1	5	3	4	2	-7	1	3	2	1												I, M
123	Jep	C, Xs	MX	1	5	3	6	5	4	3	2	1													N, O
	R/F	Xs		No source cited																					
124	R/F	X	DR	1	5	4	2	3	1	-7	4	2	1												I, T
125a	Jep	C, Xs	MX	1	5	4	2	3	4	3	2	1													
	R/F	Xs		No source cited																					
	S/S	C		Jeppesen cited																					
125b	R/F	X	LY	1	5	4	2	3	b4	3	2	1	No source cited												
125c	R/F	Xs	LY	1	5	b4	2	3	b4	3	2	1	No source cited												
125d	S/S	Xs	AO	1	5	4	2	3	4	3	2	1	No source cited												
126	R/F	C	DR	1	5	4	3	1	2	1	-7	3	2	1											
127a	Jep	C, Xs	DR	1	5	4	3	2	1	3	2	1													
	R/F	X		No source cited																					
	S/S	Xs		No source cited																					
127b	S/S	Xs	AO	Jeppesen cited in 1 of 11 instances																					
128	R/F	C	DR	1	5	4	3	2	-7	1	2	-6	-7	1	3	2	1								R
129	R/F	C	DR	1	5	4	5	7	6	7	5	3	2	1											H, M, Q, R
130	S/S	C, Xs	AO	1	5	4	6	5	3	4	3	2	1												
131	R/F	C	PH	1	5	6	4	5	3	4	3	2	1												L, W
132a	Jep	C	DR	1	5	b6	5	4	1	3	2	1													L

TABLE 1. continued

Entry Number	Author	Use	Mode	Cantus																			Exceptions																		
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20	21																
	R/F	X		No source cited																																					
132b	R/F	X	MX	1	5	6	5	4	1	3	2	1	No source cited																												
133	R/F	C	PH	1	5	6	5	4	3	2	4	3	2	1											L, V																
134a	Jep	C, Xs	IO	1	5	-5	-6	-7	1	2	3	4	3	2	1	(Mistake in footnote attributes this to Fux; see #74a, Jep.)										O, R															
	R/F	X		No source cited																																					
134b	R/F	X	LY	1	5	-5	-6	-7	1	2	3	b4	3	2	1	No source cited																									
135	Jep	C, Xs	AO	1	6	5	3	4	3	2	1																														
	R/F	X		No source cited																																					
136	R/F	C	LY	1	8	7	5	6	b4	3	2	1																													
137	R/F	C	AO	1	8	7	5	6	5	3	2	1																													
138	Jep	C, Xs	AO	1	8	7	5	6	5	4	3	2	1																								O				
	R/F	X		No source cited																																					
139	R/F	C	DR	1	8	7	6	7	3	4	5	2	4	3	2	1																									
140	Jep	C, Xs	PH	1	-7	1	2	3	4	-7	2	1																													
	R/F	Xs		No source cited																																					
141	R/F	X	DR	1	-7	1	4	2	5	6	4	2	1	(from Prout; no source cited)												I, L, M, N															
142	R/F	C	IO	1	-7	1	-6	-5	-4	-5	-6	-7	-6	3	2	1																									
143	Che	C	AO	1	-#7	1	-5	1	2	3	4	5	2	3	4	3									2	1								L, Q, V							
144	R/F	X	DR	1	-7	1	-4	-5	-6	-7	1	3	2	1												Q, R															
145	R/F	X	AO	1	-7	2	4	2	1	-6	3	2	1													I, M, N															
146	Jep	C	PH	1	-7	3	2	-6	-7	1	-4	1														Y(abc), Z															
147	R/F	C	DR	1	-7	3	4	5	7	5	4	3														2	1												J, L, 2Q, R		
148	Che	C	IO	1	-7	-6	1	2	1	-7	2	3	2	1	3	4	3	2	1								W														
149	S/S	C, Xs	PH	1	-7	-6	2	1	4	3	2	1															W														
150	Che	C	IO	1	-7	-6	-5	-4	-3	-2	-5	-6														-5	-3	-7	1	-6	3	2	1								C, 2L, O
151	D/L	C, Xs	AO	1	-7	-6	-5	-3	-4	-5	1	3	2	1												J, L, M, Q															
152	Alb	Xs	IO	1	-6	2	-7	1	-3	-4	-5	-6	-7	1												3	2	1													I, N, O, Q
	Sch	C, Xs		Albrechtsberger cited																																					
153	Jep	C, X	MX	1	-6	-7	1	2	1	4	3	2	1																												
	R/F	X		No source cited																																					

TABLE 1. continued

Entry Number	Author	Use	Mode	Cantus																					Exceptions					
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21						
154	S/S	C	MX	1	-6	-7	-6	-5	5	4	1	3	2	1	"flat given as 'optional'"															
155a	Fux	Xs	PH	1	-6	-7	-6	-4	4	3	1	2	1																	
	Jep	C, Xs		Fux cited in one of three places																										
	R/F	C, Xs		No source cited																										
	S/S	C		Fux cited																										
155b	Che	C	AO	No source cited																										
156a	R/F	X	PH	1	-6	-5	1	2	3	-7	1	-6	2	1											I, L, Z					
156b	R/F	X	LY																											
157	D/L	C, Xs	IO	1	-6	-5	1	2	3	-7	-6	2	1											2L, Z						
158	R/F	C	MX	1	-6	-5	-6	-7	-6	2	b3	2	1											L, R						
159	R/F	C	IO	1	-6	-5	-6	-7	-6	2	4	3	2	1											L, M					
160	Che	C	IO	1	-6	-4	-5	2	-7	-5	-6	-7	1	-6	-7	1	2	3	2	1						C, I, 2M, N, P, V				
161	Che	C	IO	1	-6	-4	-5	-6	2	-5	1	-4	-5	-6	-5	1	3	2	1						I, L, 2M, N, V, W					
162	S/S	C	AO	1	-5	-7	-6	-5	3	2	1																			
163	Jep	C, Xs	IO	1	-5	-6	-7	1	2	3	2	1													I, J, O					
	R/F	X		No source cited																										
164	S/S	X	IO	1	-5	-6	-7	1	2	3	4	3	2	1											I, J, O, R					
165	S/S	C, X	DR	1	-5	-6	-7	1	2	-7	3	2	1																	
166	R/F	C	DR	1	-5	-6	-5	5	4	2	3	2	1																	
	S/S	Xs		No source cited																										
167	S/S	C	DR	1	-5	-6	-5	-4	4	2	3	2	1																	
168	R/F	X	LY	1	-5	-6	-5	-3	3	2	-7	1	2	1																
169	Che	C	AO	1	-5	-3	-4	-5	1	2	1	4	3	2	4	3	2	1						H, I, 2L, M, Q, R, V						
170	Jep	C, Xs	PH	1	-4	4	3	2	1	-7	2	1																		
	R/F	X		No source cited																										
171	Jep	C	PH	1	-4	-5	-6	-7	1	2	-7	3	2	1											O					
	R/F	Xs		No source cited																										
172	Jep	C, X	MX	1	-4	-5	-6	-7	-6	2	1													Z						
173	R/F	X	PH	1	-4	-5	-6	-5	1	3	2	1												L, M						
174	R/F	C	MX	5	3	4	1	2	4	6	5	3	2	1											I, M, X					

TABLE 1. continued

Entry Number	Author	Use	Mode	Cantus																				Exceptions
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
175	R/F	X	LY	5	3	4	5	8	6	5	3	2	1											J, Q, X
176	R/F	X	LY	5	3	4	5	8	6	7	3	2	1											L, Q, R, X
177	R/F	C	IO	5	6	5	3	5	4	3	4	2	1											X
178	R/F	X	AO	5	6	5	4	3	2	5	3	2	1											X
179	Jep	X	DR	8	1	2	4	3	2	1														C, J, X
180	R/F	X	PH	8	4	6	5	4	5	3	6	4	3	2	1									I, N, X
181	R/F	X	LY	8	5	4	3	6	3	2	1	b4	2	1										2L, X
182	Che	C	IO	8	6	4	5	3	6	2	5	1	3	2	4	5	4	3	2	1				C, I, M, N, W, X
183	Che	C	AO	8	6	4	7	5	3	6	4	2	5	3	2	1								I, 3M, N, R, W, X
184	R/F	X	DR	8	7	4	5	8	7	b6	5	3	2	1										H, J, Q, X
185	Che	C	AO	8	#7	5	8	6	4	5	3	4	2	3	4	3	2	1						H, I, M, N, W, X
186	R/F	X	DR	8	7	5	8	6	5	3	4	3	2	1										H, N, X
187	Che	C	IO	8	7	6	5	6	5	4	3	4	2	5	4	3	2	1						V, W, X
188	R/F	X	IO	8	7	8	6	5	3	4	3	2	1											H, X
189a	R/F	X	LY	8	7	8	6	5	3	4	5	3	2	1										H, X
189b	D/L	C, Xs	IO	No source cited																				
190	Che	C	AO	8	9	10	7	8	#6	#7	8	7	6	5	4	3	2	1						O, X
191	R/F	C	LY	-5	1	2	3	b4	3	2	1													I, J, L, Q, R, X

(*b" = flat)

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TABLE 2.

Principles Governing the Writing of Cantus Firmi, from Salzer and Schachter (1969)

Note: The identifying letter labels for the successive principles are provided by the present author. The page reference following each principle is to the Salzer and Schachter book. For each principle the total amount of cantus firmi containing an exception to it is given; when there are nine or fewer tunes with an exception, the specific catalog entry numbers from Table 1 appear, preceded by a # sign. Further details about the principles are in the commentary.	
PRINCIPLES	
A.	<i>... the cantus firmus must consist of tones of equal value (p. 3). No exceptions.</i>
B.	<i>It is best ... to write the cantus in whole notes (p. 3). No exceptions.</i>
C.	<i>The length can vary; as a rule the cantus will not contain fewer than eight or more than sixteen tones (p. 4). Two have fewer than eight: #120, 179; 13 have more than sixteen.</i>
D.	<i>... the cantus firmus should not contain intervals larger than an octave (p. 4). No exceptions.</i>
E.	<i>... the cantus firmus should not contain ... dissonant leaps. The dissonant leaps include all sevenths and all augmented and diminished disjunct intervals; we include the augmented second ... (p. 4). No exceptions.</i>
F.	<i>... the cantus firmus should not contain ... chromatic half steps (p. 4). No exceptions.</i>
G.	<i>A tenth between the lowest and the highest tone is the maximum range (p. 4). No exceptions.</i>
H.	<i>Each cantus firmus must contain a climax or high point. The climax tone should not be repeated (p. 5). Clarification: the meaning is that the climax tone should not occur more than once in a cantus firmus (principle T advises against the immediate repetition of a tone). 21 exceptions.</i>
I.	<i>... the cantus firmus will contain predominantly stepwise motion. Each cantus firmus will contain two to four leaps (pp. 5-6). Six have only one leap: #7, 25, 76, 163, 164, 191; 52 have five or more.</i>
J.	<i>The direction of the line will change several times in the course of the exercise (p. 6). Clarification: "several" is not defined; the present author employs an arbitrary minimum of three changes of direction. 13 exceptions: six with only one change; seven with two changes of direction.</i>
K.	<i>As a rule, a cantus will not contain more than two leaps larger than a fourth (p. 6). Only one exception: #42.</i>
L.	<i>Leaps larger than a third should be followed by a change of direction preferably in stepwise motion (p. 7). Clarification: appearances of the letter "L" in the Exceptions column in the catalog (Table 1) identify cases that violate only the admonition to change direction after a leap larger than a third, and there are 57 of them, from 46 cantus firmi. Although not included in the catalog or in the general totals of exceptions, there are 90 cases from 72 cantus firmi where, even though the direction of the line does change, the motion is by leap rather than step.</i>
M.	<i>Avoid two consecutive leaps in the same direction (p. 7). 54 exceptions, from 47 cantus firmi. One cantus, #183, has three incidences; five have two: #12, 14, 92, 160, 161.</i>
N.	<i>Avoid more than two consecutive leaps (p. 7). 41 exceptions from 38 cantus firmi.</i>
O.	<i>The student should take care not to continue a stepwise motion too long in the same direction. The vagueness of the preceding statement is intentional; a long cantus firmus can better assimilate an extended scalewise progression than a short cantus; it is therefore not possible to establish a universally valid limitation. In most cases, five tones seems to be the limit (p. 7). To this limitation there are 21 exceptions from 20 cantus firmi.</i>
P.	<i>In general, a leap of a fifth or larger should change direction (p. 7). Clarification: that is, change direction from the immediately preceding motion, since principle L deals with motion following a leap. Eight exceptions: #12, 30, 34, 69, 95, 102, 110, 160.</i>

CANTUS FIRMI

TABLE 2. continued

Q.	<i>Avoid excessive motion in one direction, whether caused by stepwise progression alone, stepwise progression followed by a large leap, or stepwise progression interlaced with several small leaps (p. 7). Clarification: "excessive" is not defined. The present author employs the following: "Avoid a succession of step(s) and leap(s) in the same direction if the compass exceeds a sixth." To this there are 25 exceptions, from 23 cantus firmi.</i>
R.	<i>[Avoid] dissonant intervals ... formed by the first and last tones of a motion in a single direction (p. 7). A footnote on page 8 adds: "The larger the number of intervening tones, the less the impression of outlining a dissonant interval arises." To the principle as stated, however, there are 27 exceptions from 26 cantus firmi, with the number of notes in the motions ranging from three to seven.</i>
S.	<i>[Avoid a line that] reaches its climax on the leading tone (p. 8). No exceptions.</i>
T.	<i>The requirements of the cantus firmus exclude the immediate repetition of a tone (p. 8). Two exceptions: #110, 124.</i>
U.	<i>No single tone should sound so often that it dominates the entire exercise (p. 3). Clarification: "sound so often" is not defined. In consideration of both the length of a cantus and the use of degree 1 as opposed to other degrees, the present author employs the following: "Avoid more than four occurrences of 1 if the cantus has up to thirteen tones; avoid more than five if the cantus has fourteen or more tones. Avoid more than three occurrences of any scale degree other than 1 if the cantus has up to thirteen tones; avoid more than four if the cantus has fourteen to seventeen tones; avoid more than five if the cantus has eighteen or more tones." There is one exception to the limitation on degree 1: #12. There are eight exceptions to the limit on other degrees: #17, 20, 46, 71, 74, 80, 82, 86.</i>
V.	<i>[Avoid] the repetition of a distinctive group of tones (p. 8). Clarification: "distinctive group" is not defined. The present author employs the following: "Avoid the recurrence of any (ordered) set of three or more (successive) tones during a cantus, unless the second occurrence is the concluding three- or four-tone segment of the cantus. 21 exceptions.</i>
W.	<i>... avoid the use of so-called sequences (p. 9). Clarification: "sequence" is not defined or delimited. The alternate employed by the present author is: Avoid any more than two occurrences of a pattern of two or more tones at a consistently higher or lower pitch level, even if only the first note of the third occurrence of the pattern appears. 26 exceptions from 25 cantus firmi.</i>
X.	<i>If the cantus firmus is to form a self-contained whole ... it must begin and end on the tonic (p. 9). Clarification: no indication is given concerning the octave register of the respective tonics; since all the cantus firmi in the Salzer and Schachter book do begin and end on the same note, cantus firmi in which there is an octave register difference between the first and the last tones also are considered exceptions in addition to those that begin on a scale degree other than 1. 20 exceptions; six do not begin on 1, and 14 have a difference in octave register.</i>
Y.	a. <i>... the approach to the final tone must be by step.</i> b. <i>... it is usually best to approach the final tonic from above.</i> c. <i>[If approached from below] the final note must be approached by a half step (p. 9). One exception (to all three parts): #146.</i>
Z.	<i>The next-to-last tone will generally enter by step. It must never follow a leap larger than a third (p. 9). Seven exceptions: #57, 88, 97, 146, 156, 157, 172.</i>

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COMMENTARY ON TABLE 2

The principles governing cantus firmi appear in Salzer and Schachter as directives to the student for composing cantus firmi. Thus, being a list of "do's" and "do not's," they reflect an *a priori* philosophical approach, and are not presented as an *a posteriori* compilation resulting from a study of a particular collection of cantus firmi. Of course references to characteristics of apparently existing cantus firmi do occur in some of the principles; also some either are or contain suggested preferences rather than being absolute directives.

Nevertheless, taken together, they provide an attempt to present a logical, complete summary of the abstract melodic elements associated with cantus firmi for species counterpoint and therefore were chosen to serve as the basis of comparison to an actual collection of cantus firmi. It is thereby possible to reflect on the cantus firmi in the light of the principles and to examine the principles in the light of the cantus firmi. Benefits accrue from both endeavors. On the one hand, insight may be gained regarding music-melodic practice in the eight rather widely divergent sources; on the other hand, the extent to which the cantus firmi corroborate the stated principles concerning the preferred and the better-avoided elements is observable—and thus a better focus on the pedagogically oriented presentation and employment of such principles can be achieved.

The following comments seek to illuminate both issues through points of clarification and amplification regarding each principle in turn (as identified by its respective capital-letter label). In addition, cases are noted each time a Salzer/Schachter principle can also be found in either Schenker (1910) or Bellermand (1901)—Schenker, because of his obvious influence on Salzer and Schachter and Bellermand because Schenker makes several references to his work and, in fact (on Page 28 of *Kontrapunkt*), says that "Bellermand is the only contrapuntal theorist who discusses the cantus firmus."

A and B. All the cantus firmi in the catalog appear in (equal) whole notes in their respective sources, therefore the first two principles have no exceptions. Two sources, however, contain subsequent modifications to original whole-note tunes. In the Albrechtsberger (1955), in addition to the whole-note cantus firmi for the initial two-voice examples, some examples occur in which the original whole-note values are changed to dotted noted values (wholes or halves) for triple time settings, and examples of eight-against-one counterpoint employ both half-note and even quarter-note cantus firmus values (starting with two-voice counterpoint). Also, in the latter, the values of the two final cantus notes sometimes change (by being

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lengthened). Further, in four-voice texture examples, cantus firmi for first, second, third, and fourth species are in half notes (those for fifth species return to whole notes). Jeppesen also contains a few examples where original whole-note cantus firmi appear later as dotted whole notes in 3/2 meter. The foregoing amplification notwithstanding, however, principles A and B certainly reflect the prevailing attitude regarding the values of notes in a cantus. Both Bellermand and Schenker suggest (equal) whole notes as well.

C. The Salzer/Schachter statement of principle C regarding the number of tones in a cantus contains the phrase "as a rule," which perhaps has an *a posteriori* implication, but in the text no justification is given regarding the choice of either the suggested minimum (8) or maximum (16). The statement occurs on page 4 of the text; curiously, however, page 17 says "The student will remember that most cantus firmi contain from nine to twelve tones." Since the statement on page 4 occurs among many other principles, it was selected for this study. (However, even though "most cantus firmi" is not defined, this study corroborates the general implication of the page 17 statement since 137 of the cantus firmi have from nine to twelve tones while the remaining 54 include 11 with seven or eight tones and 43 with more than twelve.)

The two exceptions to the minimum number of tones (8) are both 7-tone cantus firmi by Jeppesen (#120, 179). Equally interesting is that all 13 examples containing more than sixteen tones are by Cherubini. 27 cantus firmi have nine tones, 41 have ten, 53 have 11; the average length is 11.4 tones. Regarding the number of tones in a cantus, Bellermand suggests approximately 9, 10, 11, 12, 13, or at the most 14 or 15, and Schenker says that the cantus was never extended beyond fifteen or sixteen measures [notes]. The exceptions notwithstanding, the number initially suggested by Salzer and Schachter (8-16) certainly seems appropriate and the even more restricted limit of 9-12 might be considered as well, especially for pedagogical applications.

D.E.F.G. No exceptions to these four occur in the catalogued tunes. The proscription of leaps larger than an octave (D), dissonant leaps (E), and range larger than a tenth (G) reflects the influence, with concomitant limitations, of basic vocal tradition. These three principles also are stated by both Bellermand and Schenker. While the concern of principles D and E is with leaps, nothing is mentioned regarding the leap of a sixth, even though strict vocal compositional practice from chant through Palestrina does exclude major sixths as well as descending minor sixths. Actually, the inclusion of such a principle in Salzer and Schachter would have been

supported by the catalogued cantus firmi since no major-sixth leaps are found and two ascending minor sixths (in #135 and 162) do appear. A descending minor sixth (that would be the only exception) occurs from 1 to -3 in an Ionian tune by Albrechtsberger (#152). Bellermann categorizes major sixths and the descending minor sixth as "forbidden." Schenker accepts all sixths. Additionally, there are nineteen octave leaps—fourteen ascending and five descending. Salzer and Schachter do not comment on octave leaps by direction. Bellermann "forbids" the descending octave while Schenker says that the ascending octave is preferred over the descending.¹

The advice to avoid chromatic half steps (principle F), also found in both Bellermann and Schenker, reflects a preference grounded on both stylistic and philosophical dictates. One interesting digression from principle F, however, is found in the section labeled "free style" (thus not included in the present catalog) in the work by Albrechtsberger (1855) where a tune labeled "chorale" consists of the successive tones A G# G F# F E E F# G G# A C B A.

I. Because 58 of the 191 cantus firmi (30%) do not conform to the Salzer/Schachter statement that "each cantus firmus will contain two or four leaps," the statement may seem too strong and a bit too delimiting (especially without an accompanying reference to the number of tones in a cantus.) Only six cantus firmi contain just one leap, so it is appropriate to suggest two leaps as the minimum. However, 30 of the 52 with more than four leaps have five leaps; therefore one suggestion is to consider five as an appropriate maximum and modify the statement to read "most cantus firmi contain from two to five leaps." Even Salzer and Schachter include two examples that contain an exception to their principle: catalog #66 (an eleven-tone tune found on their pages 24, 70, 77 and attributed to Roth) contains five leaps, and tune #164 (found on page 99 of their book, with no attribution) contains only one leap. Also, this is the only principle for which all authors have at least one cantus firmus with an exception: Albrechtsberger has 3, Cherubini 24, Davis and Lybbert 3, Fux 2, Jeppesen 3, Roberts and Fischer 20, and Schenker 1 (#96). A count of exceptions to principle 1 in relation to the number of tones per cantus substantiates the expectation that the longer cantus firmi (those with 13 or more tones) are likelier to have more than four leaps.

Thus the other plausible modification to statement I (instead of changing the number of leaps from four to five) would be to leave the numbers two to four as is and add "as long as the cantus does not contain more than 12 tones." Then a provision would have to be added for cantus firmi with 13 or more tones. Such a procedure was found necessary as clarification for

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principle U for instance but here, for principle I, the exact delimitation becomes a matter of personal preference; the evidence in the cantus firmi may influence the reader's judgment. The first suggestion (from two to five leaps) is straightforward, clear, and my personal favored recommendation.

I. Principle J (the direction of the line will change several times in the course of the exercise) seems intuitively logical. It forces each teacher and student, however, to define or delimit "several." Obviously, regarding exceptions to principles for this study, I have had to delimit in those cases where Salzer and Schachter are less than specific. (Besides principle J, this is also necessary for principles Q, U, V, W, and X.) For J, three changes of direction was chosen as the minimum number since only thirteen cantus firmi have fewer than three and also since 53 do have three.

The 13 exceptions come from four sources. Those with just one change of direction include two by Davis and Lybbert (#25, 27); one by Jeppesen (#76); and three by Roberts and Fischer (#41, 84, 191). Those with only two changes of direction include one by Davis and Lybbert (#151); two by Jeppesen (#163, 179); three by Roberts and Fischer (#147, 175, 184); and one by Salzer and Schachter (#164).

Study of the relation between the number of tones in a cantus and the number of direction changes supports another seemingly logical assumption: namely, the greater the length, the greater the number of direction changes. The number of direction changes varies from one to thirteen; those with the most occurrences are 54 tunes with five direction changes and 53 tunes with three changes. This leads to another interesting observation: there are far more cantus firmi with an odd number of changes of direction (143) than with an even number of changes (48). This odd-even factor (not mentioned in Salzer and Schachter) is dependent upon the relation between: 1) the initial motion of melody (that is, from the first to the second tone) and 2) the concluding motion of a melody (that is, from the penultimate to the ultimate tone). If the direction of these two motions is the same (both ascending or both descending), the number of changes will be even; if the direction is opposite, the number of changes will be odd. The latter is the case in the majority of the cantus firmi since so many begin with an ascent from the first degree and end with a descent from the second to the first degree. This is true of the first 139 cantus firmi with only one exception: #32 ends with the ascent from 7 to 8 (after starting with the ascent from 1 to 2) and therefore has an even number (6) of direction changes. Consequently, while the average number of changes is 4.76, a fair generality would be that "the majority of cantus firmi has either 3 or 5 changes of direction" (107 out of 191) which results both from the relationship between the initial and concluding motions and from the average overall length of the cantus firmi.

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Besides the suggestion of a minimum number of changes, there is no allusion in principle J to a maximum number (upon which the length of the cantus would have some bearing). The principle, however, with the more specifically delimiting clarification of a minimum of three changes, is well supported by the catalogued cantus firmi.

K. Avoiding more than two leaps larger than a fourth is an obviously important characteristic contributing to the overall concept of conjunct melodic motion. Considering both the number of cantus firmi catalogued and the length of some of them, however, it does seem noteworthy that of all 191 only one cantus has more than two such leaps. (In #42, a 15-tone cantus by Albrechtsberger, there is an ascending octave and two descending perfect fifths.) Consequently, principle K is justified.

