Dmitri Tymoczko A Geometry Of Music Harmony And


Essays in diatonic set theory, transformation theory, and neo-Riemannian theory -- the newest and most exciting fields in music theory today.

(Berklee Guide). Use counterpoint to make your music more engaging and creative. Counterpoint the relationship between musical voices is among the core principles for writing music, and it has been central to the study of composition for many centuries. Whether you are a composer, arranger, film composer, orchestrator, music director, headline, or improvising musician, this book will help hone your craft, gain control, and lead you to new creative possibilities. You will learn "tricks of the trade" from the masters and apply these skills to contemporary styles. Online audio examples illustrate the principles being discussed, and many recommended listening lists point you to additional examples of how these principles have been used in music over the past thousand years.

Pulling great sounds in the studio is a peculiar mix of art and science. Mike Stavrakos unique perspective has helped producers via his column in AudioTechnology magazine, and now the closely guarded secrets of one of the worlds top sound balance engineers have been laid bare in this book.

In Composition and Cognition, renowned composer and theorist Fred Lerdahl builds on his careerlong work of developing a comprehensive model of music cognition. Bringing together his dual expertise in composition and music theory, he reveals the way in which his research has served as a foundation for his compositional style and how his intuitions as a composer have guided his cognitively oriented theories. At times personal and reflective, this book offers an overall picture of the musical mind that has implications for central issues in contemporary composition, including the recurrent gap between method and result, and the tension between cognitive constraints and aesthetic aims of musical progress. Lerdahl's succinct volume provides invaluable insights for students and instructors, composers and music scholars, and anyone engaged with contemporary music.

David Lewin's Generalized Musical Intervals and Transformations is recognized as the seminal work paving the way for current studies in mathematical and systematic approaches to music analysis. Lewin, one of the 20th century's most prominent figures in music theory, pushes the boundaries of the study of pitch-structure beyond its conception as a static system for classifying and inter-relating chords and sets. Known by most music theorists as "GMT", the book is by far the most significant contribution to the field of systematic music theory in the last half-century, generating the framework for the "transformational theory" movement. Appearing almost twenty years after GMT's initial publication, this Oxford University Press edition features a previously unpublished preface by David Lewin, as well as a foreword by Edward Golfin contextualizing the work's significance for the current field of music theory.

An introduction to the theory of orbifolds from a modern perspective, combining techniques from geometry, algebraic topology and algebraic geometry. One of the main motivations, and a major source of examples, is string theory, where orbifolds play an important role. The subject is first developed following the classical description analogous to manifold theory, after which the book branches out to include the useful description of orbifolds provided by groupoids, as well as many examples in the context of algebraic geometry. Classical invariants such as de Rham cohomology and bundle theory are developed, a careful study of orbifold monodromies is provided, and the topic of orbifold $K$-theory is covered. The heart of this book, however, is a detailed description of the Chen-Ruan cohomology, which introduces a product for orbifolds and has had significant impact. The final chapter includes explicit computations for a number of interesting examples.

Foundations of Diatonic Theory: A Mathematically Based Approach to Music Fundamentals is an introductory, undergraduate-level textbook that provides an easy entry point into the challenging field of diatonic set theory, a division of music theory that applies the techniques of discrete mathematics to the properties of diatonic scales. After introducing mathematical concepts that relate directly to music theory, the text concentrates on these mathematical ideas, firmly establishing a link between introductory pedagogy and recent scholarship in music theory. It then relates concepts in diatonic set theory directly to the study of music fundamentals through pedagogical exercises and instructions. Ideal for introductory music majors, the book requires only a general knowledge of mathematics, and the exercises are provided with solutions and detailed explanations. With its basic description of musical elements, this textbook is suitable for courses in music fundamentals, music theory for non-music majors, music and mathematics, and other similar courses that allow students to improve their mathematics skills while pursuing the study of music.