L. Principle L is concerned with two aspects of motion following a leap larger than a third. The first is that the direction of the line should change. It does so in 246 instances. There are, however, 57 exceptions (from 46 cantus firmi) where motion continues in the same direction. In the catalog the letter L is used only to indicate exceptions to the phrase "the direction of the line should change." The second part of principle L is "preferably in stepwise motion." Since it is stated as a preference, exceptions are not noted in the catalog, but of the 246 instances of direction change, there are 90 cases, from 72 cantus firmi, where the change is by leap rather than step. Of these leaps, 68 are thirds, 12 are fourths, 6 are fifths, and 4 are octaves.

The advice in principle L, like that for principle K, is also commonly associated with ideal melodic motion. The number of exceptions to the admonition to change direction after a leap larger than a third (57, from 46 cantus firmi) as well as to the preference to do so by stepwise motion (90, from 72 cantus firmi), is more than I expected to find, however, and suggests that it indeed was advisable to use "should" and "preferably" in the statement of the principle rather than anything more stringent (as in principle K, for instance).

The 57 instances counted as exceptions to the principle are divided among Cherubini with 19 exceptions, from 12 cantus firmi, including two that have three each (#44 and 111), Davis and Lybbert with five exceptions from four cantus firmi, Fux with one (in #92), Jeppesen with one (in #132), Roberts and Fischer with 29 exceptions, from 27 cantus firmi, and Schenker with two exceptions in one cantus (#49). Albrechtsberger along with Salzer and Schachter have no tunes with exceptions. Although there are exceptions to principle L in tunes by Schenker, he mentions that the requirements of a flowing melody include the change of direction by step after a leap. Bellermann's advice is to follow a large ascending interval with a small

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descending interval. Even though not included in the catalog or in the summarizing tallies for this study, the 90 exceptions to the second part of the principle (the preference for the direction change to be by step) are divided among all eight sources.

Given the number of exceptions in the catalogued cantus firmi to both parts of principle L, some may feel that a reconsideration of the principle is in order. An alternate proposal presents a challenge, however, because of the varying combinations of direction and size of a motion following a leap. Nevertheless, based on the exceptions to both parts of the principle, it is possible to suggest that the two most common occurrences (37 instances of an ascending fourth followed by an ascending second and 41 instances of an ascending fourth followed by a descending third) be considered "acceptable exceptions," thereby reducing the exceptions to a direction change from 57 to 20 and the stepwise motion from 90 to 49. Thus the modified principle would read: "With the exception of an ascending fourth followed by an ascending second or by a descending third, leaps larger than a third should be followed by a change in direction, preferably in stepwise motion." This modification would more closely reflect the catalogue practice, but the decision to modify must still be made on philosophical preference. Even with the exceptions, many may wish to use principle L as is, but the evidence in the catalogued cantus firmi at least necessitates more careful consideration than might have been assumed.

M. Avoidance of two consecutive leaps in the same direction eliminates (triadic) arpeggiation in a cantus. The Salzer/Schachter text does not discuss this when the principle is presented on pages 6 and 7. Page 6 says "skips of a third may be continued in the same direction" but implies that the continuation should be by stepwise motion. Only later, in second species counterpoint lines (p.44), is the possibility presented of subdividing larger (consonant) intervals into two smaller leaps. All of the cantus firmi in Salzer/Schachter avoid arpeggiated triads, so their cantus firmi adhere to the principle as stated. It is interesting that of the eight sources used for this study, Jeppesen is the only other one that also avoids triadic arpeggiation. Arpeggiation examples in the catalogued cantus firmi include one by Albrechtsberger (#42); one by Schenker (#96); two by Davis and Lybbert (#122, 151); four, from two cantus firmi, by Fux (#12, 92); 20 examples, from 16 cantus firmi, by Cherubini; and 26, from 25 cantus firmi, by Roberts and Fischer—54 instances from 47 cantus firmi.

Most of these arpeggiated triads are major or minor, but four are arpeggiated diminished triads in 5/3 position (all descending). Not surprisingly, there are no arpeggiated augmented triads. At least one or two examples are found of the three "positions" of major and minor triads, both

ascending and descending, except for no descending minor triads in 6/3 position. The two most common arpeggiations are the descending major and minor triads in 5/3 position, with 15 and 12 occurrences, respectively. The arpeggiations are not restricted by scalar placement or by mode. In fact, examples of descending 5/3 positions beginning on all seven of the respective scale degrees are found, with those starting on 8 or 1 (nine examples) being the most common.

Bellermann's comments about principle M include the admonition to avoid two successive fifths or fourths in the same direction, avoid several leaps in the same direction, and avoid two leaps in the same direction that equal a seventh, ninth, or tenth, with downward direction being even worse than upward. Nevertheless, these do not exclude the arpeggiation of a triad. Schenker, however, does make this exclusion as he says to avoid successions of pitches that would stand out as arpeggiation or figuration of a chord, and subsequently adds that successive leaps in the same direction are prohibited because they could lead beyond the limit of the range and could establish triads or seventh chords. (Schenker's cantus with an exception - catalog #96 - contains the succession 8 6 3.)

Since there are 54 exceptions to principle M in the catalogue, it may seem appropriate to admit the occasional use of triadic arpeggiation. On the other hand, a more abstract musico-philosophic attitude regarding the relationship between arpeggiation and desirable melodic motion in a cantus could lead one pedagogically to avoid arpeggiation when students are writing cantus firmi or when cantus firmi are being selected for species exercises. At any rate the modification seems worthy of careful consideration, personal preferences notwithstanding, and could accept the two most common occurrences; thus to the principle would be added the phrase "with the exception of descending major or minor triads in 5/3 position," which would reduce the exceptions from 54 to 26.

N. Even though it seems intuitively appropriate to exclude more than two successive leaps in a cantus there are, as with principle M, many exceptions to principle N (41, from 38 cantus firmi). All authors except Salzer and Schachter, in fact, have one or more cantus firmi with exceptions: Albrechtsberger has two (#42, 152), Cherubini 14, Davis and Lybbert one (#116), Fux two (#12, 92), Jeppesen two (#120, 123), Roberts and Fischer 16, and Schenker one (#96). Tunes by Albrechtsberger (#42), Cherubini (#59), and Fux (#92) each have two different places that exceed the limitation; thus two exceptions are counted for each. Besides 25 of the 41 exceptions that have three successive leaps, however, there are 12 cases of four successive leaps, two of five (#20, by Roberts and Fischer and #89, by Cherubini), one of six (#182, by Cherubini), and the granddaddy is #183, a 13-tone cantus by

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Cherubini that has 10 successive leaps (though all of these cases are counted as just one exception each). Schenker avoids two successive leaps, even with a change in direction. As with principle M, principle N can be adhered to (musically and pedagogically) as stated, despite the many exceptions. The alternative, based on the cantus firmi, would be to increase the maximum from two to three successive leaps, thereby reducing the exceptions from 41 to 16.

Q. Principle O, which suggests a maximum of five scalar tones in the same direction, is the only one addressed directly to “the student.” The authors also admit to an intentional vagueness by saying “not to continue a stepwise motion too long in the same direction,” but they do end up suggesting five tones as the maximum, justified by the phrase, “in most cases [this] seems to be the limit.” This justification implies an *a posteriori* observation without, however, any reference to a collection of cantus firmi. Also, even though the length of the cantus affects the acceptable number of successive scalar tones, no length is given for the five-tone limit.

With the five-tone limitation, 21 exceptions (from 20 cantus firmi) occur in the catalogued tunes. Seventeen of the 21 are 6-tone successions, so if the principle were modified, raising the maximum to six successive tones would result in only four exceptions—or three exceptions for 7 tones (#134, 150, 164) and one for 8 tones. The 7-tone successions occur in cantus firmi having 12, 17, and 11 tones respectively, and the 8-tone succession is a descent from 8 to 1 in a 15-tone cantus by Cherubini (#190). Another 15-tone cantus by Cherubini has two exceptions (#23). All sources in the study except Schenker do have at least one exception; #164 is the one case from Salzer and Schachter. There is one from Albrechtsberger (#152), one from Davis and Lybbert (#25), two from Fux (#52, 55), four from Cherubini, five from Jeppesen, and six from Roberts and Fischer. In comparison to the exceptions to the principle, the “non-exceptions” include 78 examples of 4-tone scalar successions (19 ascending and 59 descending) and 31 examples of 5-tone scalar successions (10 ascending and 21 descending).

P. The point made in principle P (regarding having a leap of a fifth or larger go in the direction opposite to that immediately preceding) is well taken as there are only eight exceptions in the cantus firmi. In five cases a descending fifth follows a descending step, and in three cases an ascending fifth follows an ascending step. One of the exceptions occurs in a cantus by Salzer and Schachter (#30), one in a cantus by Fux (#12), one by Schenker (#34), two by Cherubini (#110, 160) and three by Roberts and Fischer (#69, 95, 102). There are no exceptions in the cantus firmi by Albrechtsberger, Davis and Lybbert, or Jeppesen. Of the exceptions, three have the degree

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succession 6 5 1; the other five are all different. The clarification provided for principle P (change direction from the immediately *preceding* motion) was only to avoid any misunderstanding about the context of the leap; actually it might have been better to place principle P just before principle L to deal successively with motion into a leap and then motion from a leap. Other than this, the principle is appropriate, as corroborated by the cantus firmi.

Q. This Salzer/Schachter principle (avoid excessive motion in one direction, by stepwise progression alone, stepwise progression followed by a large leap, or stepwise progression interlaced with several smaller leaps) makes it necessary to clarify "excessive motion." Since "stepwise progression alone" is the subject of principle O, it seems unnecessary to include it in principle Q (thus such cases are not counted as exceptions here) and since "stepwise progression followed by a large leap" is essentially covered by principle P, the focus of principle Q was directed to the last part of the statement that refers to "stepwise progression interlaced with several smaller leaps." Because there are 25 exceptions when the maximum compass is set at a sixth for a unidirectional succession of any combination of step(s) and leap(s) (implying either one or more of both) and that these exceptions are limited to compasses of either sevenths or octaves, the sixth was chosen as the maximum compass. Thus the clarified alternative states, "avoid a succession of step(s) and leap(s) in the same direction if the compass exceeds a sixth."

The 25 exceptions come from 23 cantus firmi: one by Albrechtsberger (#152), five by Cherubini, one by Davis and Lybbert (#151), one by Fux (#12), 16 examples from 14 cantus firmi by Roberts and Fischer, and one by Schenker (#49). There are no exceptions in the cantus firmi by Jeppesen or by Salzer and Schachter. Of the exceptions, 16 have a compass of a seventh (eight ascending and eight descending patterns) and nine have a compass of an octave (five ascending and four descending).

Questions regarding the pedagogical application of principle Q thus concern: 1) the degree of precision desired (accept the principle as is or use the more specific clarification as suggested?) and 2) the choice of interval for the maximum compass if the clarification is employed (accept the sixth as suggested, or prefer other?).

R. Exceptions to principle R (avoid dissonant intervals formed by the first and last tones of a motion in a single direction) are limited to only three dissonant intervals: the diminished fifth (nine cases), the minor seventh (16 cases), and the major seventh (two cases). Six cases have a three-note succession; ten have four notes; five have five notes; four have six notes; and

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two have seven notes. The direction is divided between 14 ascending and 13 descending motions. Even though a footnote in Salzer and Schachter suggests an inverse relation between the effect of the two tones in dissonant relationship and the number of tones between them, no further specific limit was set and the exceptions just mentioned include all cases. Obviously, exceptions to principle O (limit of five tones in stepwise motion) and to principle Q (maximum compass of sixth for unidirectional combination of steps and leaps) that have a compass of a seventh also will be exceptions to principle R.

For principle R, two sources have no exceptions: Albrechtsberger, and Davis and Lybbert. There is one exception each by Fux (#12), Jeppesen (#134), Salzer and Schachter (#164), and Schenker (#49). There are eight exceptions from Cherubini, and 15, from 14 cantus firmi, by Roberts and Fischer. Schenker says to avoid dissonant aggregates of notes, and Bellermaun says to avoid the tritone as the first and last tones of a motion. Considering the relatively limited number of exceptions, principle R seems appropriate for pedagogy.

S. The leading tone is never the climax note so principle S, which advises against this occurrence, is most appropriate advice. There are, however, seven cantus firmi that climax on the subtonic note: an Aeolian tune by Schenker (#49), an Aeolian tune by Cherubini (#114), and five tunes by Roberts and Fischer, including one Mixolydian (#78), three Dorian (#79, 129, 147), and one Phrygian (#103). This small number suggests that the subtonic should be prohibited as a climax note as well.

T. The immediate repetition of a tone is avoided in all but two of the catalogued cantus firmi. One exception is a repeated fifth degree near the end of an 18-tone Ionian cantus by Cherubini (#110) and the other is a repeated subtonic (below the final) in an 11-tone Dorian cantus by Roberts and Fischer. Both Bellermaun and Schenker advise against such repetition, and Schenker argues that it is a phenomenon of free composition. Salzer and Schachter justify the exclusion of immediate repetition of a tone because it interferes with the necessary rhythmic equality and because the creation of a static pitch point sets the line as a whole out of balance. Since only two tunes have an exception, the point is appropriately well taken.

U. Obviously it is difficult to provide a specific delimitation for principle U (no single tone should sound so often that it dominates the entire exercise) but again, for this study, it was necessary to assign a numerical limit. As mentioned in the clarification of principle U given in the list of principles, it seems appropriate to differentiate in limit between scale

degree 1 and all other scale degrees, since 1 usually both starts and ends a cantus; it also seems appropriate to differentiate by the length of a cantus. Therefore the clarification for principle U was made, even though it is cumbersome. The limit is based on a "common-sense" feeling for the number of occurrences of any one scale degree, and the small number of exceptions suggests that it may be an appropriate approach (the example in Salzer and Schachter for the overuse of a single tone would violate the suggested limitation).

Even the chosen limitation, however, does not take into account the nature of the linear motion at the scale degree in question (is it part of a continuing stepwise motion, or approached or left by leap, or a "turn-around" point, or do these differences make a difference?) nor does it attempt to allow for any relative impact among the various scale degrees (are four occurrences of degree 3 in a 12-note cantus—such as in catalog #73—apt to sound as if they "dominate the exercise" any more or less than four occurrences of degree 2 in a 12-note cantus—such as in catalog #20—for instance?). Consequently this is another example where the principle can be readily accepted, but the application of the principle to a more specific pedagogical environment might provoke differing opinions. The very consideration of this issue, however, in a counterpoint class for instance, may itself yield pedagogical benefits that otherwise could be missed (thereby serving the present article as well.)

The reader is left to decide whether the chosen limits are arbitrary or whether subjective evaluation may be required to judge the appropriate number of scale-degree occurrences. Certainly the general concept is relevant and should be included among the principles.

V. This principle, which advises against the "repetition of a distinctive group of tones," also needs a clarifying limitation such as "avoid the recurrence of any (ordered) set of three or more (successive) tones during a cantus, unless the second occurrence is the concluding three- or four-tone segment of the cantus." As with principle U, a "common sense" feeling was employed in arriving at the limitation, along with a supporting implication from the cantus in Salzer and Schachter that violates their principle by a recurring three-note set. For the clarification, only the number of tones in a recurring set (three or more) is the limitation, and no further attempt was made to delimit "distinctive group of tones" by melodic shape (is a scalar set such as 4 3 2 just as distinctive as a set with a leap or with a change of direction?), or by length of cantus, or by distance between statements of the reiterated set. Since so many of the catalogued cantus firmi have "stock" three-note endings, an earlier appearance in a cantus of such a closing formula should not be as suspect as other recurrences—therefore, the

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exclusion of the closing formula. This still did lead, however, to counting as exceptions five cantus firmi that have 4 3 2 1 as concluding tones when earlier the three-note succession 4 3 2 does not then go to 1.

Of the 21 exceptions to principle V as clarified, 14 have stepwise sets and seven have sets that include a leap. Of the 14 stepwise sets, seven are the three-note succession 4 3 2. The exceptions are from four sources: 11 from Cherubini (#17, 40, 46, 86, 96, 106, 107, 143, 160, 161, 169, 187), one from Davis and Lybbert (#116), seven from Roberts and Fischer (#2, 11, 19, 68, 69, 71, 133), and two from Schenker (#49, 96, each of which has a reiterated 4 3 2 set). In both Bellermann and Schenker there is a comment that may relate to this principle but that also is less than specifically delimited: Bellermann says to avoid grouping of 2, 3, or 4 notes that form larger units by placement and accentuation and Schenker's advises to prevent groups of several tones from establishing units based on rhythm or harmony. Based on the cantus firmi with exceptions, the clarifying limitation adopted for this principle again is warranted. Nevertheless students can justifiably be made aware of the basic premise of the principle.

W. For this principle (avoid sequences), it was necessary to precisely define a sequence. The negative example in Salzer and Schachter (example 1 - 14 on their page 9) contains two three-note patterns, each used at two pitch levels. Nothing is specified, however, about the minimum number of notes in a pattern or the minimum number of patterns. The restriction used for this study does not exclude two-note patterns. Counted as exceptions are more than two occurrences of patterns of two or more tones at a consistently highly or lower pitch level, even if only the first note of the third occurrence of the pattern appears.

There are 26 of these exceptions from 25 cantus firmi. Of the exceptions, 21 are a two-note pattern, only one is a three-note pattern (in #183, by Cherubini), and four are a four-note pattern (in #18, 111, 148, and 187). Exceptions come from five sources: Cherubini (15 exceptions, including #89 that has two exceptions and #148 with three statements of a four-note pattern), Davis and Lybbert (one exception, #53), Fux (one exception, #55), Roberts and Fischer (seven exceptions), and Salzer and Schachter (two exceptions, #108 and 149, both two-note patterns). Again, the point of the principle is well taken; yet while a black-and-white delimitation is a challenge, the number of exceptions is not great enough to make suspect the basic premise.

Obviously if a different number of notes or patterns for defining a sequence were used, the number of exceptions would change accordingly. For instance if only patterns with three or more notes were to be considered exceptions, there would be only five: one with three notes (#183) and four

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with four notes (# 18, 111, 148, 187). On the other hand, if the minimum number of (complete) statements of a pattern were three (but included two or more notes per pattern) there would be only four exceptions: #55, 109, 148, 183.

X. The restriction of beginning and ending on the tonic is observed in the majority of the catalogued cantus firmi, and exceptions mainly concern the initial note. There are five tunes that start on 5 (#174-178, all from Roberts and Fischer) and one that starts on -5 (#191, also from Roberts and Fischer). As explained in the clarification to principle X in Table 2, an octave difference between the first and last tones is also considered an exception. Two start on 1 and end on 8 (#111, by Cherubini, and #118, by Roberts and Fischer). Twelve start on 8 and end on 1 (#179-190; #179 from Jeppesen, five from Cherubini, and six from Roberts and Fischer). Evidence thus supports the basic principle and the clarifying codicil as well; consequently it seems best to prohibit the octave register difference. Principle X is found in Schenker (but, as with Salzer and Schachter, with no specific dictum on octave register difference) and Bellermand advises to start on the Grundton of the mode.

Y. The three conditions regarding the approach to the final tone (by step; usually from above; if from below, by half step) were grouped together as one principle. The only exception—to all three parts—is cantus #146, a nine-tone Phrygian tune by Jeppesen that ends with the three-note succession 1 -4 1.

Even though the principle allows for either the $\underline{2} \underline{1}$ or (raised) $\underline{7} \underline{8}$ conclusion, it might have been just as appropriate to eliminate any choice and simply declare that cantus firmi [are to] end with the succession $\underline{2} \underline{1}$, for besides the Jeppesen exception there is only one cantus that ends with $\underline{7} \underline{8}$ (#32, by Schenker) and two that end with $\underline{9} \underline{8}$, which may or may not be considered exceptions, but are if the octave register restriction is an acceptable addition to principle X. Consequently, since all the other 187 cantus firmi do end with $\underline{2} \underline{1}$, it seems that a preference for the exclusive use of $\underline{2} \underline{1}$ would be justified. The Salzer and Schachter statement however, agreeing with that by Schenker, does allow the approach to the final $\underline{1}$ to be by step from either above or below.

Z. The final principle concerns motion from the antepenultimate tone to the penultimate tone, with the motion being limited to only seconds or thirds. One exception is #146 (the Jeppesen tune that also is the exception to principle Y) whose conclusion is $\underline{1} \underline{-4} \underline{1}$. The other six exceptions are from cantus firmi that end with $\underline{-6} \underline{2} \underline{1}$: one by Jeppesen (#172), four by Roberts

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and Fischer (#157, 88, 97, 156), and one by Davis and Lybbert (#157). As with the concluding two notes, for principle Y, it is interesting to look at the concluding *three*-note succession of all the tunes in the catalog in relation to principle Z. The fact that the succession 3 2 1 concludes 151 of the 191 cantus firmi makes it a heavy favorite, far surpassing its closest rivals: 4 2 1, which occurs sixteen times, and 1 2 1, which occurs twelve times. The remaining incidences are 7 2 1 with two occurrences (#140, 170), and single occurrences of 1-7 1 (#32), 8 9 8 (#111), and 10 9 8 (#118). Therefore, even though one may wish to retain an option, it would not be inappropriate to point out that a good majority of cantus firmi do end with 3 2 1 (here 79%) and it might be advisable to employ this restriction.

SUMMARY: CANTUS FIRMI AND THE PRINCIPLES

The preceding commentary emphasized that this study facilitates both a reflection on the cantus firmi in light of the principles and an evaluation of the principles in the light of the cantus firmi. Table 3 summarizes information concerning the cantus firmi. The authors are listed in alphabetical order; for each, the total number of cantus firmi, the number of that total with no exceptions, and the number of cantus firmi that have from one to eight exceptions appear. (Multiples of an exception to one principle in one cantus are counted; for instance, since catalog #14 has one exception to principle I and two to principle M, it was counted as having three exceptions.) The next-to-last column on Table 3 gives the total of all exceptions for each source, and the final column gives the average number of exceptions per cantus.

Note that of the 191 discrete tunes, only 45 have no exceptions and the others (146 = 76%) have from one to eight exceptions, with a combined total of 427 exceptions. In fact, a comparison of columns two (Total CF) and three (0 Exceptions) shows that the Salzer/Schachter text is the only one that has more tunes without than with exceptions.

The last column (average number of exceptions per cantus firmus) provides a basis for an interesting categorization. Four subdivisions are suggested. The first consists only of the tunes in the Salzer/Schachter text since they average less than one-half exception per cantus and thus highly exemplify the principles as stated in the text. (Nevertheless it is also true that five of the 20 cantus firmi in Salzer and Schachter do indeed exhibit exceptions to the authors' own principles, albeit four of the five have only one exception.) The second subdivision contains the tunes by Jeppesen, since his exceptions average to one per cantus. The third subdivision groups Davis and Lybbert, Fux, Roberts and Fischer, and Schenker, as

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exceptions average from 2.0 to 2.3 per cantus. The fourth and final subdivision contains the tunes by Albrechtsberger, averaging 3.7, and Cherubini, averaging 4.7 exceptions per cantus.

TABLE 3.
Cantus Firmi, by Source, with Respective Totals of Exceptions

	Total CF	Number of Exceptions									Total Exceptions	Average Exceptions per CF
		0	1	2	3	4	5	6	7	8		
Alb	3	0		1		1	1				11	3.7
Cher	33	1	2	2	4	6	5	6	4	3	155	4.7
D/L	9	1	3	1	2	2					19	2.1
Fux	8	3	2	1				1		1	18	2.3
Jep	20	8	5	5	2						21	1.0
R/F	93	15	23	27	14	9	2	1	2		185	2.0
S/S	20	15	4			1					8	0.4
Sch	5	2	1			1	1				10	2.0
Totals	191	45	40	37	22	20	9	8	6	4	427	2.2

Thus, the more typical cantus firmi, as judged by the principles, are found in the first three subdivisions (and among them, the tunes with no more than two exceptions, which reflects the overall combined average of 2.2 exceptions per cantus). Those by Albrechtsberger and Cherubini are not as likely to correspond to the more typical prototype in the total collection or in the codified principles. (Yet there is one—#29—by Cherubini with no exceptions, and a total of five from both authors with just one or two exceptions each.)

Of course any of the 45 tunes having no exceptions (see the catalog, Table 1) are useable as prototypical models (bearing in mind that some may have an exception to the second part of principle L, which is not included in the tally; thus leaps larger than a third being followed by a leap, rather than a step, in the opposite direction may be found). An even more select choice, however, can be made by including most common length (11 tones), most common range (a sixth), and most common climax tone (degree 6) as discussed in principles C, G, and H.

Six tunes meet these combined criteria: #33, by Schenker; #37 (which does have an exception to the not-tallied second part of principle L) and #38

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by Salzer and Schachter; #51 by Jeppesen; #63, by Salzer and Schachter; and #98, by Roberts and Fischer. It is certainly a credit to Salzer and Schachter that they are represented by a disproportionate three of the six; note also that missing from the group are tunes from Albrechtsberger, Cherubini, Davis and Lybbert, and Fux. (If one admits 10-tone tunes, five more would qualify for this select category: #28, by Roberts and Fischer; #29, by Cherubini, #62, by Salzer and Schachter; #77, by Davis and Lybbert; and #130 by Salzer and Schachter.) Other factors could also influence a search for a tune, or tunes, but the catalog should prove helpful since both tunes and respective exceptions are displayed.

The previous comments have summarized the tunes in light of the principles. Of course the music came first, so the respective authors could not have composed tunes to adhere to someone else's concept of what to include or exclude in a cantus. But the corpus of tunes really suggests its own set of principles, and the respective creators undoubtedly understood that, by publishing, they were joining an on-going historical and pedagogical tradition that inevitably is scrutinized and compared. Their efforts thus continue to serve newer generations, as indeed they have in this study.

In addition to comparing the cantus firmi with the principles, two final items conclude this section on the tunes. The first is a summary of tunes appearing in two or more sources. As mentioned earlier, citations of such borrowings are noted in the catalog; otherwise, "No source cited" appears. For these latter, I assume that the various authors were aware of such borrowings, but it is possible that in a few cases the duplication is strictly coincidental, or that a tune's appearance is not cited because only the tune and not the accompanying counterpoint(s) were borrowed. For the sake of general interest, Table 4 summarizes the duplications. Each author is listed in the left column and respective borrowings follow on the right side (listed by catalog number; refer to the catalog for citations). Borrowings within the selected group of eight sources are enclosed by the boxes. Notice that with the exception of the earliest two (Fux and Albrechtsberger) all six of the remaining sources have at least one borrowed tune.

The final item concerns an intriguing pedagogical concept about species counterpoint—the "global rule" proposed by David Lewin.² He applies the rule specifically to the composed counterpoint line and not to the cantus firmus in species counterpoint, but the rule is mentioned here because it relates to the general topic and introduces an aspect of melodic construction not yet considered. Lewin proposes the avoidance of so-called "hanging" tones, which are any notes that do not conform to his global rule. The "first form" of the rule reads: "For every note X of the counterpoint line lying above (below) the cadence tone, some note lying one step lower (higher) than X must appear in the line at some point subsequent to X." Even

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though he does not mention the presence or absence of hanging tones (or desirability thereof) in a cantus, of the three cantus firmi employed in his examples, two do not have any hanging tones, but one does. Out of curiosity I surveyed the catalogued cantus firmi for hanging tones. The results are that 74 do not have hanging tones while 117 do (some have more than one). Thus, avoidance of a hanging tone is not a characteristic of the majority of the catalogued cantus firmi. Some readers, however, may find it rewarding to consider this rule in melodic construction—in relation to cantus firmi or to counterpoints, or to a combination of both.

TABLE 4.
List of Borrowed Tunes

Text (Date of Orig. Ed.)	Tunes Borrowed From	Catalog #
Fux (1725)		
Albrechtsberger (1790)		
Cherubini (1835)	Fux	12, 35, 45, 55, 74, 92, 155
Schenker (1910)	Fux	12, 45, 55, 74
	Alb	42, 101, 152
	Che	59, 89
Jeppesen (1931)	Fux	45, 74, 155
Roberts and Fischer (1967)*	Fux	45, 52, 74, 155
	Che	29
	Jep	43, 76, 123, 125, 127, 132, 134, 135, 138, 140, 153, 163, 170, 171
Davis and Lybbert (1969)	R/F	189
Salzer and Schachter (1969)	Fux	12, 45, 74, 155
	Che	29
	Sch	21, 33
	Jep	125, 127
	R/F	166

*Prout 81, 84, 141

To summarize, Table 5 displays the number of exceptions to each of the 26 principles, cross referenced to the respective sources. The letter labels (A-Z) of the principles are in successive columns, left-to-right. The sources appear in successive rows, in alphabetical order. For multiple exceptions to one principle in one cantus firmus, two numbers are given, divided by a virgule: the first is the total number of exceptions (including the multiples in one cantus), and the second is the number of cantus firmi with exceptions.

TABLE 5.
Enumeration of Exceptions to Respective Principles, by Source

Sources	Principles																										Exc./CF
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
Alb								1	3		1		1	32	1		1										11/10
Che			13					8	24			19/12	20/18	15/14	5/4	2	5	8		1	3	11	15/14	6			155/41
D&L									3	3		5/4	2	1	1		1					1	1			1	18/18
Fux									2			1	42	32	2	1	1	1			2		1				18/15
Jep			2						3	3		1		2	5			1						1	1	2	21
R/F								12	20	6		26/27	26/25	18	6	3	19/14	15/14		1	4	7	7	13		4	184/178
S/S									2	1					1	1		1					2				8
Sch									1			2/1	1	1		1	1	1				2					108
Total	0	0	15	0	0	0	0	21	58	13	1	57/48	54/47	41/38	21/20	8	25/23	27/28	0	2	9	21	28/26	20	1	7	427/401

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Table 5 suggests the same number of categories for principles as did Table 3 for sources; namely, four. The first subdivision contains principles with no exceptions; the next those with 1 to 15 exceptions; the third, 20 to 27 exceptions; and the last, 41 to 58 exceptions. A listing follows, with an abbreviated statement of the original principles as found in Table 2:

I. First Subdivision: Principles With No Exceptions

- A. All tones equal values
- B. All whole notes
- D. No intervals larger than octave
- E. No dissonant leaps
- F. No chromatic half steps
- G. Maximum range a tenth
- S. Avoid climax on leading tone

II. Second Subdivision: Principles with 1-15 Exceptions

- C. Length, 8-16 tones; 15 exceptions
- *J. Change Direction [minimum 3 times]; 13 exceptions
- K. Not more than two leaps larger than a fourth; 1 exception
- P. Change direction [into] leap of fifth or larger; 8 exceptions
- T. Immediate repetition of a tone excluded; 2 exceptions
- *U. No single tone sounded so often it dominates; 9 exceptions
- Y. Approach final tone by step from above, by half step from below; 1 exception
- Z. Next-to-last tone approached by step or by third; 7 exceptions

III. Third Subdivision: Principles With 20-27 Exceptions

- H. Should contain a climax, which should not recur; 21 exceptions
- O. Limit of 5 stepwise tones in same direction; 21 exceptions from 20 cantus firmi
- *Q. Avoid excessive motion in one direction; 25 exceptions from 23 cantus firmi
- R. Avoid dissonant intervals from first to last tones of motion in a single direction; 27 exceptions from 26 cantus firmi
- *V. Avoid the repetition of a distinctive group of tones; 21 exceptions

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- *W. Avoid the use of sequences; 26 exceptions from 25 cantus firmi
- *X. Must begin and end on [same] tonic; 20 exceptions

IV. Fourth Subdivision: Principles with 41-58 Exceptions

- I. Contain two to four leaps; 58 exceptions
- L. Leaps larger than a third should be followed by a change of direction; 57 exceptions from 46 cantus firmi
- M. Avoid two consecutive leaps in the same direction; 54 exceptions from 47 cantus firmi
- N. Avoid more than two consecutive leaps; 41 exceptions from 38 cantus firmi

*Designates those for which a more specifically delimiting clarification was supplied.

There should be no argument or problem with the principles in the first subdivision (those having no exceptions) unless, in relation to principle B regarding the exclusivity of whole-note values, one would wish to retain the possibility of dotted note values as the basis of an occasional alternative to the 4-against-1 relationship of third species or unless the proposed modification to principle S, changing "leading tone" to "seventh degree" as an inappropriate point for the climax tone, is adopted. In the second subdivision the number of exceptions is so small that there should be no question regarding pedagogical appropriateness. In fact, the last two (Y and Z) really could be a bit more restrictive and still reflect the overwhelming majority by simply declaring that the last two notes of a cantus must be scale degrees 2 1.

The principles in the third subdivision also suggest sound pedagogical practice and the number of exceptions really does not suggest a problem with the principles as much as occasional mild license or freedom by the composers. In principle O, however, a change from the Salzer and Schachter limit of five stepwise tones to six stepwise tones would result in only four exceptions to the principle, thus placing principle O back in the second subdivision. Since for principle R Salzer and Schachter put no maximum on the number of tones from the dissonant first to last notes in a unidirectional motion, all such cases become exceptions; an arbitrary maximum (which, however, was not imposed) could reduce this number. A final point is that principles Q, V, W, and X were all subject to clarifying restraints. It obviously would be possible to reduce the exceptions by relaxing the

restraints. Nevertheless the evidence in the *cantus firmi* does support my proposed restraints; thus the clarifications are offered in the spirit of meeting the pedagogical challenge of clarity and specificity.

The fourth and final subdivision contains the four principles with appreciably more exceptions than the other twenty-two; consequently these are the most subject to question and possible modification. In principle I, Salzer and Schachter suggest the limits of two to four leaps per *cantus*. The minimum of two is considered appropriate, as there are only six *cantus firmi* with but one leap. Changing the maximum number from four to five, however, would reduce the exceptions from 52 to 22, thus placing principle I in the more acceptable third subdivision, and thus supporting modification.

Principle L is the one with two parts: the first proposes that leaps larger than a third should be followed by a change of direction (which is the basis for counting exceptions to L); the second is that the change preferably be by stepwise motion. To the first part there are 57 exceptions; to the second there are 90. As stated earlier, for pedagogical purposes, the principle could still be considered appropriate as is. But as an alternative the suggestion is to include, with the statement of principle L, the phrase "with the exception of an ascending fourth followed either by an ascending second or by a descending third," which would reduce to 20 the number of exceptions to the first part, thereby shifting it back to the third subdivision. As the second part of principle L is stated as a "preference," exceptions to it are not included in the catalog or in the combined tally, but the suggested change would also result in the more palatable reduction of exceptions from 90 to 49.

Principle M, the prohibition of two consecutive leaps in the same direction, had 54 exceptions. The exceptions are all three-note arpeggiations of diminished, minor, or major triads, in varying positions. As with principle L it may be, for pedagogical purposes, better not to modify this principle. To reflect the practice in the *cantus firmi*, however, the suggestion proffered is to add the phrase "with the exception of descending major or minor triads in 5/3 position," which would reduce the number of exceptions to 26, thereby accomplishing the shift to the third subdivision.

To principle N (avoid more than two consecutive leaps) there are 41 exceptions. As with both principles L and M, one instinct accepts principle N as is, also for pedagogical reasons. By increasing the maximum from two to three consecutive leaps, however, the exceptions would be reduced from 41 to 16; therefore this is the proposed alternative.

Just as the composers did not write *cantus firmi* to meet the demands of theoretical principles, the Salzer/Schachter principles evidently were not meant to be a reflection of characteristics in a particular collection of *cantus*

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firmit. While implications of these statistics are, of course, subject to personal interpretations and preferences, the comparison of cantus firmit to principles and principles to cantus firmit certainly provides some strongly corroborating evidence, as well as variety and degrees of difference. Overall results show that of the 191 cantus firmit, only 45 have no exceptions to the principles, but 123 have no more than two exceptions. Of the 26 principles only seven have no exceptions contained in any of the cantus firmit, while eight have 1 to 15 exceptions, seven have 20 to 27, and four have 41 to 58.

This prompts the double-edged question, not unrelated to the chicken-egg dilemma, of whether these results reflect a spectrum of quality concerning the tunes (are tunes with more exceptions in some way less desirable than those with fewer or none?) or do the results reflect a spectrum of quality regarding the principles (are certain principles less appropriate if several exceptions are found among the tunes in these published sources?). Given: a) that ultimately the tunes and the principles are inextricably entwined partners; b) that there is some hint of an *a posteriori* influence in the otherwise *a priori* bent of the principles; and c) that pedagogical application in the beginning study of counterpoint (via species) is at issue, both questions seem best answered in the affirmative.

Especially for the cantus firmit, but for some of the principles as well, the study therefore suggests that those of each having the greater number of exceptions need more careful consideration before their adoption and employment, especially in the pedagogical environment. Conversely, the tunes and principles with fewer exceptions do provide a telling profile of cantus firmus construction. (Obviously, were the application of the principles to extend beyond cantus firmit to include the construction of the accompanying counterpoint lines, care likewise would have to afford proper consideration to both similarities and differences.)

A final underlying issue, double-sided as well, is underscored by the results: even though one hopes to serve pedagogical goals by the presentation of clear and precise information based on appropriate evidence, a healthy allowance must be provided for items most dear to artistic creation such as choice, imagination, and individuality. It is encouraging (and, I would venture, pedagogically appropriate) to come to understand, even in a study of the short, simple (?), apparently unobtrusive cantus firmus of the abstract species exercise, that such a concept can also be discovered and appreciated.

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NOTES

¹See Piet G. Vos and Jim M. Troost, "Ascending and Descending Melodic Intervals: Statistical Findings and Their Perceptual Relevance," *Music Perception* 6/4 (Summer 1989): 383-396. The authors state that "the results of statistical analysis firmly corroborate the existence of two fundamental distributions of intervals in a wide and diverse range of Western musical style. One is the preponderance of small intervals in melodic patterns; the second . . . is that the smaller intervals occur in predominantly descending form, and the larger ones occur mainly in ascending form" (p. 389). Regarding this second characteristic the authors' experiment showed "that the regularity in question is picked up by listeners when asked to discriminate between (artificial) melodies that either are endowed with the regularity in question or are built up on the basis of the reversed intervallic features" (p.394).

In the present study the breakdown of the 1989 successive intervals in the cantus firmi is as follows: 2 perfect primes (.1%); 1263 seconds (63.4%); 412 thirds (20.7%); 217 perfect fourths (10.9%); 73 perfect fifths (3.7%); 3 sixths (.2%); 19 perfect octaves (1%). These figures appropriately reflect the first principle. A within-category breakdown is as follows: 463 ascending seconds (159 minor, 304 major = 23.3%); 800 descending seconds (255 minor, 545 major = 40.2%); 137 ascending thirds (86 minor, 51 major = 6.9%); 275 descending thirds (188 minor, 87 major = 13.8%); 177 ascending perfect fourths (8.9%); 40 descending perfect fourths (2%); 39 ascending perfect fifths (2%); 34 descending perfect fifths (1.7%); 2 ascending minor sixths (.1%); 1 descending minor sixth (1.1%); 14 ascending perfect octaves (.7%); 5 descending perfect octaves (.3%). These figures agree with the second principle, showing that a greater number of the larger intervals ascend while a greater number of seconds and thirds descend (thus reflecting L. B. Meyer's "gap-fill" melodic process, as mentioned by the authors).

In teaching counterpoint it would seem appropriate to relate such points about successive melodic motion within cantus-firmus technique to the broader Western musical practice (pointing out both similarities and possible subtle differences) and to mention that a perceptual sensitivity to such characteristics does exist.

²David Lewin, "An Interesting Global Rule for Species Counterpoint," *In Theory Only* 6/8 (1983): 19-44.

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REFERENCES

Albrechtsberger, J.G. *Collected Writings on Thorough-Bass, Harmony, and Composition. Volume the Second: Guide to Composition* (I. von Seyfried, ed., S. Novello, trans.; Orig. 1790), London: Novello, 1855.

Bellermann, H. *Der Contrapunkt*. 4th edition (original ed. dated 1862). Berlin: Springer, 1901.

Cherubini, L. *A Treatise on Counterpoint and Fugue*. (M.C. Clarke, trans., J. Bennett, rev.; Orig. 1835). London: Novello, 190-?.

Davis, F. & D. Lybbert. *The Essentials of Counterpoint*. Norman: The University of Oklahoma Press, 1969.

Fux, J.J. *The Study of Counterpoint, from Gradus ad Parnassum* (A. Mann, trans. & ed.; Orig. 1725; paperback, 1965). New York: W.W. Norton, 1943.

Jeppesen, K. *Counterpoint*. Englewood Cliffs: Prentice-Hall, 1983.

Prout, E. *Counterpoint: Strict and free*. 4th edition (original ed., 1890). New York: G. Schirmer, n.d.

Roberts, S. & Fischer, I. *A Handbook of Modal Counterpoint*. New York: The Free Press, 1967.

Salzer, F. & C. Schachter. *Counterpoint in Composition*. New York: McGraw-Hill, 1969.

Schenker, H. *Kontrapunkt, Erster Halbband: Cantus firmus und Zweistimmiger Satz*. Vienna: Universal, 1910. In English as: *Counterpoint* (J. Rothgeb & J. Thym, trans., J. Rothgeb, ed., 1987). New York: Schirmer Books, 1987.

TEACHING WITH WESTERGAARD'S COUNTERPOINT RULES

FRED EVERETT MAUS

Peter Westergaard's textbook *An Introduction to Tonal Theory* includes a comprehensive presentation of species counterpoint in two and three parts.¹ I got to know this material thoroughly by working as a teaching assistant for Westergaard's undergraduate music theory course, and I have continued to teach counterpoint using versions of his rules.

Though many aspects of Westergaard's treatment are traditional, innovations set his treatment apart from others. The most striking, and the most pervasive in its effects, is a set of rules for the structure of individual lines. This paper will describe Westergaard's approach to lines in species counterpoint, and indicate some of its pedagogical virtues.

Westergaard distinguishes three kinds of line, with different structures and different contributions to the complete species composition. The main melodic motion of species composition is concentrated in one upper line, which projects a purposeful motion toward closure on the tonic pitch. In three-part writing, the other upper line has a less constrained, less directed structure. The bottom line in a texture is a bass line, with different structural constraints from either upper line.

These distinctions of function depart from traditional species practice, in which the same cantus firmus can appear in any part of the texture, while other lines can be relatively uneventful in their basic structure. Figure 1 shows one of Schenker's solutions for Fux's d minor cantus firmus.² Schenker's line drops sharply from its starting point, rises back to a climax one step higher, and then returns to the starting point. Though the registral motion is striking, it is easy to hear the line as an elaboration of a simple neighboring structure, d - e - d. This makes sense of the opening descent from d down to e: though the seventh initially seems slightly awkward, the low e emerges as an octave doubling of the high neighbor note. In that way of hearing it, the upper line is static in its basic structure (though not in its elaboration of that structure) and is clearly subordinate to the cantus firmus, which elaborates a more purposeful motion up to the dominant and down, stepwise, to the tonic. Westergaard's rules do not permit this kind of subordination of the upper line to the lower in two-part writing.

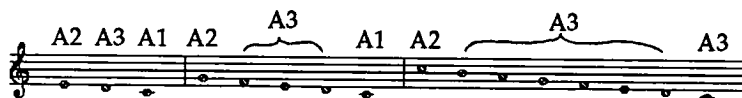
Figure 1.



Westergaard initially states the structural constraints for these lines as, in his words, "operational rules for constructing a line." There are two kinds of rules, which Westergaard calls "A rules" and "B rules." The "A rules" generate a "basic structure" for each line; the "B rules" generate "secondary structures." The "A rules" are different for each of the three kinds of line; the "B rules" are essentially the same for all three.

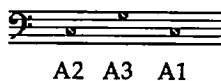
For an upper line with the main melodic motion or, as Westergaard calls it, an "upper line with a basic step motion," there are three "A rules." By using all three, in order, one completes a "basic step motion." Rule A.1 specifies that the last note of the basic step motion must be a tonic pitch; rule A.2 specifies that the first note of the basic step motion must be a tonic triad pitch a third, fifth, or octave above the final pitch; rule A.3 specifies that the two pitches must be connected by descending step motion. Figure 2 shows the three basic step motions in C major.

Figure 2.



For a bass line, there are also three "A rules." By using all three, one completes a "basic arpeggiation." Rule A.1 specifies that the last note of the basic arpeggiation is a tonic pitch; rule A.3 specifies that the middle note is a dominant pitch a fifth or fourth away from the last pitch. Figure 3 shows a basic arpeggiation in C major.

Figure 3.



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For a second upper line, Westergaard also gives three "A rules." Rule A.1 and A.2 specify that the last and first pitch must be tonic triad pitches no more than an octave apart. Rule A.3 allows the introduction of neighbor or passing motion between these two. In my experience, subsequent elaborations tend to blur the distinction between notes introduced by A.3 and notes belonging to other structures.³ Accordingly, I use only two "A rules" for a second upper line. The line must end with a tonic triad pitch, and must begin with a tonic triad pitch no more than an octave away.

When I teach this material, I don't use the term "A rule"; I call the "A rules" *rules of background structure*, for an obvious reason: Westergaard's rules introduce something like the fundamental or background structures of Schenker's final theory into species counterpoint.

Using these background structures requires the formulation of rules for elaborating the background structures into complete lines. Westergaard's way of doing this is remarkably simple and effective. His "B rules" offer ways of adding notes to the background structures, in a determinate order. More specifically, they describe various contexts and specify what kind of new pitch material can be added in that context.

There are four "B rules." Rule B.1 permits the addition of a repetition after any tonic triad pitch. Rule B.2 permits the introduction of a neighbor between any two notes with the same pitch. Rule B.3 permits the insertion of a tonic triad pitch between any two pitches, provided no dissonant skip nor skip larger than an octave results; for upper lines, B.3 also permits introduction of a tonic triad pitch before the first note of the line. (This is Westergaard's formulation of Rule B.3. So stated, rule B.3 makes Rule B.1 redundant; but this is an undesirable consequence, as Westergaard realizes, since the effect of prolonging a single pitch by repetition is quite different from the effect of moving to a different pitch. A slightly cumbersome, but more precise, rule would specify that B.3 introduces a tonic triad pitch that differs from the pitches before and after it.⁴ There is another problem: it is not clear why B.3 should permit the introduction of a tonic triad pitch *before* the first note of the basic structure of a second upper line. That is, it is not clear that one would ever have good reason to understand the first note of such a structurally unconstrained line as anything other than the first note of the basic structure. A better version of B.3 would permit the introduction of a pitch before the basic structure only for an upper line with a basic step motion.) Rule B.4 permits the filling of any skip with stepwise passing motion.

Westergaard calls the result of the application of these rules "secondary structures." In my classes I call them *elaborations*, with the idea that an "elaboration," more than a "secondary structure," sounds like something one might really want to have; and I call the "B-rules" *rules of elaboration*.

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One effect of the rules of elaboration is to orient the line solidly around tonic triad pitches. Every note introduced in elaboration of the basic structure is either a tonic triad pitch, a neighbor note prolonging a tonic triad pitch, or passing motion to or from tonic triad pitches. Only tonic triad pitches can be prolonged by repetition. By the end of a line, every non-tonic-triad pitch has been displaced stepwise by a tonic triad pitch; no non-tonic-triad pitches are left hanging.

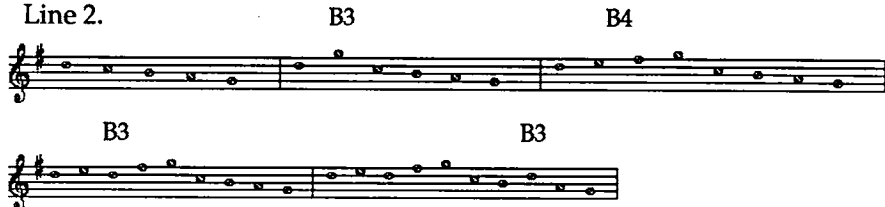
Figure 4 shows the construction of several lines using these rules. Notice that the interest of a line often comes from the interruption of a passing or neighboring motion. It is useful to distinguish two kinds of interruption. If the interruption takes place where the interrupted structure has reached a non-tonic-triad pitch, that pitch will be left hanging, creating a perceptible need for the line to return and complete the structure. If the interruption takes place where the interrupted structure is about to move from a tonic triad pitch to a non-tonic-triad pitch, the fact that an interruption has occurred will become evident only when the interrupted structure resumes, forcing an intriguing reconstrual of the structure of the passage.

Figure 4.

Line 1.

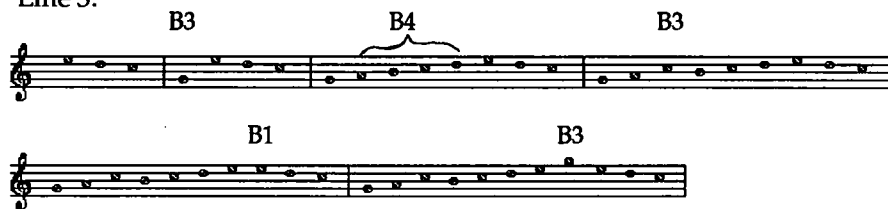


Line 2.



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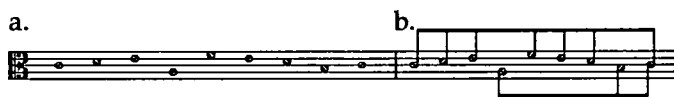
Line 3.



David Lewin's paper *An Interesting Global Rule for Species Counterpoint* also addresses pitches left hanging in lines.⁵ Lewin's aims are different from Westergaard's; Lewin is concerned with modal counterpoint, not with counterpoint that will serve as a basis for understanding tonal music. Still, it is interesting to compare Lewin's global rule with Westergaard's rules.

According to Lewin's global rule, any pitch more than a second away from the tonic creates a gap that must be filled in before the end by stepwise motion to the tonic. Lewin formulates the rule as follows: for every note X lying above the cadence tone, some note lying one step lower than X must appear in the line at some point subsequent to X; and for every note X lying below the cadence tone, some note lying one step higher than X must appear in the line at some point subsequent to X. Figure 5a shows one of Lewin's lines.

Figure 5.



There are several important differences between Lewin's rule and Westergaard's "B rules." First, Lewin requires all non-tonic pitches to be led stepwise to the tonic, while Westergaard only requires that non-tonic-triad pitches be led stepwise to tonic triad pitches. Thus, Westergaard's rules will permit some gaps that Lewin's constraint would fill. This difference may not be very important. In fact, Lewin mentions a looser constraint that allows gaps between the tonic and certain non-tonic pitches "that can idiomatically be left hanging"; perhaps, in tonal counterpoint, the tonic triad pitches are precisely the ones that can be left hanging in this way.