This is the most comprehensive survey ever published of auxiliary verb constructions, as in `he could have been going to` and `she does eat cheese`. Drawing on a database of over 800 languages Dr Anderson examines their morphosyntactic forms and semantic roles. He investigates and explains the historical changes leading to the cross-linguistic diversity of inflectional patterns, and he presents his results within a new typological framework. The book's impressive range includes data on variation within and across languages and language families. In addition to examining languages in Africa, Europe, and Asia the author presents analyses of languages in Australasia and the Pacific and in North, South, and Meso-America. In doing so he reveals much that is new about the language families of the world and makes an important contribution to the understanding of their nature and evolution. His book will interest scholars and researchers in language typology, historical and comparative linguistics, syntax, and morphology.

How music has influenced mathematics, physics, and astronomy from ancient Greece to the twentieth century. Music is filled with mathematical elements. The works of Bach are often said to possess a math-like logic, and Arnold Schoenberg, Iannis Xenakis, and Karlheinz Stockhausen wrote music explicitly based on mathematical principles. Yet Eli Maor argues that it is music that has had the greater influence on mathematics, not the other way around. Starting with Pythagoras, proceeding through Schoenberg, and bringing the story up to the present with contemporary string theory, Music by the Numbers tells a fascinating story of composers, scientists, inventors, and eccentricities who have played a role in the age-old relationship between music, mathematics, and the physical sciences. Weaving compelling stories of historical episodes with Maor's personal reflections as a mathematician and lover of classical music, this book will delight anyone who loves math and music.

This title was first published in 2001. The last century has witnessed the ascendancy of the avant-garde in music. From Schoenberg to Boulez to Stockhausen, the avant-garde has defined the modern conception of musical creativity. Contemporary serious music demands the "new" in terms of style, form and ways of listening and hearing. Implicit in this approach is the rejection of the "old", from the baroque to the music of the later 19th-century symphonists. Paradoxically, however, it is this "old" repertoire which continues to dominate concert programmes. An exploration of this dichotomy lies at the heart of this book. Drawing on a wealth of European historical episodes with Maor's personal reflections as a mathematician and lover of classical music, this book will delight anyone who loves math and music.
feature, a recomposition of a famous piece by Arnold Schoenberg, and the music of Neil Diamond, David Shire, and Brian Wilson. A celebration of the awesome variety of musical expressions encompassed in what is called tonal music. Pieces of Tradition is a book for composers seeking ideas and effects, music theorists interested in its innovations, and all those who practice the analysis of composition in all its modern and traditional variations.

In this groundbreaking book, Tymoczko uses contemporary geometry to provide a new framework for thinking about music, one that emphasizes the commonalities among styles from Medieval polyphony to contemporary jazz.

This comprehensive resource features more than 400 projections and colour illustrations augmented by MRI images for added detail to enhance the anatomy and positioning presentations.

In recent years neo-Riemannian theory has established itself as the leading approach of our time, and it has proven particularly adept at explaining features of chromatic music. The Oxford Handbook of Neo-Riemannian Music Theories assembles an international group of leading music theorists who in an exploration of the music-analytical, theoretical, and historical aspects of this new field.

A new approach to studying the violin in order to become a well-rounded and creative musician Written for violin and viola students and their teachers this book is a hand-on, write-all-over-it, spill-coffee-on-it workbook for integrating musicianship and technique through improvisation. It will benefit beginners through advanced players, even professionals. The creative approach to musical elements and technique in this book can help improve facility and expression for written music; empower participation with musicians playing in improvisation-based approaches such as blues, country, or rock; and even provide a springboard to dive into the deep waters of jazz.

A commonsense, self-contained introduction to the mathematics and physics of music: essential reading for musicians, music engineers, and anyone interested in the interaction of art and science. "Mathematics can be as effortless as humming a tune, if you know the tune," writes Gareth Loy. In Mazimathics, Loy teaches us the tune, providing a friendly and spirited tour of the mathematics of music—a commonsense, self-contained introduction for the nonspecialist reader. It is designed for musicians who find their art increasingly mediated by technology, and for anyone who is interested in the interaction of art and science. In Volume 1, Loy presents the materials of mathematics (notes, intervals, and scales); the physical properties of music (frequency, amplitude, duration, and timbre); the perception of music and sound (how we hear); and music composition. Calling himself "a composer reduced into mathematics," Loy provides answers to foundational questions about the mathematics of music accessibility yet rigorously. The examples given are all practical problems in music and audio. Additional material can be found at http://www.mazimathics.com.