Second, Lewin's rule does not constrain the *beginning* of motion in a registral area of a line, but only requires that all motion, wherever it begins, eventually lead back to the tonic. Westergaard's rules ensure that all non-tonic-triad pitches are ultimately contained within structures that begin and

end with tonic triad pitches. Lewin's lines have a certain potential for dramatic effect that Westergaard's do not: in Lewin's lines, a pitch that does not tend to confirm the tonic can appear without preparation, provided it is eventually led to the tonic. Figure 5a is an instance: the fourth note tends to disturb the clear tonic role of c, but its effect is minimized by the stepwise motion that links it to the final tonic. In Westergaard's lines, much of the interest derives, instead, from interruption and delay of structures that begin and end by confirming the tonic triad.

A third difference is crucial. Lines that satisfy Lewin's rule can imply a polyphonic effect. Motion toward the tonic from above and below can overlap rhythmically in ways that suggest two distinct lines converging on the tonic. In Figure 5, the upper register is involved in neighboring of e and descent to c *during the same time* that the lower register is involved in leading from a up to c; the overlapping structures are marked in Figure 5b. Westergaard's rules preclude any temporal overlapping of incomplete structures. A passing or neighboring motion may be *interrupted* by some other construction, but the latter must be completed before the original motion resumes. Figure 6 contrasts some elaborations that Westergaard's rules permit with others that are not possible. As Figure 6 shows, Westergaard's rules define the distinction between monophonic and polyphonic lines in large part by temporal, rather than registral, constraint. The effect of a single line results, in part, because elaborations always delay the continuation of the configurations they elaborate.

Figure 6



Another consequence of Westergaard's rules also contributes to his conception of a monophonic line. His rules do not provide any way to construct a skip between two notes when neither is a tonic triad pitch. The only skips that can occur in his background structures are between tonic triad pitches, and the only rule of elaboration that can create a skip is B.3,

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which allows the introduction of tonic triad pitches. As Figure 7 shows, B.3 allows the creation of skips to and away from non-tonic-triad pitches, but at least one pitch in any skip must be a tonic triad pitch. Given such a constraint, it becomes possible to think of a skip between non-tonic-triad pitches as a clear index of a polyphonic line.

Figure 7.



I believe Westergaard's rules are too stringent here, though only slightly. In my classes I permit a skip between non-tonic-triad pitches in one situation: when a line approaches a tonic triad pitch stepwise, a new pitch may be inserted before the tonic triad pitch, a step away from the tonic triad pitch in the opposite direction from the previous stepwise motion. Figure 8 illustrates this elaboration. To my ear, the resulting configuration does not contradict the sense of a monophonic line. To preserve the clarity of the convergence on a tonic triad pitch, I stipulate that the three-note structure cannot be broken up by further elaborations; that is, the three notes must remain as immediately successive notes in the completed line.

Figure 8.



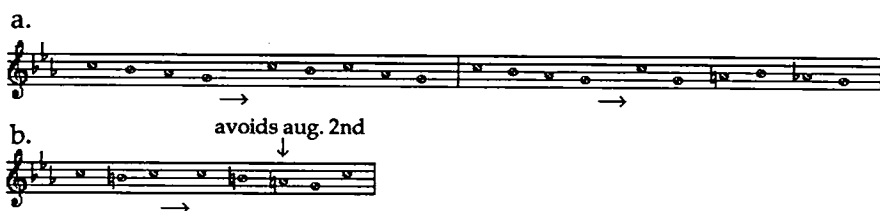
Having created precise criteria for a monophonic line, Westergaard is able to include some excellent exercises in the construction of polyphonic or, in his term, compound lines. These involve taking a three-part species composition and combining two of the lines into a single compound line. The compound line, if carefully constructed, will allow a listener to follow the structures of both of the underlying lines. Two phenomena emerge as clear indices of compound lines: skips between non-tonic-triad pitches, as I mentioned, and dissonant skips. Westergaard's rules for compound lines specify that dissonant skips must always result from arpeggiation of a dissonant simultaneity in the three-part counterpoint.

Incidentally, I find compound lines constructed in this way most satisfactory, musically, when the three-part source contains two first-species lines and a third line in first, second, or fourth species; to my taste,

three-part sources involving third species or combined species often yield compound lines that seem awkward or busy. I prefer to explain the latter possibilities outside the context of complete species compositions.

Westergaard gives specific instructions for handling of the sixth and seventh degrees in minor. Whenever the sixth or seventh degree is originally constructed in a line, it will be followed by stepwise motion, though subsequent elaboration may break this up. If the sixth or seventh degree is followed immediately by stepwise ascent when it is first constructed, the altered form should be used; if it is followed immediately by stepwise descent when it is first constructed, the unaltered form should be used. Exceptions are permitted to avoid forming an augmented second when the sixth or seventh degree is first added to a line. Once a note is added to the line it cannot subsequently change. Figure 9 shows some possible constructions.

Figure 9.



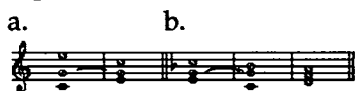
There are two main advantages to Westergaard's handling of the sixth and seventh degrees. First, the criteria of choice are exclusively linear. This provides an excellent model for comparison with harmonically influenced treatment of the sixth and seventh degrees in 18th- and 19th-century music. Second, since the stepwise motion that determines alterations may be broken up by elaboration, one can sometimes hear the occurrence of an altered or unaltered note as pointing ahead to a continuation that has been delayed. In Figure 9a, the use of b-flat indicates that the following c does not close a neighboring motion; since the b-flat points toward a note a step lower, the c is introduced by rule B.3 and delays the descent. In 9b, the use of b-natural points toward c, and the a arises from a subsequent elaboration.

Obviously Westergaard's rules introduce pitch hierarchy into species counterpoint across timespans larger than a single measure. Some theorists may want to resist this innovation.⁶ John Rothgeb has addressed a related

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issue. He cites the two measures in Figure 10a, and specifies that “the progression . . . is not to be construed as a single, prolonged c harmony, but rather, simply as a succession—perfectly coherent in terms of voice-leading—in which the two consecutive bars happen to define the same harmony.”⁷

Figure 10.



He continues by arguing that if harmonic prolongation is introduced into species counterpoint, there is no reason to exclude a configuration like Figure 10b. But this would destroy the distinction between first and second species. Rothgeb concludes that “strict counterpoint rightly makes no assumptions about harmonic relations over relatively long spans, because to do so would be to subvert the real purpose of the exercise, which is the study of voice leading apart from the influence of other musical forces.”

Rothgeb’s argument can be restated as a dilemma for someone who wants to think of species counterpoint in terms of extended harmonic prolongation. *Either* the dissonant passing and neighboring motion associated with harmonic prolongation must be incorporated across significant spans of species counterpoint, in which case the distinction of different species will disappear; *or*, if dissonant passing and neighboring motion are not admitted at spans larger than a measure, then harmonic prolongation has been given a new, restrictive definition that does not adequately reflect its explanatory power in relation to 18th- and 19th-century music.

So formulated, Rothgeb’s argument is attractive. I don’t think it provides a reason to reject Westergaard’s approach, but it does clarify what Westergaard has done. In effect, Westergaard accepts the second option of the dilemma. Though Westergaard doesn’t put it this way, his rules for constructing lines treat a line as a prolongation of the tonic triad, but the conception of prolongation is highly simplified in relation to the conception that is appropriate for analysis of 18th- and 19th-century music.

The simplification emerges most clearly in Westergaard’s treatment of neighboring and passing motion. Westergaard construes neighboring and passing motion in two nonequivalent ways. In his rules for combining lines in second and third species, he treats neighbor notes and passing notes as types of dissonance: a dissonant pitch in a second or third species line is a neighbor note or passing note depending on whether the line changes direction immediately after the note. In his rules for constructing individual

lines, all non-tonic-triad pitches are neighbor notes or passing notes, depending on how they are initially introduced into the line.

These nonequivalent senses of neighboring and passing motion can come into direct conflict. In Figure 11, d in the bass in m. 2 establishes the g in the upper line as a dissonant neighbor to f#; but in relation to the structure of the upper line, f# must be a passing note that leads to the g. Consonant support and linear structure, coordinated in the prolongations of 18th- and 19th-century music, come apart in Westergaard's counterpoint.

Figure 11.



As I see it, the justification for this strange split is pedagogical. That is, it is only possible to combine a prolongational account of linear structure with the traditional treatment of dissonance in species counterpoint by adopting a special, restricted conception of the criteria for pitch hierarchy in linear structure, and the pedagogical benefits of having such an account outweigh the risks.

Two different kinds of pedagogical advantage can be distinguished. First, the rules for linear structure are obviously designed to prepare students for study of Schenkerian theories of tonality. Theorists might argue about whether Westergaard's treatment of neighbor and passing motion distorts Schenker's thought to an extent that might permanently confuse students; I don't think it does.

A second kind of pedagogical consideration bears on beginning students' experience of species counterpoint as simple composition—the experience of listening to complete species compositions, and also students' experience of their own activity of composing—rather than on eventual Schenkerian studies. I shall close by mentioning some pedagogical virtues of Westergaard's approach that fall into this second category:

1. Most counterpoint textbooks contain instructions about how to write a line, but the instructions are almost exclusively in the form of prohibitions. Westergaard's treatment contrasts sharply with this rather discouraging approach. Westergaard's rules give a student ways of doing something. They present a student with basic structures that are coherent, purposeful, and complete, although boring, and they offer the student tools

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for elaborating these boring structures into something with much more content and individuality. The goal of elaboration is to add content and individuality *without losing* the coherent, purposeful, complete qualities derived from the background structure. Students are often apprehensive about starting anything that resembles composition; by offering students a definite goal for their work, Westergaard's rules do much to alleviate this nervousness.⁸

2. Westergaard's rules allow a student to construct a model of a listener. That is, the student can imagine that the species counterpoint composition is addressed to a listener who will interpret its structure in accord with Westergaard's rules. This makes it possible to consider issues of clarity or ambiguity of structure quite precisely, and allows the student to think about composing in light of the goal of clear communication.⁹

3. The precision of Westergaard's rules makes it easy to do without a *cantus firmus*. Actually Westergaard's textbook does not take advantage of this possibility, but I find that students are able to work within his rules to compose *all* the lines of a two- or three-part species composition. Almost all my students learn to do this adequately, some of them elegantly. This is much more exciting and instructive than working with a *cantus firmus*.

4. The definiteness of the rules for structures of lines, in combination with the definiteness of Westergaard's voice leading rules, allows students to recognize in a very direct way the distinct demands of the horizontal and vertical dimensions; that is, the tension between horizontal and vertical, traditionally associated with species counterpoint, becomes a particularly obvious aspect of the experience of composing.

5. Very importantly, Westergaard's rules allow students in their first year of music theory study to have the experience of hearing species compositions with an explicit understanding of the structural contribution of every note. This gives them a model of informed musical experience that remains valuable as they move to more complex kinds of music. And the fact that their hearing of species counterpoint is influenced by verbal formulations gives a valuable example, early in their experience of music theory study, of the contributions of explicitly formulated theory and analysis to musical experience.¹⁰

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NOTES

¹Westergaard, *An Introduction to Tonal Theory* (W.W. Norton, 1975). The book contains much more than the counterpoint material that I discuss in this paper: in particular, it moves from species counterpoint to a fine theory of rhythm in tonal music.

The present paper originated as a contribution to a panel, "The Tonal-Theoretical Work of Peter Westergaard," presented at the Society for Music Theory Meeting, Cincinnati, 1991. Each paper on the panel dealt with a particular aspect of the book. My focus on rules for constructing lines derives from the structure of the panel, and does not imply any judgment that other material in the book is less deserving of attention. On the contrary: sustained discussion of the book's many theoretical and pedagogical strengths is long overdue.

²Schenker, *Counterpoint*, Vol. 1 trans. by Rothgeb and Thym (Schirmer, 1987), pp. 224-225.

³To put the point more expansively: one virtue of Westergaard's A and B rules, apart from the present case, is that the structures created by A rules can be *heard* as the basic motion of the line, even when the line has been elaborated by the B rules (provided the elaboration is sensitive in this respect). But neighboring and passing motions introduced to a second upper line by rule A.3 cannot typically be heard as part of a vivid underlying structure, once the line is elaborated. Thus, in terms of its contribution to a listener's experience, rule A.3 for a second upper line is not analogous to the A rules for other lines.

⁴Westergaard mentioned in Cincinnati that he permits this redundancy for the sake of a subsequent argument about the criteria for choosing between different structural explanations of a line. (The relevant argument is on pp. 64-65). Since I do not use this argument in my teaching, I do not have Westergaard's reason for retaining the redundancy.

⁵David Lewin, "An Interesting Global Rule for Species Counterpoint," *In Theory Only* 6/8 (1983): 19-44.

⁶The same theorists might object to my analytical comments on Figure 1. I would certainly say that those comments represent a *choice* of a way of regarding the pitch structure, but I don't find the results arbitrary or unhelpful.

⁷John Rothgeb, "Strict Counterpoint and Tonal Theory," *Journal of Music Theory* 19/2 (1975): 260-284.

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⁸This is also a significant virtue of Schoenberg's treatment of motive, sentence, and period in *Fundamentals of Musical Composition* (London: Faber and Faber, 1967).

Incidentally, when I teach beginning theory, I find it effective to move from Westergaard-style counterpoint to the Schoenberg material. I combine Schoenberg's ideas on the patterning of repetition and contrast with a model of the harmonic structure of a phrase (based on Marion A. Guck, "The Functional Relations of Chords," in *In Theory Only*, 4/6) and Westergaard-derived notions about the linear structure of outer parts. Unlike Westergaard, I leave many aspects of rhythmic structure to the students' intuitions.

⁹Westergaard's textbook includes a provocative discussion of interest and ambiguity in lines (pp. 63-69; 82-87). The material is brilliantly worked out, but I do not use it in teaching. I am less tolerant than Westergaard of structurally ambiguous lines; instead, I place heavy emphasis on the vivid projection of background structure, which usually involves avoidance of ambiguity.

¹⁰For information on the availability of Westergaard's textbook, one should contact W.W. Norton, or Peter Westergaard (Department of Music, Princeton University, Princeton, N.J. 08544). A teacher who wants to use some of these rules without adopting Westergaard's textbook should credit Westergaard's textbook as the source of the rules—they really are a very distinctive invention—and should inform students of how to contact Westergaard.

REMEDIAL THEORY COURSES FOR UNDERPREPARED STUDENTS: AN EXPERIMENTAL PROGRAM TO DEVELOP SUCCESSFUL TEACHING AND LEARNING STRATEGIES

ISABEL BAKER
ANTHONY KOSAR

Students entering Westminster Choir College are required to take screening exams for placement in the music theory core courses. Those failing to receive an adequate score are placed in THO21, a non-credit remedial music theory course designed to prepare them for the required music theory sequence. The course covers the basic material for studying tonal music theory. This material includes constructing and identifying key signatures, scales, modes, intervals, triads, and seventh chords along with the notation of rhythm and meter. While the work deals primarily with written theory, there is an aural-skills and keyboard component.

For several semesters this remedial course had a one third failure rate, many students retaking the course one or more times to pass. To decrease this unacceptable failure rate and to reduce attrition, without lowering course standards or changing its content, the Music Theory Department initiated an interdisciplinary effort with the Arts and Sciences Department—an experimental program conducted by a music theory instructor and a reading skills specialist. The rationale behind this collaborative effort was that the two departments dealt with issues of common interest and could complement each other, sharing their different perspectives in a mutually beneficial enterprise.

Although low achieving students perceived their primary need as mastering the course content, the teachers determined that their most common need was the learning and thinking skills basic to content mastery. Therefore, rather than using a product-oriented teaching model that emphasizes correct answers to course content questions—*what* is the right answer—we decided to use a process-oriented teaching method, focusing on developing learning and studying—*how* the correct answer is obtained.

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This teaching model concentrated instruction on the thinking and study skills involved in successful academic performance. We felt that teaching students the processes of efficient learning and studying would give them strategies they could use in other courses as well.

The objectives were to develop and improve student learning strategies and, at the same time, to examine and improve course procedures and teaching methods. An experimental program was launched that involved a teaching cohort of a music theory instructor, a reading specialist, and a graduate assistant. The student population consisted of 15 high-risk students, all of whom had previously failed THO21 one or more times. Admittedly this was an unrepresentative group of students; however, the department felt that these students with the most serious problems could provide a broad spectrum of possible student difficulties. As a result, we would be able to experiment with many strategies to facilitate learning and comprehension due to the special nature of the group.

EXPERIMENTAL COURSE FORMAT

To enable students to develop the study skills needed for success in college, a rigorous course format was instituted.

Classes: The music instructor taught the course three days a week. A process-oriented, interactive style of instruction was used. Time was set aside each class period for drilling students on the topic and for providing immediate reinforcement and review.

Each class was attended by the reading specialist and the graduate assistant. Having the specialist and assistant attend the classes enabled them to see the course from two perspectives simultaneously, that of teacher and that of student, and guaranteed the instructor immediate feedback about teaching strategies and student perceptions. Because the reading specialist would bring no background knowledge of the course material to the situation, she had the advantage of seeing the course from the viewpoint of an unprepared student. Furthermore, the specialist's familiarity with college classroom instruction in other disciplines enabled her to discuss with the instructor other strategies that could be useful in facilitating student comprehension. The specialist could also determine if there were any particular study strategies needed in learning music theory, as each discipline differs in its demands upon students.

The graduate assistant's attendance was essential to know what material was being covered and what approach was being used so he could consistently reinforce the content in the lab sessions. Relying on student

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feedback about what goes on in a college classroom is untenable, as their perceptions are often distorted and may not provide the information necessary to get them the assistance they need. Attendance of both the specialist and assistant provided an objective record of what took place in the class.

Labs: The decision to institute compulsory lab sessions grew out of our perceptions of students' need for more engaged learning time. Required weekly one-hour lab sessions were conducted by the reading specialist and the graduate assistant. These sessions involved reviewing the material, clarifying any difficulties, discussing study strategies, and obtaining student feedback about the classes. The labs were an interactive study and practice period that encouraged students to reflect on the material and discuss their own learning strategies and academic progress. We felt it was important that students become active learners and learn to monitor their own comprehension and performance.

There were several other advantages to the lab session format. A major benefit was that the graduate student could extend, reinforce, and require practice of the class material, thus providing students with more engaged study time. Immediate reinforcement facilitates remembering for students learning new skills.

Students are usually hesitant to be candid to course instructors about academic concerns for fear of demeaning themselves. In the absence of the instructor, students could voice their concerns about academic problems in the more relaxed setting of the lab. We could therefore obtain feedback about the effectiveness of teaching methods and could get input and suggestions for course improvements.

Finally, both the specialist and the assistant could monitor student progress and provide feedback to the instructor about areas that might need additional clarification and reinforcement. After each session, a thorough written report was given the instructor, and he met often with the specialist and graduate assistant to evaluate course procedures and student progress.

Textbook: The textbook was John Clough and Joyce Conley's *Scales, Keys, Intervals, Triads, Rhythm, and Meter*, a programmed textbook that paced the students' learning and provided them with the questions and comprehension checks that competent students automatically use when learning. The step-by-step procedures reinforced the idea of learning as a process and walked the students through the mental procedures needed to learn the new concepts. The graduate assistant periodically checked the students' books in the lab session to ensure that they were completing their assignments.

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Attendance: This particular student group averaged 13 absences per student for their previous semester of THO21, which equalled one third of the course. Since many of the students who failed THO21 may have done so because of excessive absences, for this experimental program we instituted a strict attendance policy. In the experimental section students were allowed only three absences during the semester. Each absence over three lowered the student's final average five points, and any time a student was late to class, the final average was lowered one point. This policy applied to both the class and the required lab sessions.

Assignments: Because each class session built on the mastery of previous material, it was important that students kept up with their work. To ensure that the students completed their required daily assignments on time, assignments turned in late received only 80% credit, and assignments more than one week late were not accepted. This policy, which applied to both written and keyboard work, had the added advantage of encouraging good study habits.

Grades: At the time of the experiment the theory department's policy was that in addition to maintaining a passing average of 65%, a student must also demonstrate a mastery of the material by obtaining a minimum score of 85% on the final examination. This policy was instituted to ensure a greater chance of success in subsequent theory courses, as the material in these courses builds on the material covered in previous ones. Therefore a higher level of mastery in earlier work should improve the chances of success in later courses.

TEACHING STRATEGIES AND PROCEDURES

Following are some of the teaching strategies and course procedures developed and employed during the experimental section of THO21 as a result of the collaborative effort of the teaching staff, based upon constant observation of students and input from students:

1. Process-oriented instruction: When presenting new material the instructor described the mental steps he used, literally modelling the procedures used by an accomplished learner, while demonstrating the self-questioning strategies that guide learning. For example, the following excerpt from a lecture:

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"Suppose I want to construct a major 6th below E flat. Well, *what do I think?*

First, I have to find a pitch a 6th below E—and that's G. *Then* I think of the G Major scale and construct it, because I want to find out if there is an E flat in the G Major scale.

When I see that there is no E flat, I have a problem. I want a major 6th, but I can't use the G to make a major 6th. Well, let's see—*what do I know?*

I know that from E to G is a major 6th. *What can I do now?*

Well, if I lower the E and the G the same amount—it has to be the same amount for both, I then have a major 6th. Now I have E flat and a G flat by lowering both the same—and the major 6th I wanted to construct."

Similarly, a student answering a question was required to explain the method. It was stressed that although correct answers are useful in specific situations, the process for arriving at the answer often has a much more general application. Because the focus was the process rather than the answer, students knew that it was "OK not to understand." An example of such reaction is a student who said, "I want to answer this question, because I *don't* understand."

This approach extended to the homework assignments. Students had the opportunity to revise assignments an unlimited number of times to correct their mistakes and raise their grades. Therefore the first submitted attempt at an assignment was not necessarily perceived as a completed product, but might be seen as part of the process of learning how to master that particular concept.

2. Relevance of Course Content: The instructor always explained how the approach and a particular topic related to other concepts covered in the class and in future music theory courses. For example:

"The reason for this emphasis on chromatic and diatonic semitones is that chromatic semitones are used in altering interval size; diatonic semitones are used in constructing scales. We will use them next week and throughout the course."

"Now I'm going to talk about combining Roman numerals with inversion symbols. There's nothing new here; you've already had Roman numerals; you've already worked with inversion symbols."

3. Immediate Practice and Reinforcement: Constant and varied drill with immediate evaluation and reinforcement was vital for this group.

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Frequent homework and classwork assignments, graded and returned the following class period, were necessary as it was important that misunderstandings and errors not be built on and thus impede further learning. Outside drill with the graduate assistant and student tutors from the college tutoring program complemented the various types of written, aural, and keyboard drills in the classroom. The lab component of the course actually produced one-third more practice and feedback time for the students.

4. Visual Format: In general, "bigger was better." Students were able to perform better when manuscript paper with slightly larger staves was used.

Similarly, tests were put together with blank space between sections, to clearly limit the material in each part. Format was also considered in selecting a textbook; a textbook that doesn't look cluttered is easier for the student to read.

An additional example of efficient visual organization was a notetaking paper we designed (See Fig.1) which was half manuscript paper and half notebook paper. This facilitated lecture notetaking as students didn't have to flip back and forth to take notes or create their own staves as they were writing.

5. Use of the Overhead Projector: The overhead projector was used instead of the blackboard and proved to have many advantages:

a. The instructor was able to face the students constantly, so that they could hear him better. This also allowed him to respond to questions—or even puzzled looks—immediately.

b. Colors appeared exactly as on the printed page or piano keyboard. On the blackboard, the situation is reversed.

c. Material could be prepared beforehand, thus maximizing use of class time.

d. The instructor could go back to a previous topic, to review it or to clarify subsequent material, by simply returning to the relevant overhead projector sheet.

e. Material could be saved and reused in later courses.

REMEDIAL THEORY COURSES

Figure 1.

[illegible]

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6. No Prior Knowledge Assumed: The instructor assumed that the students had little prior knowledge and defined all required terms. The activity of defining terminology was most productive when it involved student participation. The instructor tapped into students' prior knowledge, finding out what meaning they associated with a term. He then worked with them as a group to elaborate on the meanings and create an adequate definition.

7. Elimination of Unnecessary Academic Stress: Test anxiety affects student performance on examinations, so we tried to eliminate any unnecessary stress. The minimum grade of 85% on the final caused great concern to the class; students were extremely anxious about taking the exam because their entire semester's success depended on this one measure. Allowing the students two chances to take the exam helped relieve some of the test anxiety. In the experimental class, six students took the final a second time; four of them improved their scores enough to pass the course. The following semester in the first post-experimental THO21 class, nine of the seventeen who originally failed the final passed when retaking the exam.

8. Study Skills Strategies: The weekly lab sessions focussed on discussing with students the study skills for success. Unsuccessful students often have an inadequate conception of the amount and type of work involved in doing well, believing that daily preparation for class may be desirable but not essential. Their concept of adequate preparation was often thirty minutes, whereas competent students think in terms of hours. As a result, time management and the amount of time needed for study were a focus of many of the sessions.

Efficient lecture notetaking techniques were discussed and shared, as were methods of studying and reviewing for tests. An example of student strategy is the mnemonic device one student developed for remembering the order of sharp keys: Can God Demand An Estimate Before Filing Charges? Mnemonic devices were helpful organizational systems; students using them discovered the value of organizing material when they were studying and were encouraged to use other organizational systems also.

Frequently students were unaware of the consequences of their test and homework marks. Therefore, a special form was provided for students to keep track of their grades so they could monitor their progress. Figuring out their current averages proved to be a useful method to alert them to their status in the course, and to motivate them to further efforts.