An exceptional text for undergraduate and graduate music students, Modal Counterpoint, Renaissance Style uses a wide variety of carefully graded exercises to present guidelines for writing and analyzing 16th-century music. The only species counterpoint text that draws directly on Renaissance treatises, it provides a conceptual framework to guide students through composition and analysis as it teaches them general structural principles. With stylistically diverse examples including not only motets and mass movements but also French chansons, German chorale settings, English canzonets, Italian madrigals, and Spanish organ hymns, villancicos, and ricercars, the book gives students a real-life feel for the subject. It distinguishes between technical requirements (hard rules) and stylistic guidelines (soft rules), and includes coordinated exercises that allow students to develop their skills systematically. The concluding chapters provide the formal and conceptual building blocks for longer pieces and encourage students to understand analysis and composition as complementary activities. By the end of the book, students are writing real compositions, not just drill exercises. The text also features progressively graded exercises, historical contexts that explain important topics and issues of the period, and some notes in the preface on using the book in the classroom. Combining the historical accuracy of style-oriented texts with the more systematic species counterpoint approach, this book offers a unique alternative to other methods. Now in its second edition, Modal Counterpoint, Renaissance Style integrates improvisation activities and new repertoire examples into many chapters; revises the chapter on three-part writing (Chapter 14) so that it pays more attention to rules and strategies; reworks the chapters on cadences (Chapter 10) and on writing two parts in mixed values (Chapter 11) to make them more accessible to students; incorporates clarified instructions throughout; and includes a summary of rules.

Contemporary Harmony: Romanticism Through the Twelve-Tone Row is by Ludmila Ulehla. The understanding of the musical techniques of composition cannot be reduced to a handbook of simplified rules. Music is complex and ever changing. It is the purpose of this book to trace the path of musical growth from the late Romantic period to the serial techniques of the contemporary composer. Through the detailed analysis of the musical characteristics that dominate a particular style of writing, a graduated plan is organized and presented here in the form of explanations and exercises. A new analytical method substitutes for the diatonic figured bass and makes exercises and the analysis of non-diatonic literature more manageable. The explanations describing each technique are thorough. They are designed to help the teacher and the student see the many alternating circumstances that affect a particular analytical decision. More important than a dogmatic decision on a particular key or a root tone, for example, is the understanding of why such an underdetermined condition may exist.

This book constitutes the refereed proceedings of the Third International Conference on Mathematics and Computation in Music, MCM 2011, held in Paris, France, in June 2011. The 24 revised full papers presented and the 12 short papers were carefully reviewed and selected from 62 submissions. The MCM conference is the flagship conference of the Society for Mathematics and Computation in Music. This year’s conference aimed to provide a multi-disciplinary platform dedicated to the communication and exchange of ideas amongst researchers involved in mathematics, computer science, music theory, composition, musicology, or other related disciplines. Areas covered were formalization and geometrical representation of musical structures and processes; mathematical models for music improvisation and generates theory; set-theoretical and transformational approaches; computational analysis and cognitive musicology as well as more general discussions on history, philosophy and epistemology of music and mathematics.

One of most important books in Western music. Detailed explanation of principles of diatonic harmonic theory. New 1971 translation by Philip Gossett of 1722 edition. Many musical examples.

Creative Music Composition is designed to be an introductory textbook for music students. "Creative composition"—composing in your own style, rather than in the style of a composer of the past—is embraced by music educators not only for composition students, but for beginning performers and music educators; and is often offered to all music students and non-music majors who wish to enhance their musical creativity. With 25 years of experience teaching fledgling composers, the author tackles the key ingredients that make for successful composition, including: stimulus to the musical imagination; discussion of a variety of current musical languages; analysis of many examples from contemporary scores; technical exercises; suggestions as to how to start a composition; structures; and examinations of works from various genres. Wilkins covers several musical languages, from folk and popular to serialism; analyses various rhythmic forms; suggests approaches for composing for a variety of instruments, from traditional to electronic ones, as well as for the human voice; addresses the nuts and bolts of score preparation; and offers career advice. For all composition students—and for music students in general—Creative Music Composition offers a clear and concise introduction that will enable them to reach their personal goals.

One of the most important books in Western music. Detailed explanation of principles of diatonic harmonic theory. New 1971 translation by Philip Gossett of 1722 edition. Many musical examples.
landmark in the analytical application of transformational techniques, Tonality and Transformation is an indispensable work of music theory.

Leonard Meyer proposes a theory of style and style change that relates the choices made by composers to the constraints of psychology, cultural context, and musical traditions. He explores why, out of the abundance of compositional possibilities, composers choose to replicate some patterns and neglect others. Meyer devotes the latter part of his book to a sketch-history of nineteenth-century music. He shows explicitly how the beliefs and attitudes of Romanticism influenced the choices of composers from Beethoven to Mahler and into our own time. "A monumental work. . . . Most authors concede the relation of music to its cultural milieu, but few have probed so deeply in demonstrating this interaction."—Choice "Probes the foundations of musical research precisely at the joints where theory and history fold into one another. . . .—Kevin Korsyn, Journal of American Musical Sociology 'A remarkably rich and multifaceted, yet unified argument. . . . No one else could have brought off this immense project with anything like Meyer's command."—Robert P. Morgan, Music Perception "Anyone who attempts to deal with Romanticism in scholarly depth must bring to the task not only musical and historical expertise but unquenchable optimism. Because Leonard B. Meyer has those qualities in abundance, he has been able to offer fresh insight into the Romantic concept."—Donal Henahan, New York Times

This new textbook provides students with a comprehensive and accessible introduction to the subject of security studies, with a strong emphasis on the use of case studies. In addition to presenting the major theoretical perspectives, the book examines a range of important and controversial topics in modern debates, covering both traditional military and non-military security issues, such as proliferation, humanitarian intervention, food security and environmental security. Unlike most standard textbooks, the volume also offers a wide range of case studies — including chapters on the USA, China, the Middle East, Russia, Africa, the Arctic, the Middle East, Europe and Latin America — providing detailed analyses of important global security issues. This 34 chapters contain pedagogical features such as textboxes, summary points and recommended further reading and are divided into five thematic sections: Conceptual and Theoretical Military Security Non-Military Security Studies and Security Case Studies This textbook will be essential reading for all students of security studies and highly recommended for students of critical security studies, human security, peace and conflict studies, foreign policy and International Relations in general.

Building on the foundation of Lerdahl and Jackendoff's influential A Generative Theory of Tonal Music, this volume presents a multidimensional model of diatonic and chromatic spaces that quantifies listeners' intuitions of the relative distances of pitches, chords, and keys from a given tonic. The model is employed to provide conceptualized structures, paths represent through the space, and compute patterns of tension and attraction as musical events unfold, thereby providing a partial basis for understanding musical narration, expectation, and expression. Conceived as both a music-theoretic treatment and a contribution to the cognitive science of music, this book will be of interest to music theorists, musicologists, composers, computer scientists, and cognitive psychologists.

Did you ever ask whether music makes people smart, why a Parkinson patient's gait is improved with marching tunes, and whether Robert Schumann was suffering from schizophrenia or Alzheimer's disease? This broad but comprehensive book deals with history and new discoveries about music and the brain. It provides a multi-disciplinary overview on music processing, its effects on brain plasticity, and the healing power of music in neurological and psychiatric disorders. In this context, the disorders the plagued famous musicians and how they affected both performance and composition are critically discussed, and music as medicine, as well as music as a potential health hazard are examined. Among the other topics covered are: how music fits into early conceptions of localization of function in the brain, the cultural roots of music in evolution, and the important roles played by music in society and educational systems. Topic: Music is interesting to almost everybody Orientation: This book looks at music and the brain both historically and in the light of the latest research findings.