REMEDIAL THEORY COURSES

One of the most important components of the lab sessions was providing a forum for student feedback about assignments and teaching methods. As a result of student input, many of the teaching strategies here described were initiated or evaluated (e.g., use of the overhead; new lecture notetaking paper).

STUDENT FEEDBACK ABOUT TEACHING METHODS

At the end of the course, the reading specialist gave the class a survey listing teaching strategies used by the instructor with examples taken from the class lectures and asked the students to indicate which were most helpful. The results were:

1. Returning all written work promptly.
2. Providing daily timed drills on material.
3. Using the overhead projector.
4. Providing mnemonic devices to aid learning (e.g., to distinguish types of semitones, Diatonic—Different letter name; Chromatic—Same letter name).
5. Assuming students have no knowledge of new concepts and beginning with the most basic information when presenting new material.

Also helpful were:

1. Encouraging correction of written work by giving 1/2 credit for corrections.
2. Encouraging practice of standard music notation skills (e.g., "Don't just think it; write it down.").
3. Reviewing concepts causing difficulty in homework before moving on to something new.
4. Providing handouts for learning (e.g., Circle of Fifths, Steps to Identify Intervals).

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5. Encouraging students to think of the mental processes they must use to solve a problem (e.g., "If you want to construct a Dorian mode on E, what questions must you ask yourself?").

Students were also asked to identify what parts of the lab sessions they found helpful. The following five strategies were selected:

1. Encouraging prompt performance of course requirements (e.g., lab grades were given for completing keyboard assignments on time).
2. Providing computer printouts of current grades so that students can check progress.
3. Providing staff/lined notetaking paper.
4. Encouraging discussion of course content so that students can share any solutions or difficulties.
5. Graduate student and study skills instructor attending classes to follow course progress.

STATISTICS

The approach in this section of THO21 lowered the usual 33% failure rate to a 23% failure rate, even for these high-risk students. While the results for the experimental group seem better than the usual results for the remedial course, and might even seem impressive considering the high-risk population of the group, any evaluation of the success of a fundamentals of theory course must include the performance of students in later music theory courses to ascertain how well prepared they were for work at a more advanced level.

Unfortunately, the students who participated in the experimental class described here did not fare well in their following theory courses. Only two students went on to successfully complete the following theory course and none of these students ever completed the third theory course in the sequence. As stated earlier, however, the students who made up this experimental class were not a representative sampling but consisted solely of students judged to be high-risk.

REMEDIAL THEORY COURSES

Many of the teaching strategies developed in the experimental section were employed by the same theory instructor when THO21 was next offered. There were three main differences: 1) there was no study-skills specialist working with the theory instructor; 2) the minimum passing average was raised from 65% to 72%; and 3) because of the large number of students in the two sections and the availability of only one graduate assistant, the lab sessions were limited to only those students experiencing the most serious difficulties.

In Figure 2 the percentages of students passing the pre-experimental section of THO21 and the two courses following it in the music theory sequence (TH121 and TH122) are compared with the percentages of students passing the post-experimental section of THO21 and the two courses following it. In the last pre-experimental class, 35.4% of the 48 students failed the class. Of the students who earned passing grades, only 33.3% succeeded in TH121 in their following semester and only 28.9% successfully completed TH122 two semesters later.

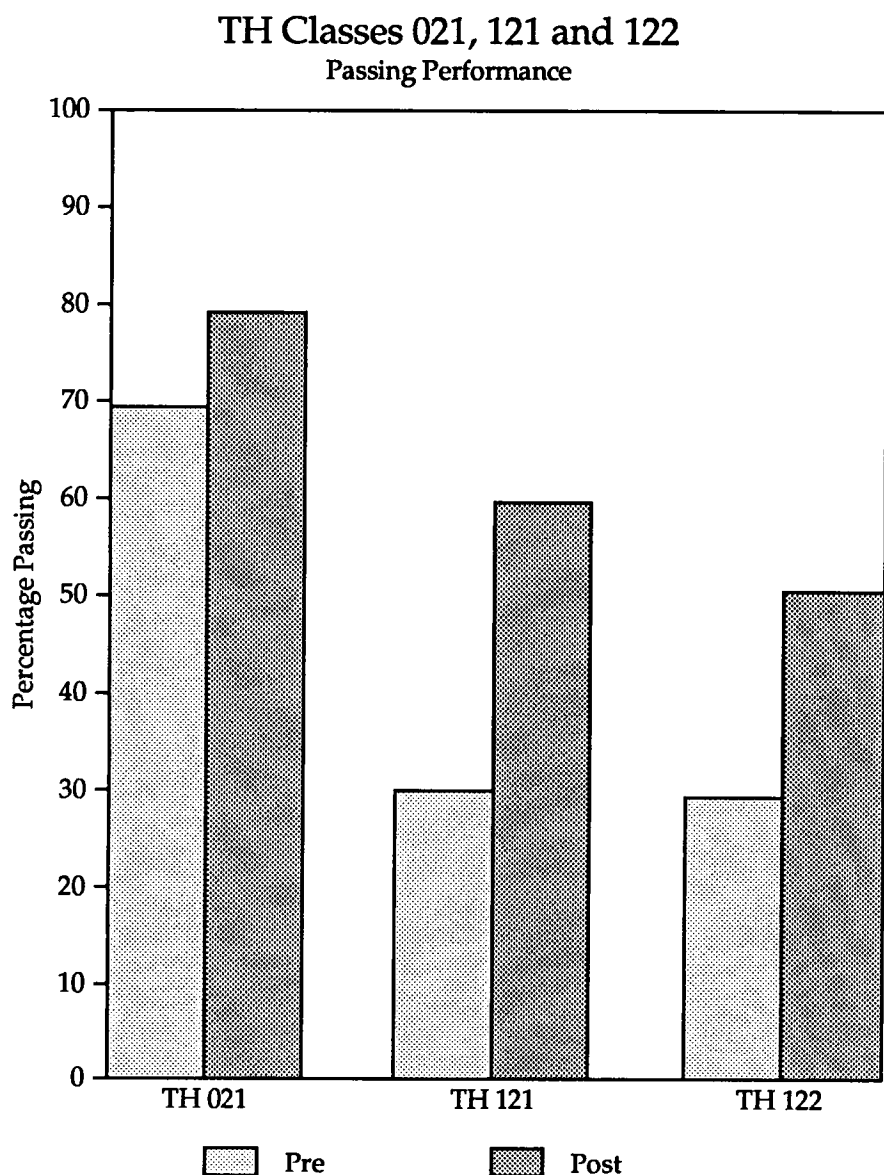
The statistics for the post-experimental class are much more impressive, especially when compared to statistics from the last pre-experimental class. Figure 2 shows that only 21.6% of the 60 students in the post-experimental class failed the course. Of the students who earned passing grades, 58.3% succeeded in TH121 the following semester and 50% successfully completed TH122 two semesters later.

These results seem to indicate that the teaching and learning strategies developed in the experimental section of THO21, when applied to a normal distribution of students, greatly enhance the success rate in that course as well as nearly doubling the success rate in subsequent theory courses.

IMPLICATIONS FOR TEACHING

Remedial music theory courses cannot be handled using the same methods as other college classes. Because the students must quickly "catch up" on material vital for their success in subsequent theory classes, and because many of these students are academically unprepared for college-level work—in our program this was indicated by their performance on the New Jersey Basic College Skills Placement Test as well as the theory placement exam—special care must be taken to meet their particular needs. The following procedures, therefore, should be considered in remedial theory courses:

Figure 2.



REMEDIAL THEORY COURSES

1. The experimental design for the pilot program used a unique format of a teaching staff composed of two faculty members, an expert in music theory and a learning specialist, and a graduate assistant. Other methods are possible. For example, a faculty instructor could teach the course aided by a graduate assistant or perhaps an undergraduate tutor who had been trained in the needed study skills and who could conduct laboratory sessions. These labs could be monitored occasionally by a reading/study-skills specialist. Should the aid of a graduate assistant not be possible, release time for the instructor could provide the necessary extra hours for the preparing and marking that this type of instruction requires.

2. Lab sessions with the graduate assistant can be required to work with the students on developing the study skills in addition to reviewing, drilling, and practicing class material. An alternative to this could be supervised study sessions conducted by the graduate assistant or trained tutors.

3. The assignments and classwork should be supplemented with drill and practice provided by computers and appropriate interactive software. This will allow drill to be tailored to individual needs.

4. The teaching strategies and course procedures developed in the experimental section of THO21 provide suggestions of useful methods instructors can use in remedial courses. Our student survey indicated which strategies students found most effective, and the statistical results provide data about the results of using these methods.

5. Students benefit when faculty members develop and share with each other new teaching and learning strategies. Interaction within and between departments is crucial in meeting the needs of underprepared students. As teachers, we should not regard student difficulties in our courses as exclusively our own problems. Our experience at Westminster Choir College indicates that a student inadequacy in one course is often mirrored by similar failures in other areas, and is often symptomatic of a larger academic problem. Working together and sharing expertise, we can develop instructional methods that will increase teaching effectiveness and facilitate learning for marginal students.

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SUMMARY

The experimental section of THO21 attempted to develop strategies and procedures to individualize instruction in the remedial music theory course as part of a larger program to prepare the students to succeed academically in all college courses. The combined effort of two departments resulted in a model which, when used in later remedial courses, significantly improved the performance of students in the theory sequence. The issues of common interest and mutual benefit provided the impetus for the productive cooperation of two interrelated departments. This interdisciplinary cooperation was part of the college's effort to deal with the larger problem of underprepared students. The experimental program illustrates the advantage of departments sharing both problems and expertise for the common goal of improving student academic performance and reducing attrition.

KEYBOARD HARMONY: A COURSEWARE SYSTEM FOR HARMONIC SKILLS ACQUISITION

Naphtali Wagner

Teaching music, perhaps more than any other subject, requires the integration of formal rules with subjective considerations. A music teacher's role is, therefore, to impart technical skills while simultaneously developing creative abilities. A similar differentiation may be made concerning the distribution of tasks to men and machines, that is, between the human teacher and the mechanical one—the computer. The finer points of interpretation, criticism of exercises in composition, and analysis of musical works are areas that will most likely remain in the domain of the human music teacher for a long time to come. However, such skills as aural perception development (music dictation), solfege, keyboard harmony, exact renderings of notes and rhythm are well suited to computer-aided drill.

The traditional study of harmony clearly illustrates the polarity between technical and creative aspects. It involves technical drill such as playing harmonic progressions, realization of their schematic outlines, developing harmonic aural perception, as well as more creative tasks, raising from free harmonization of a given melody, through improvisation based on harmonic progressions, to composition in a variety of specific styles.¹

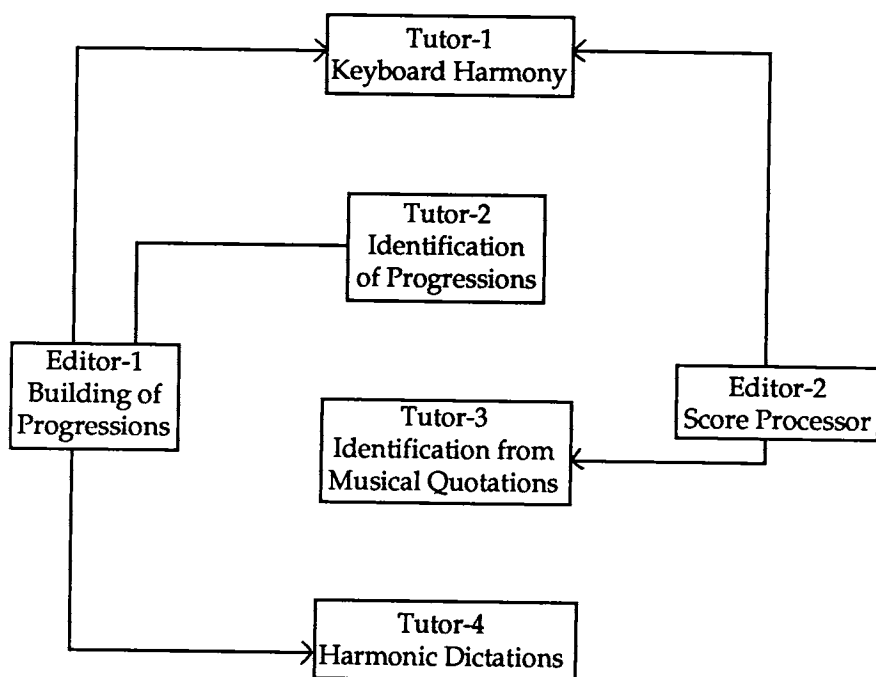
The project here outlined had as its goal the creation of a user-friendly work environment for the computer-assisted drill of the technical skills necessary for the foundations required for creative work.

"H" (Harmony), a Xanadu Ltd. project under development by Hebrew University of Jerusalem musicians and software specialists, is part of "Musicom," a courseware series encompassing a variety of music education areas, music theory basics among them. This courseware, which deals in an in-depth fashion with the tonal system and provides a broad range of drill in the construction and identification of scales, intervals, and chords, is a particularly well-suited preparation for study with the "H" series.

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The hardware necessary for operating the above-mentioned software consists of an IBM PC (or IBM-compatible PC), an interface card, and a MIDI music keyboard. The "H" software system contains four tutors and is supported by two editors:

Chart 1. Keyboard Harmony.



The system focuses on two topics: construction of harmonic progressions (Tutor 1) and harmonic ear training (Tutors 2, 3, & 4). Editor 1 and 2 provide the tools necessary for putting together exercises and examples for all four Tutors.²

STUDY MATERIALS

At present the software system under discussion is geared to diatonic harmonic progressions and excludes those exceptions engendered by me-

KEYBOARD HARMONY

lydic and harmonic minor scales. The system will eventually be extended to include chromatic harmony and various types of modulation.

Exercises are harmonic progressions from two to six chords each. Short progressions are usually examples of harmonic idioms, such as opening formulas or cadences. Longer progressions are likely to contain these formulas in broader and more detailed contexts.

Progressions are organized around topics such as the V⁷ chord and its inversions, diatonic sequences, super-tonic and subdominant 7th chords. These same topics are drilled in each unit from a different viewpoint. A student studying a specific topic in harmony, such as the cadential II⁶, may practice playing the cadence, learn to identify it by ear, and take harmonic dictation of progressions in which the same cadence occurs.

TARGET POPULATION

The courseware is primarily intended for harmony students within any program offering theory courses, such as schools of music or college music departments. Study material may be explained in lectures, following which the instructor refers students to relevant material for drilling. Alternately, students interested in auto-didactic work may find, in the courseware, the answer to their needs. An accompanying study manual guides them from one exercise to the following one and from one unit to the next. This user's handbook explains all screen options from the viewpoints of both their functional and their musical significance. In this sense, the independent student does not discover himself suddenly abandoned when faced by bewildering material.

THE PEDAGOGICAL APPROACH

One of the pedagogical decisions arrived at during the development stage of the system was to avoid, insofar as possible, any coercion or pressure on the user. The program contains no quantitative evaluation of the student's achievements but relies uniquely upon comments relevant to accurate performance and includes occasional words of praise or encouragement.

No conditions are set that demand successful completion of exercises as a prerequisite for advancing to more difficult drill. Progress is not automatically effectuated—students can be as hard or easy on themselves as they wish and determine their program and rate of progress by choosing both the content and method of drill. This does not mean that the student

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receives no guidance or direction in his work. Exercises are presented in a pragmatic sequence and with logical method, yet this sequence is offered as a suggestion only. The practice options offer hints, by their very presence, at various "routes" of progress, assuming that students will discover the route that best suits them.

The role of the instructor or supervisor is likely to find expression in the directing of students' choices of study routes according to the demands made by a specific theory course or an individual's rate of progress.

Eventually, support programs are to be developed that will provide the opportunity for a teacher to dictate the content of exercises by constructing their own harmonic progressions and entering their choice of examples from the music literature.

The description that follows focuses on the main "Keyboard Harmony" program and describes in concise terms the other programs that make up the "H" project.

TUTOR 1: KEYBOARD HARMONY

Keyboard harmony is one of the more important subjects taught in music theory courses and poses a frustrating pedagogical problem.³ The average student is likely to view the subject as a direct continuation of the tortures of the Spanish Inquisition, while instructors are often ill-equipped to increase student motivation. Workbooks intended for drill do not assist the students with the tiresome process of transposition and leave them in a state of uncertainty as to the accuracy of their performance of exercises. Musical examples meant to "illustrate" structures are likely to be too difficult for the beginning student, especially in cases where such a student has had little training at the piano or at score-reading.

The "Keyboard Harmony" tutor offers solutions to these problems. The principal task presented to the student by the tutor is the construction of harmonic progressions notated by symbols.

This task was chosen because of its accepted pedagogical value and because it permits evaluation. In other words, the accuracy of a harmonic progression constructed by the student may be verified by a computer. The evaluation requires that the computer be given the basic rules of traditional harmony. This was the major task confronting the software developers. The rules governing what is "permitted" or "forbidden" in traditional harmony are, indeed, defined with relative clarity in the body of theoretical knowledge upon which the teaching of harmony is based but they are not formally structured or formulated. For them to be expressed in algorithms, their definitions must be refined and clarified beyond ambiguity. Certainly

KEYBOARD HARMONY

not every rule of harmony needs to be considered as a distinct and independent algorithm—interdependence of rules needs to be taken into account. For instance, when following one rule leads to the breaking of another, preference rules must be established and the “transgression” permitted. Rules of counterpoint, such as avoidance of parallels, resolutions of dissonance and so on, overrule doubling conventions. Preference rules do not always present themselves as clearly as the above example and must, therefore, be formulated extremely carefully.

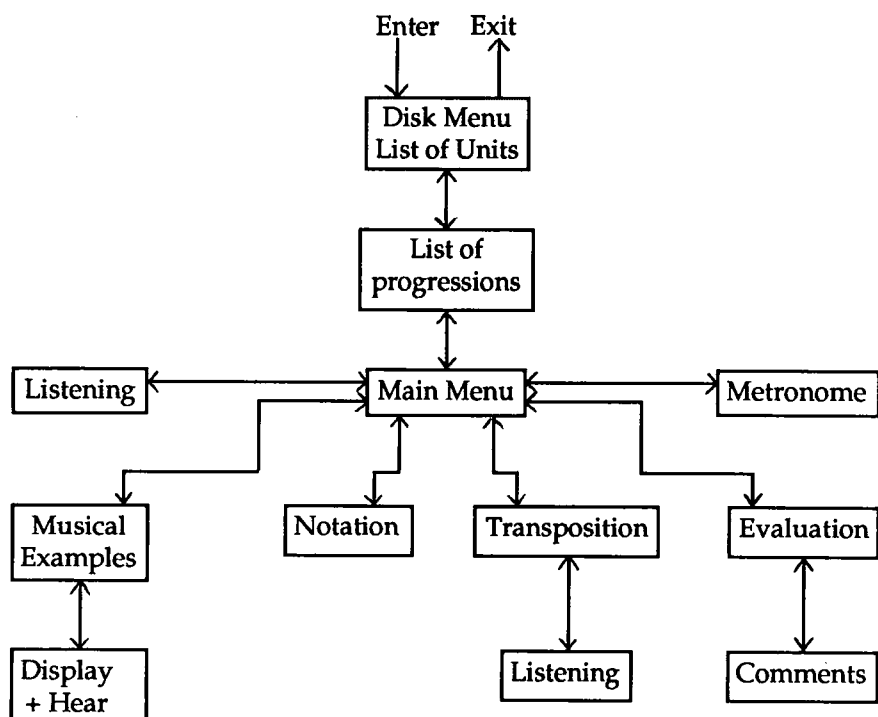
The system of evaluation offers no comments on the eloquence of performance, yet some assistance supporting this aspect is provided. Students may listen to the progression they have played in either of two fashions: They can hear an actual recording of their performance containing all the hesitations and errors (if any have occurred) and compare it to a correct rendition played in strict tempo.

In addition, the courseware provides a metronome to help the user develop rhythmic accuracy, expressed in this case by the maintenance of strict harmonic rhythm. There exist, in addition, the options of students recording and hearing their improvisations based on a given progression and of hearing recorded examples from the music literature exemplifying the hidden potential of a schematic progression. These tools are intended to encourage the development and exercise of self-criticism, in addition to the formal evaluation provided by the computer program.

PROGRAM STRUCTURE

Chart 2 displays screens from the user’s viewpoint. This chart displays the structural principle governing the courseware—a main menu that provides access to sub-menus. These sub-menus offer a variety of options; some are essential to the main purpose of the tutor (such as the Notation and Transposition menus) and some are secondary supplements (Listening, Metronome and Musical Examples menus). Essential are those options subject to the evaluation process.

Chart 2. Flow Chart of Tutor 1.



PROGRESS PROGRAMS

A student is likely to advance from simple to more difficult tasks on the following orientations:

Harmonic content: from simple to complex progressions.

Transposition: from keys with few sharps or flats to those with four or more.

Notation: advancing from complete, full, on-screen notation to minimal visual data, such as Roman numeral notation of harmonic degrees or figured bass.

Evaluation: options are available that allow for choosing between real-

KEYBOARD HARMONY

time corrections for each chord or corrections after completion of the entire progression only.

Tempo: (metronome) allows for slow to rapid performance of progressions.

An example follows that describes study methods or step procedures by which a student may practice each progression in a variety of soprano positions and in various key signatures. Notation remains constant:

- 1) Choosing a study topic
- 2) Choosing a progression
- 3) Establishing notation for the progression (e.g., outer voices & figured bass)
- 4) Progression construction, by playing, according to notation specification, for evaluation
- 5) Attending to computer feedback ("comments")
- 6) Repetition of steps 4 and 5 until successful performance has been achieved
- 7) Changing the initial soprano position of the progression
- 8) Repetition of steps 4 through 7 in all available soprano positions
- 9) Performing the progression in transpositions
- 10) Drill of all steps described above
- 11) Drill from step 2, skipping step 3 (notation remains unchanged).
In a supplementary session, it is advisable to practice the same progressions, as established in steps 1 and 2, from more abstract forms of notation.

An example of graduated notational difficulty follows:

- 1) Full, four-voice, score
- 2) Scored soprano and bass with Roman numeral notation of harmonic degrees
- 3) Figured bass and numerically indicated soprano positions
- 4) Figured bass only
- 5) Harmonic degrees only.

As notational abstraction is increased, voice-leading freedom is expanded and the probability of error increases.

Let us demonstrate the courseware by printing and explaining a few choice screens.

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Figure 1. Main Menu.

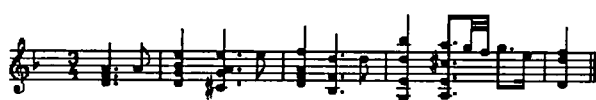
112 within an Opening Formula (2)



The example above is the third harmonic progression in Unit 3, Volume 2. This progression will remain the topic for drill around which will revolve all secondary details indicated by symbols at the bottom of the screen which may be activated by means of the function keys.

The fashion in which the progression appears indicates that sub-menus have been put to use: the key (D minor) and opening soprano position were determined by the Transposition Menu, while the Roman numeral symbols were determined from the Notation Menu.

Figure 2. Examples From The Music Literature.



The link between the schematic harmonic progression and actual music is expressed by examples from the music literature that accompany the majority of the progressions. Students may either play the quoted examples or listen to them. Figure 2 (Bach, Chaconne, mm.1-5) illustrates the progression presented in Figure 1.

KEYBOARD HARMONY

Figure 3. Comments Screen.

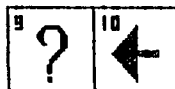
COMMENTS

[U3P3]

112 within an Opening Formula (2)



WRONG RESOLUTION OF 7TH



In the principal evaluation mode, computer feedback is given in two stages: in the first, vertical stage, the computer highlights all those notational elements not realized by the student. This stage takes place in real-time, while the student actually plays. When an incorrect chord is played, the computer prevents the student from progressing to the following chord before the incorrect chord has been properly played.

In the second, horizontal stage, contextual comments are displayed, referring primarily to voice-leading conventions, doubling, and soprano melodic contour.

The screen above (Figure 3) displays the second stage of evaluation, in which students have completed playing a given harmonic progression (Figure 1). In other words, they have correctly constructed the chords indicated by the Roman numerals but have erred in voice-leading. Each chord requiring comment is marked by an "x." The verbal comment "wrong resolution of 7th" refers to the chord marked by a framed "x." A student can survey all comments concerning a particular progression by using function keys 1, 2, and 3, and can listen to each error individually (by function key no. 4). Listening to an error entails hearing all the chords

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connected to the incorrect chord whose erroneous tones are heard accentuated.

In the present example, only the third and fourth chords would be heard, with the g2 tone in the third chord and its incorrect resolution to d2 in the fourth chord both accentuated.

The following is a partial list of error messages provided by the program:

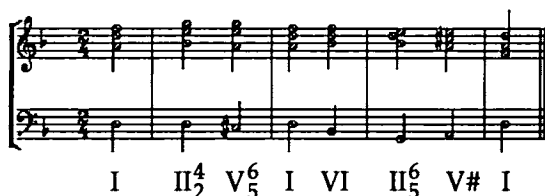
Parallel 5ths or parallel octaves
Hidden 5ths or hidden octaves
Unprepared seventh
Wrong resolution of 7th
Unresolved leading tone
Alto is too far from soprano
Tenor is too far from alto
Doubling the third is not desirable
Discontinuous melody
A leap from a 6/4 chord
etc.

Figure 4. The Evaluation Screen.

EVALUATION

[U3P3]

112 within an Opening Formula (2)



I II₂ V₅ I VI II₅ V# I

CORRECT!
PRESS SPACEBAR TO START RECORDING



KEYBOARD HARMONY

The example displays a correct interpretation of the given progression, although, of course, more than one correct interpretation exists. Any progression that does not elicit a comment may be considered acceptable.

The evaluation system is, then, the heart of the "Keyboard Harmony" tutor. It analyses the progression played in terms of the conventions of traditional harmony. This system of conventions has never been defined in a standard or uniform fashion, and each version of the system in theoretical and methodological literature presents an individual interpretation of basic principles. In a sense, this program is also no more than an interpretation of a consensus on theory.

As in any other field, the formulation of conventions or rules into algorithms requires their unequivocal articulation and leads to sharper and clearer definitions. This process takes place due to the attempt to avoid, inasmuch as possible, arbitrary formulation of rules. Flexible formulation of the rules in harmony obviously entails treatment of the special circumstances that permit divergence from strict tradition. Treatment of inner voices, for example, is less strictly criticized than treatment of outer voices, while doublings are verified in reference to the chord played. The evaluation system is a compromise between the trend to a general and elegant formulation of rules and the intended purpose to treat specific circumstances and exceptional musical idioms.

HARMONIC EAR TRAINING

Ear training, of all areas in music education, is probably the best suited to computer drill, for the following reasons:

A. Aural perception is almost impossible to drill on one's own. A second person, dictating is almost always necessary.

B. Group drill is often a frustrating experience due to individual differences among students. Students differ not only in their perceptual speed, but in their problematic areas, which, in such situations, come into maximum play.

C. The basic function necessary in computerizing ear training presents, in principle, little difficulty: a musical "entity" (an interval, chord, melody, rhythmic pattern) must be played for the student. The student attempts to identify it and then reports to the computer. The computer must receive the report, evaluate it, and then accept or reject it. Programs that enable students to report by playing or by singing into a microphone complicate tasks of reception and analysis of input somewhat, but a typed-

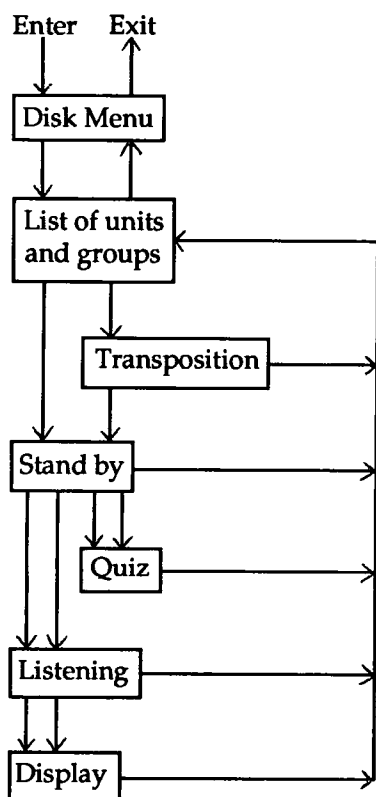
in student response is simple to receive and evaluate.

Harmonic ear training develops the ability to hear the harmonic progression that lies beneath music actually heard. A student's task consists of reducing an actual polyphonic texture heard to symbols representing harmonic degrees. This involves a certain level of abstract thought, despite the fact that the analysis remains very much at a descriptive level.

The present project treats the topic from a number of viewpoints, all of which reflect a Gestalt approach: two of the tutors enable the student to acquire the relevant musical terms (i.e., the idiomatic harmonic formulas). The third tutor integrates these formulas into complete harmonic progressions that are, in effect, combinations or prolongations of idiomatic expressions.

TUTOR 2: IDENTIFICATION OF HARMONIC PROGRESSIONS

Chart 3. Flow Chart of Tutor 2



KEYBOARD HARMONY

In this tutor, based on a multiple-choice principle, most of the activity centers around the "Quiz" screen. A number of harmonic formulas are individually displayed to the student on the screen in a randomized sequence. Students must correctly identify the progression they have heard from the list displayed.

In this framework, students can dictate the manner in which the progression is played: they may repeat the progression, change the tempo, arpeggiate the chords, and raise the volume of the bass in relation to the other voices. After having indicated one of the possible formulas, a computer comment will appear on screen confirming or rejecting the identification. Progressions are displayed in Roman numerals, as in this group of cadences:

Figure 5. Stand By Screen.

STAND BY M=80 [U8G1]

- | | | | | |
|----|----|-------|------|---|
| 1. | I | II6/5 | V | I |
| 2. | I | IV | V | I |
| 3. | VI | II7 | V7 | I |
| 4. | I | II2 | V6/5 | I |
| 5. | I | II6 | V7 | I |

PRESS SPACEBAR TO HEAR

F1=ADD
F2=SUB

F3=LISTENING

F5=SLOWER
F6=FASTER

F7=ARPEGGIO
F8=BASS

F9=HELP
F10=MENU

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In the "stand by" mode, students can narrow or broaden the scope of their choice within the framework of given progressions. Furthermore, they may perform certain specific groupings to their taste, allowing an expansion of the level of variety or similarity between progressions.

In the "Listening" mode, students can familiarize themselves with each of the formulas displayed on screen. They may hear them in a variety of soprano positions and in major or minor modes. In addition, they may call up a complete notational display by using the "Display" option. These listening and display options may be utilized as a "time-out" from "Quiz," for error clarification, and for preparation for "Quiz."

Choosing drill material and a group of specific formulas for "Quiz" is effectuated by using the two opening menus (see above Flow Chart). In "Transposition" mode one may define the degree of randomization of the multiple-choice process: should all the formulas be played in a single soprano position or in a number of positions? In one key or in all keys? In one "mode" (major or minor) or in either?

TUTOR 3: IDENTIFICATION OF PROGRESSIONS IN LITERATURE

This Tutor resembles the previous one except for one main feature: while the first plays harmonic formulas in a schematic chorale format, this one plays passages from the musical literature. These passages are sorted according to the following categories: opening formulas, cadences, and sequences. The progressions in each category are organized within the "multiple-choice" framework. For example, in the "sequences" category, a number of groups are found, each of which contains some four types of harmonic sequences. The shared feature of the group given here as an example is the common use of first-position triads.

Each type is exemplified by a number of excerpts from the musical literature. Figure 7 is one of six excerpts demonstrating type 3 of the group.

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Figure 6. Stand By Screen - Sequences.

STAND BY

M = 80

[U5G1]

1. Descending 5ths
2. Ascending 5ths
3. 4th down / 2nd up
4. 3rd down / 4th up

PRESS SPACEBAR TO HEAR

F1 = ADD

F3 = LISTENING

F2 = SUB

F5 = SLOWER

F7 = ARPEGGIO

F9 = HELP

F6 = FASTER

F8 = BASS

F10 = MENU

Figure 7. Mozart, Symphony No. 38, K. 504, First Movement, mm. 66-68.



F1 = HEAR

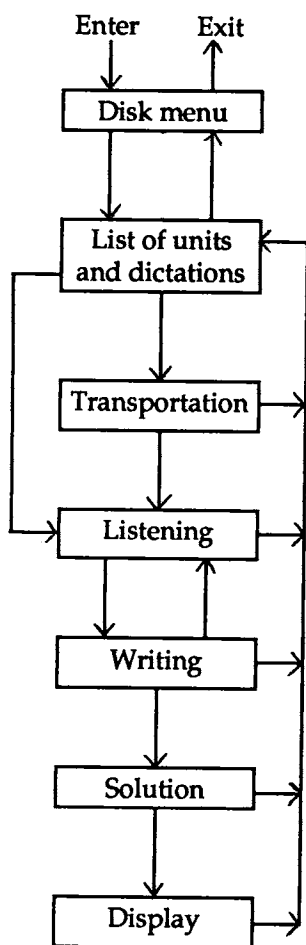
F9 = HELP

F10 = BACK

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TUTOR 4: HARMONIC DICTATIONS

Chart 4. Flow Chart of Tutor 4.



Within the framework of this tutor, drilling is done in two principal fashions, the "Listening" and "Writing" modes. A toggle function enables immediate passage from one to the other.

In the "Listening" mode, the computer dictates a harmonic progression according to parameters defined by the user. The student establishes

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the size of the fragment heard (which may be the entire progression), an excerpt, or even an individual chord.

As in Tutor 2, which deals with formula identification, the student can, in this case, determine tempo, relative volume of the bass line (which facilitates the identification of inversions) and can choose between simultaneous and arpeggiated performance. The above options represent the pedagogical attitude that favors students' freedom in choosing their own learning styles, yet the program encourages certain options simply by making them easily accessible. For example, every harmonic progression is divided into a few harmonic fragments that form a pattern. The fragments are numbered, and students may access any one of them by typing its ordinal number in the sequence they prefer. In this fashion, the program encourages the student to learn harmonic degrees from their structural context. Despite this, nothing prevents them from hearing shorter fragments by combining single chords appearing in sequence.

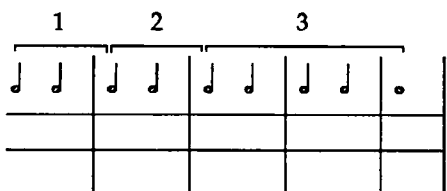
Figure 8. Listening Screen.

LISTENING

[U1D1]

KEY = C

M = 72



Press SPACEBAR to write

F1 = HEAR WHOLE

F3 = SLOWER

F6 = BASS

1 - 3 = HEAR PART

F4 = FASTER

F9 = HELP

← → = HEAR CHORD

F5 = ARPEGGIO

F10 = MENU

The table displayed includes three horizontal matrices: the upper displays the harmonic rhythm of the progression and shows the fragmentation described above. The middle one, intended for the user, is for filling in the harmonic degrees, and the last one displays the (correct) solution.

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In "Writing" mode, the keyboard functions as an editor that enables the writing of harmonic degrees and their inversions in Roman numerals. The order of entries is of no consequence; students may freely move within the middle matrix and enter any element they have perceived. For example, it is possible to begin by entering the cadence, follow with the opening pattern, and complete by entering the connecting fragment. The "Writing" and "Listening" modes are, as previously mentioned, the main focal points of activity. One may ask for evaluation at any stage. Solutions are not offered with evaluation, so that a student can continue the dictation and attempt to correct errors. The computer provides specific corrections and differentiates between errors in degrees and those in inversions, as shown in Figure 9.

Figure 9. Writing Screen.

WRITING [U1D1]

KEY = C M = 72

1		2		3	
♪	♪	♪	♪	♪	♪
I	V ₃ ⁴	I		IV	I ₄ ⁶ V

Press SPACEBAR to listen

F1 - F7 = DEGREES	DEL = DELETE ALL	← → = MOVE
2 - 7 = FIGURES	0 = DEL FIGURES	F9 = HELP
F8 = EVALUATION	ENTER = SOLUTION	F10 = MENU

At any given moment, a student may ask for the solution to a dictation. This option is especially significant in those cases where students can not, on their own, complete the dictation, yet wish to locate their error(s).

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Figure 10. Solution Screen.

SOLUTION

[U1D1]

KEY = C

M = 72

1	2	3	4	5
I V ₃ ⁴	I	IV	I ₄ ⁶ V	I
I V ₅ ⁶	I VII ⁶	I ⁶ II ⁶	I ₄ ⁶ V ₃ ⁵	I

Incomplete

F1 = DISPLAY

F2= PRINT

F9 = HELP

F10 = MENU

In "Solution" mode, the dictated progression can be displayed in full notation, in all four voices on request.

Figure 11. Display Screen.

DISPLAY

[U1D1]

I I I⁶ I₄⁶ I

V₅⁶ VII⁶ II⁶ V₃⁵

I I I₄⁶ I

V₃⁴ IV V

1 = HEAR

F2= PRINT

F9 = HELP

F10 = MENU

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After a while, a student may review a dictation and attempt it under more demanding conditions: increased tempo, reduced usage of the listening options, unaccented bass line, without arpeggiation, with fewer requests for evaluation, and without using the musical keyboard.

EDITOR 1 & 2: AUXILIARY PROGRAM

To prevent limiting the scope of material in the library of prepared progressions, the user (teacher or student) should be equipped with auxiliary programs to produce additional harmonic progressions. The software developed for this project enables users to dictate by playing a progression they have composed.

The program interprets and displays the progression in standard format. The bass is displayed in the lower clef and the three upper voices in the upper clef. In effect, the computer reconstructs, by default, the new progression from the soprano and bass voices as played, according to rules of spacing and doubling. The computer then displays the progression to users and allows them to depart from the default parameters to correct or improve voice leading. In this fashion, the user may create groups of exercises for each of the other tutors included in the project.

Xanadu's educational software system includes an editor that writes and edits piano notation. The editor was originally intended for computer-monitored piano playing, yet it may be used as a teaching aid. Teachers can thus bring to life the harmony exercises they have composed with examples from the music literature. They will also be able to use these excerpts in Tutor 3, which deals with the identification of harmonic progressions as they appear in actual music.

SUMMARY

The "H" project demonstrates a systems approach to an encompassing topic in the field of music theory acquisition. The student learns the language of harmony by acquiring two basic complementary skills: perception and performance. Computer-monitored drill provides training towards more creative expression, such as improvisation and composition on the one hand, and analysis on the other. The computer is gaining ground in these fields as well, but changes, at this point, from an instructional tool to a technical device. The more creative the skill to be acquired through the computer, the less meaningful and detailed the evaluative possibilities

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become for the student. That is not to say that a computer could provide no indication at all for more creative endeavors. Courseware designed to develop improvisation skills might include exercises in which a student would have to play within the framework of a particular key, harmonic scheme, and so on. The evaluation function could verify the extent to which the student succeeds in respecting these parameters. Such evaluation could not, of course, relate to very many aesthetic aspects of consequence in appraising any creative endeavor. At some stage, direct intervention of the human teacher's judgement becomes necessary.

NOTES

¹The "H" project resembles, in its systems approach, the "Lasso" project, which deals with sixteenth-century counterpoint and was developed in the Florida State University Center for Music Research. Our approach differs in a few aspects from that of the "Lasso" creators, mainly in that we avoided providing quantitative evaluation and did not make progress to advanced exercises contingent on the master level of preceding exercises.

See Steven R. Newcomb, "Lasso: an Intelligent Computer-based Tutorial in Sixteenth-Century Counterpoint," *Computer Music Journal* 9/4 (1985): 49-61.

²The present state of the "H" project (January 1990): Tutor-1 was completed in 1987 and marketed under the following label: XANADU, Music Software Series: MUSICOM, Keyboard Harmony Course. Tutors 2 and 3 are in their final stages of development and are in use in the Department of Musicology in the Hebrew University of Jerusalem.

Tutor 4 was completed in 1988 and put on the market as a supplement to Tutor 1. Editors 1 and 2 are now serving the developers of the courseware. In the future they will be compiled with the courseware and made available to the user.

³"Keyboard Harmony is probably the most frustrating course taken by a college music major." See Joan M. Wildman, "A Re-Evaluation of Keyboard Harmony," *College Music Symposium* 22/2 (1982): 112-119.

Wildman introduces several ideas that may enliven the subject and make it more attractive, such as a less strict attitude towards four-part writing and uses of chord notation while placing an emphasis on improvisation. Realization of these ideas is largely dependent on the personality and musicality of the instructor. Our attempt, within the framework of the present project, aimed to intensify the attractiveness of the formal-technical aspects of the subject, which are given to instructor-free, computer-controlled, drill.

1992 BIBLIOGRAPHY

MARY WENNERSTROM

New books

Butler, David. *The Musician's Guide to Perception and Cognition*. New York, NY: Schirmer Books, 1992. A review and discussion of psychophysical and cognitive literature related to pitch, timbre, loudness, time, and space. Includes a CD with 62 listening examples. Glossary, extensive references, and summaries.

Clark, Thomas S. *Arrays: Musical Patterns for Aural Development*. Dubuque, IA: W.C. Brown, 1992. A combination of ear training, sight-singing, and keyboard harmony. Chapters on patterns: rhythmic, melodic, and choral (including serial patterns), and contrapuntal studies in 16th-, 18th-, 19th-, and 20th-century styles.

Damschroder, David. *Foundations of Music and Musicianship*. New York, NY: Schirmer Books, 1992. Text, 2 cassettes, instructor's manual, and computerized test bank.

Downs, Philip G. *Anthology of Classical Music*. New York, NY: W.W. Norton, 1992. Seventy-seven selections. Accompanies text, *Classic Music: The Era of Haydn, Mozart, and Beethoven*. New York, NY: W.W. Norton, 1992.

Morgan, Robert P. *Anthology of Twentieth-Century Music*. New York, NY: W.W. Norton, 1992. Forty-one selections. Accompanies text, *Twentieth-Century Music*. New York, NY: W.W. Norton, 1991.

Morris, Robert. *Class Notes for Atonal Music Theory*. Hanover, NH: Frog Peak Music, 1992. [Frog Peak Music, Box A36, Hanover, NH 03755]. A summary and survey of Morris's own work, with references to other atonal theorists.

Neumeyer, David and Susan Tepping. *A Guide to Schenkerian Analysis*. Englewood Cliffs, NJ: Prentice-Hall, 1992. A manual including analyzed

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bass notation and several complete analyses, illustrating middleground and foreground techniques as well as fundamental structures. Relationship of structural patterns to various formal designs. Exercises (some with solutions given), complete scores, references.

Owen, Harold. *Modal and Tonal Counterpoint: From Josquin to Stravinsky*. New York, NY: Schirmer Books, 1992. Surveys counterpoint from c. 1500-c. 1935, combining complete musical excerpts, contrapuntal exercises, and text (including questions for discussion and concise observations). Also glossary and references.

Pen, Ronald. *Introduction to Music*. New York, NY: McGraw-Hill, 1992. Schaum outline series. Summary discussions of the elements of music, musical form, and the history of music (periods and styles). Wide range of terms defined in a 35-page glossary and referenced in extensive index.

Rumery, Kenneth R. *Introduction to Musical Design*. Dubuque, IA: W.C. Brown, 1992. Two volumes of text; cassettes.

Russell, Armand and Allen Trubitt. *The Shaping of Musical Elements*. New York, NY: Schirmer Books, 1992. Two volumes of text and workbooks; instructor's manual.

Both the Rumery and the Russell/Trubitt books are designed as a two-year undergraduate theory text; Rumery includes assignments and self-instruction checkpoints in the text, Russell/Trubitt have exercises and assignments in comprehensive workbooks.

Rumery's text uses a spiral approach, combining a study of melody, harmony, texture, and form with writing and analysis exercises. Musical examples and the accompanying cassettes include music from Gregorian chant to Bartók, with half of Volume II emphasizing twentieth-century music.

The Russell/Trubitt text is an integrated approach, combining a study of melody, harmony, counterpoint and form; it also explores ways of analyzing tension in music and the practical performance implications. Music from the seventeenth century to tonal and serial music of the twentieth century.

BIBLIOGRAPHY

New editions

Benjamin, Thomas, Michael Horvit, Robert Nelson. *Music for Analysis*. 3rd edition. Belmont, CA: Wadsworth, 1992.

_____. *Techniques and Materials of Tonal Music, with an introduction to 20th-century techniques*. 4th edition. Belmont, CA: Wadsworth, 1992.

Benward, Bruce, Maureen Carr, J. Timothy Kolosick. *Introduction to Ear Training and Sightsinging*. Dubuque, IA: W.C. Brown, 1992. Instructor's edition, 4 tapes, software. A combination of *Sightsinging Complete*, 5th edition, 1991, and *Ear Training: A Technique for Listening*, 4th edition, 1991.

Duckworth, William. *A Creative Approach to Music Fundamentals*. 4th edition. Belmont, CA: Wadsworth, 1992.

Hill, Frank and R. Searight. Revised Dorothy Hendrickson. *Study Outline and Workbook in the Elements of Music*. 10th edition. Dubuque, IA: W.C. Brown, 1992.

Lynn, Theodore A. *Introductory Musicianship*. 4th edition. San Diego, CA/New York, NY: Harcourt, Brace, Jovanovich, 1992.

Ottman, Robert. *Advanced Harmony: Theory and Practice*. Text and workbook. 4th edition. Englewood Cliffs, NJ: Prentice-Hall, 1992.

Turek, Ralph. *Analytical Anthology of Music*. 2nd edition. New York, NY: McGraw-Hill, 1992. Instructor's reference manual.

Reader's Response

THE AMERICANIZATION OF SOLMIZATION: A RESPONSE TO THE ARTICLE BY TIMOTHY A. SMITH, "A COMPARISON OF PEDAGOGICAL RESOURCES IN SOLMIZATION SYSTEMS."¹

MICHEÁL HOULAHAN
PHILIP TACKA

Approaches to teaching music need to be developed which emphasize process as well as product. We do not believe that concern for coverage and factual knowledge is where the construction of a curriculum should begin . . . We do believe that there are methods and processes, modes of access to understanding judgement, that should inform all study.²

Timothy A. Smith's article in the *Journal of Music Theory Pedagogy*, Spring 1991 covers a multitude of issues relating to ear training and sightsinging. All of these issues and concerns reflect a number of growing problems facing theory teachers. One of the most vital questions concerns the teaching of theory and the development of students' aural abilities. This is a call to question and evaluate the undergraduate theory curriculum and address the following questions:

1. Does the North American university music program have a similar responsibility to serve all of its students to the best of its ability or only to serve the elite who are able to "decode" the divergent approaches and "obscurum per obscurius" of our current theory programs?

2. Do we continue to graduate music students, a disturbingly high percentage of whom are, from the standpoint of aural skills, musically illiterate, or do we strive to prepare the largest percentage possible for the responsibilities of their musical world?³

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3. How can we facilitate the simultaneous development of aural and theoretical skills in the music curriculum for all our undergraduate and graduate students in the most accessible manner?

Comprehensive solutions to such questions will not be found in discussions advocating solfege systems based on the amount of syllables needed to read music. It is not possible to discuss the inherent differences in solfege systems without discussing methodological approaches and materials.

Smith's article is a "systematic and rational comparison of the theoretical resources of solmization systems . . . (It) is an attempt to persuade and to convince; it is a flotilla of arguments for one system—'do-tonic' movable do" (Smith, *JMTP*, page 1). The author is to be commended for attempting to address this timely issue. Within any "systematic and rational comparison," we believe it would be a more accurate debate if *la* minor were presented more completely with an accurate examination of the methods, materials, and applications for teaching musical literacy. We work for the simultaneous development of aural and theoretical skills—in other words, complete musical literacy rather than the separation of theory and skill development. In our approach to music theory, we do not teach music theory first; we teach music literature. Solfege syllables, using the "*la* minor" system, are used as a means of gaining knowledge about this repertoire.

Throughout this article we will address salient points of Smith's article by isolating the direct quote with our comments following.

"Most (teachers) agree that the teaching of solmization is beneficial, but when it comes to the selection of one system, we hear little consensus and much opinion" (Smith, *JMTP*, page 1).

Randall G. Pembroke and H. Lee Riggins' article in the *Journal of Music Theory Pedagogy*, 4/2 (Fall 1990), "Send Help!: Aural Skills Instruction in U.S. Colleges and Universities," attempts to address the issues relating to teaching ear training and sight reading. Their study reveals that "among approaches to teaching sight-singing, moveable function as opposed to fixed function is preferred by an overwhelming majority of instructors. In order, scale-degree numbers, moveable-*do* where *do* is tonic in major and minor and moveable-*do* where *do* is tonic in major and *la* is tonic in minor are the systems of choice. (It is interesting to note an almost equal number of proponents of both the *la* minor and the *do* minor systems.) Their results concur with those of Irma Collins.⁴

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"From the theorist's point of view, the purpose of ear training is broader—to produce musicians who can perceive, understand, and analyze music with utmost intelligence and skill" (Smith, *JMTP*, page 2).

One of the primary goals of each theory class must also be the development of the students' musicianship. If theorists fail to develop this skill in each class, then teachers are doing a disservice to students and turning music into a "dead language." Every musical concept taught in class should be discovered by the students' own active participation in the class. Active music-making, especially through singing, should form the basis of each theory class.

"It is herein hypothesized that solmization works because it associates phonemes with various musical constructs that, with repetition, enable students to audiate sound from sight, and perceive sound to sight. Syllables give names to structures that would otherwise have no names" (Smith, *JMTP*, page 3).

Smith correctly attributes the term audiation to Edwin Gordon, a proponent of *la* minor. Audiation is "the hearing of music in one's mind when the sound is not physically present."⁵ Teaching the rules of notation and applying the rules of how a solfege system works does not lead to audiation. In traditional theory courses, students are presented with theoretical information to provide a foundation for their aural understanding. For example, major and minor scales are explained to the students in a theoretical manner, and the students are then asked to use syllables or numbers for sightsinging and dictation. It is our experience, and the dilemma of many theory teachers, that students have no understanding of the inner relationships of solfege syllables and their application for reading music of various style periods.

One should not assign solmization syllables on a rule-based mentality "to structures that would otherwise have no names."⁶ Solmization syllables should not be discussed in terms of which system has the least number of syllables to learn. This is a rather trite argument for the rationalization of one solfege system over another.

If students are to develop the skill of audiation, the teacher must teach each of the solmization syllables within a given framework of patterns derived from the musical material in a logical and sequential manner, recognizing students' cognitive styles of learning. According to Barbe and Milone, a learner's cognitive style (or modality of learning) may be defined as the ability to process concepts and information using one of four perceptual modalities: visual, auditory, kinesthetic, or mixed (a combina-

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tion of two).⁷ Apfelstadt, citing Barbe and Milone's 1981 article on modality, estimates that visual learners (students who learn best by seeing) and mixed modality learners each comprise about 30% of the population; auditory learners another 25%; and kinesthetic (physical), the remaining 15%. When planning instructional strategies, we must account for the different learning styles among our students.⁸

As Gordon states: "The mechanical ability to name and define individual notes or other music symbols does not, of itself, provide the readiness for music literacy. One does not read music names or definitions, but, on the contrary one hear [sic] groups of notes (patterns) as one reads. Only when one can audiate tonal and rhythm notation can the names and definitions of music symbols become musically relevant."⁹ The mere repetition of syllables will not enable the average music student to develop this skill of audiation or sight singing fluently and musically. Research done by Davidson and Scripp suggests that without the intensive and comprehensive training that leads to the operationalization and internalization of musical knowledge through the various modalities—sensory-motor, verbal, and symbolic—this transformation of musical learning into aural and notational literacy will not take place.¹⁰ Petzold's study concludes that aural perception precedes visual perception and that one must be able to hear music to develop skills in music reading.¹¹ Hewson suggests that aural experience, prior to encountering notation, facilitates the development of sight singing and ear training skills.¹²

Naming is always the final stage of learning. Attaching a solfege syllable to the name of a note will not result in the development of sight reading or ear training. Each solmization syllable must be presented in a pattern in such a way that students have a physical, aural/oral, and visual understanding of the syllable before the presentation of the solmization syllable.¹³ In this manner, the physical and aural experiences provide the necessary preparation for the teaching of all musical concepts and skills. All theoretical information is derived from an aural understanding of musical elements and concepts. The success of the curriculum is evaluated within the students' aural development and musicianship skills. It is not an isolated assessment.

"'La-minor' is the system advocated by Kodaly. In 'la-minor' the tonic of a major scale is called 'do,' but the tonic of a minor scale is called 'la.' Each mode requires a different syllable to represent the tonic. . . ." (Smith, *JMTP*, page 13).

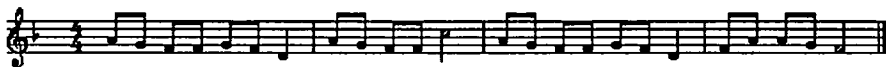
In our approach to theory, solfege syllables are always presented in patterns derived from the musical literature we want to teach. "Investiga-

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tors in the field of instrumental music support the need to associate aural imagery with notation and the need to build an aural vocabulary of tonal patterns before introducing notation."¹⁴ The fundamentals of music are taught simultaneously with ear training and sightsinging using a combination of pentatonic and diatonic patterns.¹⁵ Theoretical concepts and standard notation are taught to students once they have an aural/oral understanding of solfege syllables. Students are always comparing known and unknown motifs and melodies. Emphasis is placed on aural development before moving on to music theory. Once students can identify the *la-so-mi-re-do* motifs and melodies, we begin to introduce low *la* (*la*,). Low *la* (*la*,) is presented in both *do*-centered materials and *la*-centered materials. Students practice *la*, in both *do*-centered and *la* - centered material to become aware of the two different tonal areas; relative solmization teaches the students the function of the note within a tonality. Sophisticated theoretical knowledge is not needed to solfege *la* minor at sight.¹⁶ In the following examples, it would be quite ridiculous for students to solmize the second example with *do* as the final note:

Figure 1. Micheál Houlahan and Philip Tacka, *Sound Thinking: Music for Sight-Singing and Ear Training*, 2nd edition (Boosey & Hawkes, New York 1990); Volume I, page 75 - no. 7; page 76 - no. 12.

7.



12.



The ear decides whether the melody ends on a *do* or a *la*,. Beginning singers, liberated from the constraints of notation, are free to solfege what they hear before having learned its visual cognates.¹⁷ This advantage does not apply to all moveable systems as stated by Smith. To sing the examples with *do* minor, students would need an explanation of both the major,

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minor, and parallel scale formations. In the *la* minor system students discover that each melodic syllable can be the final resting tone of a melody; *do* is not reserved for the final or key note. As Dobszay states:

A more significant factor than the absolute pitch of the sounds is their function, the relationships between them. Connection and contrasts, closer and more distant interdependencies are formed between them, frequently varying from style to style, and always with the richest shading. This system of interrelationships valid for particular styles or particular pieces is what we call tonality. In this sense tonality does not simply mean a scale but also includes the behavior patterns of individual notes. (These may in a wider sense be called functions). How can we best apprehend tonality if we interpret it in this way? By the melodic progression, patterns, typical phrases and idioms characteristic of the work, the type of melody or the style.¹⁸

All musical examples are continually put into a conceptual framework. In the context of our sequence, musical elements are not abstracted from the musical examples but are rather presented in relation to the entire musical composition. In this approach, students are taught to hear and read pentatonic, major, minor, modal, chromatic, modulating musical examples and to apply these concepts to the study of harmony.

The following is an abbreviated sequence of our presentation of melodic elements.¹⁹ Each unit introduces and practices a specific tone set, and new units add additional rhythmic and melodic complications.

A. *Do* pentatonic with *la* pentatonic melodies.

Once the students have an aural understanding of *do* and *la* pentatonic scales, the students begin to sing with absolute letter names. Initially the students sing materials in letter names using C=*do*, F=*do*, and G=*do* to avoid theoretical explanations of sharps or flats.

B. *Do* and *la* pentachord and hexachord melodies.

In being led to aurally compare a transposition of *do* hexachord songs in C into G, and F *do* while using solfa syllables followed by singing with absolute letter names, the students will discover the need for the b flat when

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singing in F *do*. In being led to aurally compare a transposition of a *la* hexachord song in C=*do*, into G=*do*, and F=*do*, using solfa syllables followed by singing absolute letter names, the students will discover the need for the F sharp when singing in G =*do*.

C. Major and minor Scales.

When the diatonic scale is introduced we present musical examples with a specific key sequence. Musical materials, sung in solfege and absolute letter names, are presented sequentially in the direction of the flat keys, C - F - Bb - Eb - etc. This facilitates sight reading skills for modulating music to nearly-related keys. Musical examples are sung with numbers as a preparation for harmonic hearing and teaching. The raised tones *fi* and *si* are taught as alterations of the minor scale.

D. Renaissance Music

Modes are introduced by comparing and contrasting *do, re, mi, so, la*, pentatonic melodies with ionian, dorian, phrygian, mixolydian and aeolian melodies. The altered tones *di* and *ta* are introduced.

One of the basic characteristics of the Renaissance style is a tone set that combines the eight-tone system derived from the Gregorian melodic culture—all the diatonic notes plus *ta* with the leading notes of the dorian, mixolydian, and aeolian modes: *di, fi, and si*. Since modal music does not move outside this tone set:

do - di - re - ri - mi - fa - fi - so - si - la - ta - ti

the *do* of the range of notes does not change. With the *la* minor system, modulations/mutations are easily identified both aurally and visually.

It occurs that in the musical material of certain sections the altered note 'ta' exists for a longer time pushing out the diatonic note 't.' In such a case the modes coloured by 'ta' sound as the modes of the one fifth lower system . . . As the keynotes of the 'ta' coloured modes remain the members of the given eleven-note tone set further on as well, the sounds of new type do not change the functions of the single notes within the system, but only change the modes' character belonging to them. For example, the dorian becomes of aeolian in character, the aeolian of phrygian character.²⁰

E. Classical and Romantic Music.

Students reading music of the Classical style will use all the informa-

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tion from the previous units but they will also begin to read music with additional altered tones (the flatted third and the flatted sixth) as well as modulating music examples.

F. Atonal melodies.

In movable *do* with a *la* based minor, *do* is the keynote or tonic in major; *la* is the tonic in minor; *re* in dorian; *mi* in phrygian; *fa* in lydian, and *so* in mixolydian. In the *do* system with a *do* based minor, solfege syllables do not indicate the tonality or the keyality of the music.²¹ The *la* minor system, efficient for developing the skill of audiation as given melodic pattern, is associated with the same syllables in every keyality. Laslo Dobszay, Professor of Musicology at the Liszt Academy, advocates the use of the *la* minor system:

... we are no longer slaves to intervals ... every interval, so to speak, is at once at our service among the notes fixed by the already introduced solmization, though naturally only within the framework of typical phrases. Solmization (*la* minor system) opens the finest and most appropriate way towards music culture, for the average pupil: hearing, clear musical thinking which cannot be adequately replaced by reading or lectures about music and other accepted ways and means of musical popularization otherwise frequently considered misleading by Kodaly ... It is clear that the careful selection of the musical material, the succession of phrases displaying similar tonal thinking, melodic patterns, stylistic areas, each strengthening the other, give us the greatest help.²²

"First, sophisticated theoretical knowledge is not needed to Solfege "*la*" minor at sight, explaining why the system is advocated by teachers of young students. Beginning singers, liberated from the constraints of notation, are free to solfege what they hear before having learned its visual cognates" (Smith, *JMTP*, page 13).

"Unlike '*la*-minor,' '*do*-tonic' requires that reading students be able to interpret set-up information to correctly identify the pitch that is tonic, in order to call it '*do*,' in all modes. This requires theoretical acumen beyond the level of beginning students" (Smith, *JMTP*, page 14).

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There is a tendency for music theorists to disassociate themselves from the music education profession. It is time for theorists to look closely at successful models of music reading and writing in the elementary and secondary schools. Could it be possible that some music theorists do not fully understand the implications of how a *la* minor system works? Are we to presume that a system of solmization success is to be judged on the amount of sophisticated theoretical knowledge needed before its application? We must challenge a system that creates untold difficulties for average music students.

"From the theorist's perspective, 'la-minor' insinuates a dependence on the major to define the minor, as if to suggest that minor cannot exist independently of its relative" (Smith, *JMTP*, page 13).

If the *la* system is taught correctly, it will not insinuate a dependence on the major scale to define the minor. If any possible insinuation of dependence is implied it should be with the teaching of the parallel minor scale as a modification of the major scale. Major, relative minor, and parallel minor scales are always compared. Students in advanced solfege classes should be able to sing the parallel minor with *do* in order to practice altered solfege syllables and make an analytical comparison between the two separate scale systems.

"According to 'la-minor,' half-steps in all modes are defined and named by their relationship to the relative Ionian mode . . . By inference, they tend to portray all modes as infratypes of Ionian, diminishing the significance of modal variation to the degree that other scale degrees are implied to behave as tonic" (Smith, *JMTP*, page 13).

This statement is incorrect. The *la* minor system does not neglect the aural and notational differences in modes.

". . . but when it comes to aural perception of functional harmony, a more useful comparison is found in the relationships between a major scale and its parallel minor. With so many aural structures belonging both to major and to minor, it is instructive to bring shared features together, calling them by the same names. As for the differences, we know that when functional harmonies become more complex homogeneous major and minor tonalities tend to banish, while androgynous tonalities, having characteristics of both major and minor, tend to appear. (Smith, *JMTP*, page 14).

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We have made a survey of commonly-used harmony and sight reading textbooks. These texts stress the acquisition of theoretical concepts over aural concepts with very little information about the perception of functional harmony. No sequential methodology is provided for integrating aural training and theoretical information into popular harmony textbooks beyond a few token suggestions. Gauldin and Wennerstrom maintain that while many of the new theory books offer good teaching materials and suggestions, the format of these books (even in updated CAI software) is still generally traditional.²³ These texts tend to emphasize theoretical information and rules but fail to incorporate current research regarding the process through which students learn. (The work of Lave, 1988²⁴ and Dreyfus, 1988²⁵ among others challenge many assumptions about learning including the notion that cognition is governed by rules). Schon's research indicates that teaching which focuses only on cognitive and abstractable content will be ineffective for imparting expertise.²⁶

Of course "a more useful comparison is found in the relationships between a major scale and its parallel minor" if students are presented music theory only in a theoretical manner. Students presented with a methodological approach that is based on an aural analysis of music using *la* minor scale system have in their possession a useful analytical tool for analyzing the subtleties of music.

Solfège syllables such as *lah* and *doh* indicate both character and function. Notes with the same character and function should be called by the same solmization syllable, and in particular that all keynotes should be called *doh* if these keynotes, major and minor are identical in mental effect. They are not . . . The dynamic tensions among the scale steps are different in major and minor and there is no one-to-one correspondence of character between similarly numbered steps of the two scales. There is no over-riding reason to use the same syllable for a particular scale-step in both modes. The *doh*-minorist's claim that he uses one name to describe identical phenomena falls to the ground because the effects of keynotes in major and minor, though overlapping considerably, are not identical.²⁷

When students have an aural mastery of altered tones such as *ma* and *law*, useful comparisons should be made with the parallel minor. It is our experience, however, that average students will not be able to audiate patterns that include singing such syllables as *ma - - ta* or *re - - lo*, especially

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in basic and intermediate sightsinging and ear training classes. Indeed it is instructive “to bring shared features together, calling them by the same name”—theoretically that is. Naming alone will not be instructive for students’ long-term musical development.

“It is in this context of secondary chromatics relationships and modal borrowings, that the deficiencies of ‘la’ minor manifest themselves most clearly” (Smith, *JMTP*, page 14).

One has only to read the analysis made by such fine musicologists as Lendvai and Bardos to appreciate the *la* minor system for analyzing chromatic, modal, and twentieth-century music.²⁸ If deficiencies of *la* minor manifest themselves, it will undoubtedly be a result of the user’s lack of comprehension of this system for musical analysis.

“The only way to identify musical structures consistently, from one mode to the next and from one key to the next, is to name the tonic ‘do’ regardless of the mode or key” (Smith, *JMTP*, page 14).

This is not the only way to identify musical structures. The merits of any solfege system should be evaluated by how easy aural identification of systems can be made, not only on how notes are named.

“In contrast, with ‘la’ minor . . . the ‘do-tonic’ system . . . is therefore better suited to teach the aural particulars of major and minor” (Smith, *JMTP*, page 15).

Discussing the merits of solfege systems without any reference to musical material and methods of teaching solmization will only result in fallacious arguments such as the above. A more detailed presentation of *la* minor will need to be developed to facilitate a more productive dialogue.

“It is for this reason that the “do-tonic” system is superior to other systems for the promotion of writing ability while the ‘la-minor’ system may excel in the promotion of reading ability (at least for younger students)” (Smith, *JMTP*, page 16).

The *la* minor system is a solfege system that truly develops the “seeing” ear and the “hearing” eye. This system does not advocate the promotion of sight reading over writing skills. The two are developed simultaneously. Theoretical information is always practiced and drilled, but always as the final stage of learning. In our experience, university students of varying

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abilities have learned, therefore the *la* minor system is appropriate for all age groups.

“If one takes the view that the purpose of syllables is to teach a student to read a modulation passage quickly, then movable ‘do’ may be inferior in the short run. To sing a modulating melody, the student must first analyze the melody to determine what syllables to apply in each key. The analyzing takes time, therefore the reading is slower. If one takes the view, however, that the purpose of syllables is to help students to analyze, then moveable ‘do’ is superior in the long run” (Smith, *JMTP*, page 16).

This statement again reveals the author’s bias towards teaching theory to the exclusion of the students’ aural development. The *la* minor system always advocates a pivot note when listening, reading, or writing modulating passages. Students are always encouraged to find the most natural and musical solfege interpretation. Students will have to discover the most suitable pivot note. Both analyzing and singing are developed simultaneously.

“Whereas the ‘la’ minor system is unaware of modulations when they are between relatives, fixed ‘do’ begs the question altogether. The practitioner of ‘do-tonic’ solmization, in wrestling with the difficulties of naming modulations, is in fact learning how modulations work” (Smith, *JMTP*, page 16).

If the students of the *la* minor system are unaware of modulations that occur between relative keys, the teacher must accept the blame for not training the students to sing and analyze music correctly.

CONCLUSION

Our commitment to the *la* minor system for teaching music theory incorporates the Bartok and Kodaly philosophies of music teaching, current research in the area of learning styles and research, CMS Report Number 7, and our teaching experience. Musical elements and skills are presented and developed within a format dictated by musical materials that have been analyzed for their pedagogical content. Musical concepts and elements are derived from pentatonic, major, minor, and modal folk songs and art music examples. Beginning with musical examples derived from pentatonic folk songs and diatonic music and advancing to art music allows each rhythmic

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and melodic element to be introduced in a sequential and historical manner. Theoretical explanations are always the final stage of musical learning. After careful practice, the students develop a strong association in which the symbol evokes the sound experience and the sound experience evokes the symbol. This is of prime importance in the development of musical memory, sightsinging, ear training, and dictation skills. As Rumelhart states, "all knowledge is in the connections."²⁹ The *la* minor solfege system, when taught correctly, provides a pedagogy that is both faithful to musical structure and effective in challenging students to deepen and integrate their musical skills.³⁰

Some American theorists have turned solmization into a streamlined technology—very much in the American spirit—in which fixed rules lead to readily predictable results. In the Americanization of solmization pedagogy, theory is king. What matters to these theorists is how well a given solmization system conforms to a predetermined theory. Theory wins and music students lose.³¹

NOTES

¹Timothy A. Smith, "A Comparison of Pedagogical Resources in Solmization Systems," *Journal of Music Theory Pedagogy* 5/1 (Spring 1991): 1-23. Steve Larson presented a discussion of the different solfege systems and how they explicitly model various aspects of pitch structure in "Solfege Systems and Integrated Music Learning," a paper presented to the twelfth annual meeting of the Society for Music Theory, Austin, Texas, October, 1989.

²*Music in the Undergraduate Curriculum: A Reassessment*. CMS Report Number 7 (The College Music Society, 1990), p. 5.

³Bruce E. More, "Sight Singing and Ear Training at the University Level," *Choral Journal* 25 (March 1985): 21.

⁴Irma Collins, "Current Attitudes and Trends in the Teaching of Sight Singing in Higher Education" (D.M.A. in Mus. Ed. Dissertation., Temple University, 1979).

⁵Edwin E. Gordon, "Research Studies in Audiation," *Bulletin of the Council For Research in Music Education* (1984): 34.

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⁶The connectionist revolution aims to overthrow a notion that has been with us since ancient times—the notion that cognition is governed by rules. See Carl Bereither, "Implications of Connectionist Thinking about Rules," *Educational Researcher* 20: 10-16.

7W. Barbe and M. Milone, "What We Know About Modality Strengths," *Educational Leadership* 38/5 (1981): 378-380.

⁸Hilary Apfelstadt, "Reaching Your Students Through Perceptual Learning Modalities," *General Music Journal* 5/2 (Winter 1987): 7.

⁹Edwin E. Gordon, *Learning Sequence and Patterns in Music* (Chicago: G.I.A. Publications, Inc., 1976), p. 2.

¹⁰Lyle Davidson and Larry Scripp, "Happy Birthday: Evidence for Conflicts of Perceptual Knowledge and Conceptual Understanding," *Journal for Aesthetic Education* (1988).

¹¹R.G. Petzold, "The Perception of Music Reading by Normal Children and by Children Gifted Musically," *Journal of Experimental Education* 28 (1960): 271-319.

¹²A.T. Hewson, "Music Reading in the Classroom," *Journal of Research in Music Education* 14 (1966): 289-302.

¹³Micheal Houlahan and Philip Tacka, "Sound Thinking: A Suggested Sequence for Teaching Musical Elements Based on the Philosophy of Zoltan Kodaly for a College Music Course," *Journal of Music Theory Pedagogy* 4/1 (Spring 1990): 85-109.

¹⁴Patricia Ann Grutzmacher, "The Effect of Tonal Pattern Training on the Aural Perception, Reading Recognition, and Melodic Sight-reading Achievement of First-Year Instrumental Music Students," *Journal of Research and Music Education* 35/3: 172.

¹⁵Micheal Houlahan and Philip Tacka, *Sound Thinking: Music for Ear-Training and Sight-Singing* (London: Boosey & Hawkes, 1991).

Jarjisian found that a combination of diatonic and pentatonic pattern instruction benefitted students' rote-singing abilities at all tonal aptitude levels: Catherine S. Jarjisian, "The Effects of Pentatonic and or Diatonic Pitch Pattern Instruction on the Rote Singing Achievement of Young Children" (D.M.A. Dissertation, Temple University, 1981).

¹⁶Smith, 13.

¹⁷*Ibid.*

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¹⁸Laszlo Dobszay, "The Kodaly Method and its Musical Basis," *Studia Musicologica Academiae Scientiarum Hungaricae* 14 (1972): 18.

¹⁹Houlahan and Tacka, *Sound Thinking*.

²⁰Erzsebet Hegyi, "Stilusismeret," *Kodaly Pedagogiai Múvel Alapjan* (Zoltan Kodaly Pedagogical Institute of Music, 1987), pp. 60-61.

²¹According to Edwin Gordon, if a piece of music is in D major, it is in a major tonality and in a D keyality.

²²Dobszay, "The Kodaly Method," pp. 19-21.

²³Robert Gauldin and Mary Wennerstrom, "Pedagogy," *Music Theory Spectrum* 11/1 (1989): 68.

²⁴J. Lave, *The Culture of Acquisition and the Practice of Understanding* (IRL report 88-0007). Palo Alto, CA.

²⁵H.L. Dreyfus, "The Socratic and Platonic Basis of Cognitivism," *AI and Society* 2: 99-112.

²⁶D. Schon, *Educating the Reflective Practitioner* (San Francisco: Boosey-Bass, 1987).

²⁷Kenneth Simpson, ed., *Some Great Music Educators* (Novello & Company Limited, 1976), pp. 118-119.

²⁸Erno Lendvai, "The Workshop of Bartok and Kodaly," *Editio Musica Budapest* (1983).

²⁹D.E. Rummelhart, "The Architecture of Mind: A Connectionist Approach," in M.I. Posner, ed., *Foundations of Cognitive Science* (Cambridge, MA: MIT Press), pp. 133-159.

³⁰Gauldin and Wennerstrom, p. 69.

³¹This is a paraphrase of a paragraph written by William Rothstein on Schenker pedagogy [see *Journal of Music Theory Pedagogy* 4/2 (Fall 1990): 295-299].

Author's Reply

LIBERATION OF SOLMIZATION: SEARCHING FOR COMMON GROUND

TIMOTHY A. SMITH

I am indebted to professors Houlahan and Tacka for their reply to my "Comparison of Pedagogical Resources in Solmization Systems," *JMTP* (Spring 1991). It is obvious that my esteemed peers bring to this debate a wealth of experience and thought, which supports my contention that each solmization system *does indeed* offer pedagogical resources. As I wrote then: "The selection of a method ought to be justified by its potential as a pedagogical resource," and "Judicious application of a system presumes a high regard for contexts, purposes, and outcomes . . ." (*JMTP*, page 2). It is upon these grounds—resources and contexts—that I wish to respond in the hope that it might stimulate further debate.

With respect to pedagogical resources it is interesting to note that the rejoinder to my "flotilla of arguments" came NOT from advocates of a fixed system, but of a movable system. Interesting indeed, and propitious, for it gives me the opportunity to redirect my argument from the perspective of five presuppositions that Old World, and "Americanized" movable-functionists might hold in common (as it were, to re-launch my fleet from Houlahan's and Tacka's own anchorage). I shall use these mutually-held presuppositions to develop seven propositions that I doubt if my opponents can refute, though I am certain that they shall try.

First, I assume that Houlahan and Tacka would agree, the reason we both advocate movable systems is for the pedagogical resources that they provide *vis a vis* fixed systems: specifically, their ability to provide a language—phonemic identity—for tonal functions. Notwithstanding their protestations about naming structures being primarily a notational-theoretical exercise (therefore somehow specious), it is possible to identify the function of what one hears, by means of syllables, without reference to notation. This, the *la*-minor and *do*-tonic systems both do; we are therefore

on common ground. Where we disagree is that Houlahan and Tacka would require students to learn two languages, one for major, and another for minor.

This is not necessarily a bad thing, but it is a distinction worth careful consideration (in spite of my opponent's claim that the number of syllables required by any given system is a "trite" consideration). If the Old World's Charles the Fifth was used to speaking French to women, Spanish to men, German to his horse, and Latin to God, presumably he had his reasons; and if Houlahan and Tacka wish to teach students one language for major and another for minor, presumably they have their reasons. Their explanation of those reasons—"the Americanization of Solmization," in this issue of the Journal—leaves me unconvinced.

I continue to maintain that *la*-minor not only requires that students learn additional syllables to express the most frequently encountered tonal functions, it also requires that they be able to decipher which one of two possible meanings they ought to ascribe to each syllable. While we do this in language (e.g., "The bat flew across the stadium" could refer to a furry creature with wings or to a piece of wood used to hit a baseball), in a musical context it seems, somehow, arcane. In the context of more complex tonal functions, such as chromatic and borrowed chords, the *la*-minor system imposes a formidable array of combinations indeed, as Table 1 demonstrates:

The table shows that *la*-minor system-students are required to learn the combinations of BOTH columns; the *do*-tonic system, by contrast, requires that they learn only the second. This means that most *la*-minor constructions have two names: The V7/V, for example, is rendered *ti-ri-fi-la* in minor, but *re-fi-la-do* in major. The table shows, moreover, that nearly every *la*-minor construction can be used to represent harmonic entities with radically different functions: for example, *sol-ti-re-fa* connotes V7/III in minor but V7 in major. We shall let the reader be the judge as to whether this is a "trite argument for the rationalization of one solfege system over another," as claimed by Houlahan and Tacka. We shall also let the reader decide if Houlahan and Tacka were correct when they contested my statement: "It is in the context of secondary chromatic relationships and modal borrowings, that the deficiencies of *la*-minor manifest themselves most clearly." When a student is solfeging in the major mode, but encounters a tonal entity that is borrowed from the parallel minor (as frequently happens), the *la*-minorist is forced to represent those structures using syllables that are most likely to be perceived as alterations of major mode, not the syllables pertaining to what he has been taught should represent the minor mode from which the structures are truly derived.

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Table 1.

Chord	Minor mode	major mode
N	te re fa	ra fa le
V ⁷ /III(bIII)	sol ti re fa	te re fa le
V ⁷	mi si ti re	sol ti re fa
V ⁷ /VI(bVI)	do mi sol te	me sol te re
V ⁷ /iv(IV)	la di mi sol	do mi sol te
V ⁷ /ii		la di mi sol
V ⁷ /V	ti ri fi la	re fi la do
V ⁷ /iii		ti ri fi la
vii ^{o7}	si ti re fa	ti re fa le
vii ^{o7} /vi		si ti re fa
vii ^{o7}	si ti re fi	ti re fa la
vii ^{o7} /vi		si ti re fi
vii ^{o7} /V	ri fi la do	fi la do me
ct ^{o7} /I ⁶		ri fi la do
Fr+ ⁶	fa la ti ri	le do re fi
Gr+ ⁶	fa la mi ri	le do me fi

Syllable designations of altered chords and V⁷ in la-minor
(Leading tones and altered scale degrees are in bold type)

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Proposition 1: The reason that *do*-tonic and *la*-minor people both advocate a movable system is that such systems facilitate recognition of, discussion of, and production of, tonal characters and functions. They do this by providing a language—phonemic identity—for those characters and functions.

If my contenders do not agree with this proposition, then we had best furl the sails now, for there is no *terra firma*. If there is no common ground, then I challenge them to present one rational argument for movable function of any stripe. Their writings intimate that they would agree, so we shall sail on.

I assume that the protagonists of *la*-minor would concede that the essential function we desire our syllables to name is the *sense of centeredness in a tonic* (which is, to be sure, the tonal morpheme for every character and function that tonality might possibly invoke). So, I offer a second proposition with the request, if Houlahan and Tacka do not agree, that they might explain which tonal function they wish to identify, and how their system identifies that function better than the *do*-tonic system.

Proposition 2: The essential tonal character and function that movable systems seek to identify is the sense of centeredness in a tonic.

I have used the terms “character and function” because, as my counterparts formalized in their reply, they believe that, in addition to its function, each scale degree also possesses a character (like body, soul, and spirit). They argue that rootedness in minor has a different “character” (not to be confused with “function”) from rootedness in major. Accordingly, they propose that in a major mode we should call the morpheme for centeredness, *do*; but in a minor mode we should call it *la*. But the “streamlined” solfegist would maintain that, when it comes to tonal centeredness, any alleged character difference (as distinct from function) between tonic major and tonic minor is either a figment of their imaginations, a byproduct of their nomenclature, a mis-identification of function, or so imperceptible to most people as to be pedagogically insignificant. Accordingly, the morpheme should be *do* in all instances.

Though I do not believe that there is a difference of “character” (as distinct from “function”) between scale degrees, I have used their term in my first two propositions, and am willing to temporarily concede that point in order that we might proceed with the following argument. If the alleged

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difference of character does indeed exist, therefore requiring different morphemes, then the *la*-minor system is riddled with inconsistencies that, by its own *sine qua non*, make it unsuitable for use in a university theory or ear-training course.

How so? If Houlahan and Tacka truly believe that centeredness in minor and major have different characters, it is baffling that they are content to call both character AND function of the third scale degree/minor by the same phoneme that they use to ascribe the character and function of tonal centeredness in major. Are not these entities also heard differently; do they not therefore require different phonemes? If it is true (as in the quote cited in fn. 27) that "the *doh*-minorist's claim that he uses one name to describe identical phenomena falls to the ground because the effects of keynotes in major and minor . . . are not identical," then, surely the corollary is also true: the *la*-minorist's claim, that the different effects of rootedness in minor and major require DIFFERENT syllables, falls to the ground (and I mean "crashes") when they use the SAME syllable to represent the third scale degree/minor that they use to represent tonal centrality in major.

Likewise inconsistent, the *la*-minorist uses the syllable *ti* to name a function that, in major, is usually on its way up, but, in minor, is usually on its way down. Do not the tonic/major and mediant/minor have different characters and functions; do not the leading-tone/major and supertonic/minor have different characters and functions? Yet, after having asserted that tonic/minor and tonic/major require different phonemes because they are different aural entities, Houlahan and Tacka betray no hint of discomfiture calling the aforementioned structures *do* and *ti*, in spite of the fact that these scale degrees are heard, according to their own hermeneutics, as manifesting not only different characters, but radically different functions (more so, I submit, than any "character" difference that is presumed to exist between tonic/major and tonic/minor).

Therefore I declare my third and fourth propositions, with the request that, if my opponents do not agree, they should please explain how application to the third scale degree minor of the same syllable expressive of the character and tonal function of centeredness in major is not counterintuitive in light of their agreement with propositions one and two. Further, I wish the reader to be the judge as to whether I was correct (as Houlahan and Tacka dispute) in writing that such sharing of phonemes between centeredness in major and the third scale degree minor, "insinuates a dependence upon the major to define the minor, as if to suggest that the minor cannot exist independently of its relative." It is doubtful that my opponents will agree with these propositions, so I challenge them to refute them without abandoning propositions 1 and 2.

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Proposition 3: If tonal centrality in minor is heard as having a different "character" from centrality in major, therefore requiring a different phoneme, then it is counterintuitive for one to use identical phonemes for radically different functions and characters between relative modes. Not only is such usage counterintuitive, it is pedagogically hurtful; the lexicon of symbols is thereby compromised by numerous inconsistent meanings.

Proposition 4: An effective lexicon provides that identical characters and functions shall be identified in a phonemically consistent manner regardless of the context in which they are heard.

I stress the word "heard," because my critics and I agree upon a third point—to wit, solmization works best when it names tonal functions independently of their notation. Much of their argument is based upon this supposition, which, regrettably, is couched in language that surely gives the reader—unfamiliar with my former work—the impression that the advocates of *do*-tonic movable would not agree. We do indeed agree, without hesitation, and without qualification, as I stipulated formerly in the second of my six assumptions.

Houlahan and Tacka correctly assert that *la*-minor can be applied to sounds apart from the consideration of notation whatsoever. To their credit, they meticulously document studies showing the efficacy of a pedagogy that teaches students to recognize sounds before having to deal with symbols—my point exactly. Not to their credit, they neglect to show, because they cannot show, that the *do*-tonic system fails to facilitate such a result. Put into positive terms, the *do*-tonic system, too, teaches students to recognize sounds before having to deal with symbols. Not only so, but is my contention that *do*-tonic does this better than *la*-minor.

How? The method I shall use to demonstrate my thesis is necessarily abstruse, but, if the kind professors will be alert and patient, I am confident they shall taste of its logic, though they might not savor its result. Imagine that you hear a slow flute-like sound that begins with a pitch, moves upward a perfect fourth, upward a major second, back down a major second, down a minor second, and back up a minor second. Suppose, furthermore, that upon hearing this melody you have a firm sense of tonal centeredness in the second pitch. Finally, suppose that I tell you that the melody is not finished; I shall withhold the ending until my friends have answered a couple of questions.

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First, *la*-minorists, are you able and willing to solmize what you have heard? . . . pause No, I sense that you are not willing, because you are not able. For if you do not know the mode, and if you do not know how the melody will unfold in its next two pitches, then how can you possibly know which one of your two symbols for tonal centeredness—*la* or *do*—to apply to the second pitch; I do not blame you for pausing. You should know, however, that the most unskilled of my students could probably solmize that example as easy as pie (excuse the streamlined Americanism). Here, listen: *sol do re do ti do*.

Now I shall provide you with two possible endings. The first ending continues with a descent of a minor third followed by a major second in the same direction. The second ending continues with a descent of a *major* third followed by a *minor* second in the same direction. Now my *la*-minor champions are ready to apply their syllables. The impartial reader is asked to compare his syllables with those of the *do*-tonicist, then to decide the following question: which string of syllables accurately represents the tonal structures that sounded the same? Different?

La-minor syllables

Ex. 1: *sol do re do ti do la sol*

Ex. 2: *mi la ti la si la fa mi*

Do-tonic syllables

Ex. 1: *sol do re do ti do LA sol*

Ex. 2: *sol do re do ti do LE sol*

My fifth proposition, then, is nothing less than the second of six assumptions from my earlier work, which I repeat now for emphasis. I know that my colleagues on the opposite side agree, because it comprised the crux of their argument against my earlier work (though I cannot fathom why they chose to sail this tack since, refuting nothing, they merely added credence to what I had already written).

Proposition 5: The ideal solmization system will facilitate the recognition of musical structures and their transfer to written symbols. Students are better served when they learn first to recognize sounds, then the symbols, and not the reverse. The ideal solmization system will be oriented toward the ear, not toward the eye, causing students to become absorbed first with sounds, second with symbols (*JMTP*, p. 3).

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Now, with great respect for my partners in debate, I ask them to recall my earlier melody, with its two endings, and to bring their unflagging sense of collegial humor to an imagined colloquy in which we shall at last decide: which system is better oriented toward the ear? Question: "Distinguished professors, was it necessary for you to analyze what you heard before you were able to apply syllables to the earlier examples?" Answer: "Yes, it was because we first had to determine whether the melody was major or minor."

Aloysius—Ah, then you do admit that the *la*-minorist must analyze what he hears.

Josephus—I admit, but I am full of questions. Do you mind explaining to me the purpose of analysis?

Aloysius—Certainly, the purpose of analysis is to inform the ear, thereby to develop musicianship and to increase one's listening pleasure. Which causes me to wonder, Josephus, why you appear to be suspicious of analysis, implying that the people who practice such alchemy *obscurum per obscurius*, namely, theorists, are in pursuance of the "separation of theory and skill development" (as you have written). You yourself have conceded, your own pedagogical system requires that you, too, must analyze before you can apply your method to facilitate the development of listening skills.

Josephus—I see the error of my ways. But please tell me, why do I need syllables in the first instance; and, in the second instance, is this not "turning the field of music into a dead language?" as I have written elsewhere.

Aloysius—No, not at all. The purpose of syllables is to give the neophyte a vocabulary with which to show the master what has been perceived, remembered, and understood about the structure of a melody, and that this might be done before having to contend with the complexities of notation. For if a student hears something, but does not remember it, or, if she remembers it, but does not understand its structure, she will not be able to put her eloquent musical thoughts into writing. Likewise, the purpose of syllables is to enable the neophyte to show the master what she has recognized and understood of aural structures symbolized by the written page. For if a student sees symbols, but does not recognize the sounds they represent, she will not be able to audiate, and if she cannot audiate, she will not be able to make the proper sounds, much less make them musically. And if she has no vocabulary with which to communicate with the master, how is the master to know what the neophyte does or does not

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understand, or at what stage the neophyte is having difficulty, or how, even to help her overcome that difficulty. You see, my dear Josephus, the problem with your *la*-minor syllables is that you were incapable of employing them to show me that you had perceived and understood the most fundamental tonal characteristic of my example—its tonal centeredness—until after I had appended the final pitches (though I am certain that you had perceived the center before I appended the final pitches).

Josephus—This is beginning to make sense, but why did you omit the last two notes? Were you trying to: a) “disassociate yourself from the music education profession as is the tendency for music theorists; or b) could it be that you do not fully understand the implication of the *la*-minor system?” (translated loosely from something I have written elsewhere)

Aloysius—You should not be so abrasive my dear Josephus. No, the reason I omitted the last two notes was to introduce you to the concept of prevenient, isomorphic, metamodal structure in melody . . . pardon me for lapsing into *chiaroscuro*, but some things cannot be painted any other way. You see, you could not use your syllables to identify a single structure that you heard until after you had identified the mode; yet, the structures surely existed prior to and independently from, the mode. This means that the essential substance of tonality—centeredness in a single pitch—is supra-modal; and, if supra-modal, then modal functions themselves are necessarily infra-tonal, meaning that they exist after, and are dependent upon, centricity. It is strange, therefore, that, after having named the supra-modal functions of the first six notes, you found it necessary, for the sake of a different pitch in the second ending, to re-name all prior functions when, in fact, those functions remained unchanged. So you can see, if I may quote one of your own writings, “it would be quite ridiculous for students to solmize the second example with [mi] as the final note.” In truth with the exception of the seventh pitch, both examples sounded quite the same in terms of their characters AND tonal functions.

Josephus—I see the error of my ways. In my system of naming pitches I cannot identify the most basic elements of a melody independently of the mode, though I may perceive and understand many of those elements before I have perceived the mode. And if I do not perceive the mode, then it is impossible for me to use my system to verbalize to you, the teacher, a single structure that I may have recognized; I am stuck. And if I am stuck, you are no

less stuck, because you do not know what it is that stuck me: the mode or the melody's prevenient, isomorphic, metamodal structure. I understand, furthermore, that your method required but one changed syllable, representing the one pitch that distinguished the first ending from the second, and the one scale degree that defined the mode. Your method helped me to understand what was the same and what was different about the two examples. I agree now with your earlier writing that the *do*-tonic system "is better suited to teach the aural particulars of major and minor."

Aloysius—Do not worry about that mistake. You couldn't avoid it because your attention had not yet been called to it. And do not distress yourself overmuch with analysis. You see, we both do it. The difference is, that you do it while processing sound-to-syllable-to symbol, while I do it the other direction: symbol-to-syllable-to-sound.

Josephus—If what you say is true, master Aloysius, then my method offers certain resources that are particularly helpful when going from notation to syllable to sound; I don't have to do too much analysis of notational symbols before I can apply syllables—ugh, analysis, I dislike it.

Aloysius—Conversely, inasmuch as I am required to do a less-complicated analysis of sounds before I apply syllables, my method offers resources that are useful when going from SOUND to SYLLABLE to NOTATION. Do you see now why I was correct in my assertion that *do*-tonic works even better than *la*-minor in a purely aural context?

Josephus—I see, and I am full of admiration. But what about atonal music. Does not the *la*-minor system better "... indicate the tonality or the keyality" of atonal melodies (as I have written elsewhere)?

Aloysius—My dear Josephus, now I am truly perplexed! As the system has not yet been invented, I am not entirely sure upon what essence the atonality, of which you speak, is built; yet I am quite confident in declaring upon etymological grounds that neither your system nor mine could possibly contribute to a sense of tonality or keyality in atonal melodies, since the meaning of the word is - "without tonality."

Josephus—By the nymphs of Parnassus, I am mistaken once more! I shall take steps to correct my errors.

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Proposition 6: Whereas, a) the *la*-minor system requires comparatively MORE analysis when going from sound to sight; b) the *do*-tonic system requires comparatively LESS analysis when doing the same thing; c) the *la*-minor system requires one to recognize the mode before one can apply a single syllable; and (d) the *do*-tonic system requires no such recognition of the mode in the context of heard sounds . . . we agree that the latter system is less complicated to use in an aural context than is the former. The *do*-tonic system is oriented more toward the ear than is the *la*-minor system.

Surely my critics will not take umbrage over the light-hearted satire, for they share with me yet a fourth presupposition: specifically, that context is an extremely important consideration in the matter of which system to use. Being practitioners of Kodaly, Houlahan and Tacka advocate *la*-minor because it affords undeniable resources that appertain to the pedagogy of notationally semi-literate persons; as I wrote:

Two advantages [of *la*-minor] . . . are worthy of immediate recognition. First, sophisticated theoretical knowledge is not needed to solfege *la*-minor at sight, explaining why the system is advocated by teachers of young students. Second, in the *la*-minor system alone, the singer who has progressed to the reading stage, and who can identify the tonic pitch (major) of each signature, calling that pitch *do*, can sing [music in] any of the seven modes associated with that signature (*JMTP*, p. 13).

The locution "sophisticated theoretical knowledge" was, I confess, overstating the problem. "Rudimentary theoretical knowledge" would have been less frightening, yet have conveyed my point. And my point is: just as Josephus was required to recognize the mode before he could use *la*-minor syllables to identify the tonal functions of what he HEARD, the *do*-tonicist is required to recognize the mode before he can use syllables to identify the tonal functions of what he SEES. In that sense *do*-tonic solmization is a less-than-appropriate exercise for individuals who are in the process of mastering the rudiments of music notation. What teacher, in his right mind, would dare attempt to explain to elementary students how they might recognize, through visual cognates, whether the music represented by a particular key signature is major or minor? Better to defer that rubric to a later day, and then only to that "elite who are able to 'decode' the

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divergent approaches . . . of our current theory programs," to quote Houlahan and Tacka.

My seventh proposition follows. While I do not entertain any doubts about its rationality, I do doubt if my opponents will concede the question; as I wrote earlier, "everybody has his preference . . ." (p. 1). We know that preferences are not always rational.

Proposition 7: In the context of individuals who have not mastered the symbols of notation, *la*-minor is a pedagogically sound approach and should be preferred. In the context of the university theory and ear-training curriculum, where students have mastered the symbols of notation, *la*-minor is pedagogically inferior to the *do*-tonic system, which should be preferred.

Before identifying our last area of concord, I wish to call into question several casuistic themes that permeated the Houlahan and Tacka response. First, they seem annoyed that people of my species (university theory teachers) would "create untold difficulties for average music students" by requiring them to do something as bizarre as to analyze a written melody before they attempt to put it into sound. Certainly they would not have students trot off tunes willy-nilly without giving some forethought to structure. Too, as I emphasized in my earlier treatise, my context is the university, a place where we assume aspiring musicians know a thing or two about notation (and what they don't know we dare place in the laps of music educators). Here, too, we assume that an aspiring musician needs to be taught how to tell, from visual cues alone, whether a piece is in major or minor. In consideration of the double-entendres that are possible in the *la*-minor system, I wonder who is really creating untold difficulties.

Second, Houlahan and Tacka betray what I would characterize as polite loathing for theorists and analysis. I am not a psychologist and I shall not attempt to explain their attitude. I do suspect, however, that the word "analysis" has a private meaning for them, and that my use of that word was so privately colored that the critics were unable to comprehend most of what I wrote. When I wrote of analysis in the context of ear training, I wrote neither of Fortesque PC sets nor Schenkerian fundamental structures, but of the fundamental ability to *think about*, disassemble, reconstruct, criticize, and understand what one is hearing or reading. That is pretty much the orthodox meaning of the word in educational circles. Students must learn to think (analyze) before they can ever begin to audiate. Houlahan and Tacka have not shown how their system develops thinking skills or how the

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do-tonic does not facilitate, or how *la-minor* is superior to *do-tonic* in facilitating the formation of analytical skills.

"Audiation," they assert (and in so doing they do not correct my own use of the word), "is the hearing of music in one's mind when the sound is not physically present." Understood thus, audiation has nothing to do with the "seeing ear" (a concept upon which they lavish most of their reply) but everything to do with the "hearing eye." "Attaching a solfege syllable to the name of a note will not result in the development of sight reading or ear training," they write.

I have never believed such a thing, nor did I imply it in my article. What I did write was that "solmization works because it associates phonemes with various musical constructs that, with repetition, enable students to audiate sound from sight, and perceive sight to sound" (p. 3). The key words are "associates" and "enables," whose meanings are not nearly so simplistic as insinuated by Houlahan's and Tacka's words—"attaching" and "results."

Because a student recognizes that the pitch "A" (in the key of D) is the dominant, and applies the syllable *sol*, does not mean that he has audiated the dominant. But, if he applies the syllable AND recognizes the sound associated with *sol* (and this is likely to happen "with repetition"), then he has, in fact, audiated. So, why is it necessary to go through the intermediary steps of analyzing to determine the scale degree is number 5, name it *sol*, then recognize the sound of *sol*? The reason we apply the syllable is because the aural function we call *sol* assumes different shapes, visually, depending upon the key and clef. *Sol* is just a convenient notationally independent name that we have attached to the sound of the dominant, not the analytical concept nor the score. Having named the function, the student is in a better position to recall what *sol* sounds like after which he will be able to produce the sound in a musically informed manner.

The *la-minor* system itself requires that students go through this analysis-naming-recognition-audiation-production sequence. I wonder, therefore, why Houlahan and Tacka felt that it was necessary to make a distinction between the two systems in this regard, not to mention their attempt to pillory theorists and theory in the process. Unnecessary, too, was their pedantic foray into the "theory" of learning modalities; we have no argument with this, and *la-minor* offers no resource that *do-tonic* does not also offer.

Before quitting the question, I suggest that it is possible that the use of syllables over a treatment period of approximately 50 to 100 hours sets into motion a conditioned response such that the combination of kinesthetic, muscular, auditory, and tactile sensations of producing a syllable may enable the audiation of that syllable to happen with greater fluency. I have

no proof, but I strongly suspect that it does happen for most people. If it does not happen, there remains sufficient reason to use *do*-tonic solmization in the classroom, if only to provide a notationally independent, singable, language that consistently articulates the basic functions of tonality. But, if the hypothesis eventuates to be empirically demonstrable, I predict that the effect shall be more measurable as a result of *do*-tonic treatment than *la*-minor. If, in fact, audiation is facilitated by conditioned response to a signal, then it can only be weakened by garbling the signal (that is, using one signal to condition more than one response as the *la*-minor system necessarily would).

The last of Houlahan's and Tacka's themes was the wretched state of theory and theory teaching. "In traditional theory courses," they write, "students are presented with theoretical information to provide a foundation for their aural understanding." The readership of *JMTP* might wish to know if there is a basis for them to make such a claim other than their experience (as they wrote). Houlahan and Tacka continue: "...for example, major and minor scales are explained to the students in a theoretical manner, and the students are then asked to use syllables or numbers for sightsinging and dictation." Again, do they have proof that this is the way it is done. And if they have proof, so what? What evidence can they cite to support the notion that providing students with a cognitive scaffold upon which to hang all this aural stuff is not, in fact, beneficial?

"Every musical concept," they write, "...should be discovered by the students' own active participation in the class." If, by this they mean that interaction and participation are good things for teachers and students to do, and do often, then I agree. But if they mean that there is no place for acculturation by means of the transmission of concepts and facts from one person to another, then I, along with most educators, would disagree. Imagine the physicist who stands before his class and says "several decades ago a man by the name of Einstein discovered an important theory. Your assignment is to discover it yourself by means of active participation"; or, "there is great power in the atom, discover it."

In our own discipline, Houlahan and Tacka write that, "All theoretical information is derived from an aural understanding of musical elements and concepts." Really! You mean to say that if I listen long enough to the *Art of the Fugue* I will actually hear and recognize Bach's name; if I listen hard enough to the twelfth and fifteenth variations of the *Goldberg* I will actually understand that they are inverted canons at the fourth and fifth respectively; if I listen carefully enough to the *St. Matthew Passion* Bach's multifarious symbols for the cross will leap to my conscious attention? This is fantastic! It is also a fantasy.

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There are many aural structures that are best perceived after an initiation; there are many theoretical concepts and structures that, if we waited for students to discover them, we would be waiting a very long time. I can appreciate the emphasis upon bridging the gap between talking about, and listening to, music; I understand the need to be continually integrating the two. It is for this reason that many theorists begin class by listening to music. But my colleagues have surely overstated their case to the prejudice of transferring the modes and codes of music, from one generation to the next, by means of discursive interaction between individuals who know the information and individuals who do not. This, too, is an important learning modality.

Finally, I and my colleagues must feel no compunction, no pangs of guilt, over Houlahan's and Tacka's *caveat* that the American academy is circling the wagons so the "theory wins and music students lose" (last sentence). We have our faults, but collusion to swindle students is not one of them. While such phraseology (to quote the music man) has a nice ring to it, it sheds more heat than light.

But enough of this bifurcation. The truth about extremists of all ilk is that we need each other for intellectual sustenance. As the southern preacher used to say, "The problem with the left wing and the right wing is that they are both flapping on the same old bird." In debates such as this, I often find myself being pushed toward the middle. If, as Houlahan and Tacka write, North American universities "... continue to graduate music students, a disturbingly high percentage of whom are, from the standpoint of aural skills, musically illiterate ...", then perhaps this exchange will help nudge us ALL in a different direction. And, hopefully, Houlahan and Tacka might recognize that they are as much a part of the problem as they are part of the solution (as they pointed out, nearly as many ear-training programs use *la-minor* as use *do-tonic*).

Which leads me to my fifth, and final, area of accord. In their learned reply, my worthy counterparts began to quack very much like theorists; and, though they might not like the canard, they are nevertheless welcomed to the flock. Like seminarians, we relish animated debate so long as there is a general round of hand-shaking when it is over. And, if we *do-minorists*, as you call us, can recognize that you have the best interests of your students at heart, we certainly hope that you might do the same for us—join us on common ground that is truly worthy of any group or system. For education, like religion, requires that we have faith: in systems, methodologies, students, administrators, peers, even janitors. It requires, more, that we get our faith out of the halls and into actions, which I know, by their many publications, and eagerness to join this fray, Houlahan and Tacka have done. In the final analysis, it is most important that we believe in what we

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do—as my critics surely do—and when we do that, we cannot help but see success from time to time. And that is a point of common ground that we share even with those who favor fixed.

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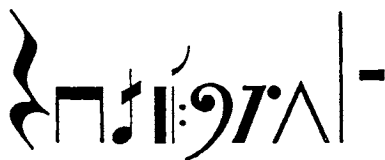
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