Comprehensiveness: This is the largest and most comprehensive volume on 'music and neurology' ever written! Quality of authors: This volume is written by a unique group of real world experts representing a variety of fields, ranging from history of science and medicine to neurology and musicology.

This book contains the refereed proceedings of the Second International Conference on Mathematics and Computation in Music, MCM 2009, held in New Haven, CT, USA, in June 2009. The 26 revised full papers presented were carefully reviewed and selected from 38 submissions. The MCM conference is the flagship conference of the Society for Mathematics and Computation in Music. The papers deal with topics within applied mathematics, computational models, mathematical modeling and various further aspects of the theory of music. This year's conference is dedicated to the honor of John Clough whose research modeled the virtues of collaborative work across the disciplines.

Music theorists have long believed that 19th-century triadic progressions idiometrically extend the diatonic syntax of 18th-century classical tonality, and have accordingly found the two repertoires under a single mode of representation. Post-structuralist musicologists have challenged this belief, advancing the view that many romantic triadic progressions exceed the reach of classical syntax and are mobilized through the context of a transgressive, anti-syntactic impulse. In Audacious Euphony, author Richard Cohn takes both of these views to task, arguing that romantic harmony operates under syntactic principles distinct from those that underlie classical tonality, but too new susceptible to systematic definition. Charting this alternative triadic syntax, Cohn reconceives what constant triads are, and how they relate to one another. In doing so, he shows that major and minor triads have two distinct natures: based on their acoustic properties, and the other on their ability to voice lead smoothly to each other in the chromatic universe. Whereas their acoustic nature underlies the diatonic tonality of the classical tradition, their voice-leading properties are optimized by the pan-triadich progressions characteristic of the 19th century. Audacious Euphony develops a set of inter-related maps that organize intuitions about triadic proximity as seen through the lens of voice-leading proximity, using various geometric relations related to the 19th-century Tonnetz. This model leads to cogent analyses both of particular compositions and of historical trends across the long nineteenth century. Essential reading for music theorists, Audacious Euphony is also a valuable resource for music historians, performers and composers.

An accessible scientific explanation for the traditional rules of voice leading, including an account of why listeners find some musical textures more pleasing than others. Voice leading is the musical art of combining sounds over time. In this book, David Huron offers an accessible account of the cognitive and perceptual foundations for this practice. Drawing on decades of scientific research, including his own award-winning work, Huron offers explanations for many practices and phenomena, including the perceptual dominance of the highest voice, chord-tone doubling, direct octaves, embellishing tones, and the musical feeling of sounds "leading" somewhere. Huron shows how traditional rules of voice leading align almost perfectly with modern scientific accounts of auditory perception. He also reviews pertinent research establishing the role of learning and enculturation in auditory and musical perception. Voice leading has long been taught to children with reference to Baroque chorale-style part-writing, yet these exist many more musical practices and traditions. The traditional emphasis on Baroque part-writing understandably leaves many musicians wondering why they are taught such an archaic and narrow system. The traditional emphasis on Baroque part-writing understandably leaves many musicians wondering why they are taught such an archaic and narrow system. The traditional emphasis on Baroque part-writing understandably leaves many musicians wondering why they are taught such an archaic and narrow system.

The original edition of The Geometry of Musical Rhythm was the first book to provide a systematic and accessible computational geometric analysis of the musical rhythms of the world. It explained how the study of the mathematical properties of musical rhythm generates complexity and coherence in music in a manner that arises in a variety of seemingly disparate fields. The book also introduced the distance approach to phylogenetic analysis and illustrated its application to the study of musical rhythm. The new edition retains all of this, while also adding 100 pages, 93 figures, 225 new references, and six new chapters covering topics such as meter and metric complexity, rhythmic grouping, expressive timing and timing in rhythmic performance, and evolution phylogenetic analysis of ancient Greek paeonic rhythms. In addition, further context is provided to give the reader a fuller and richer insight into the historical connections between music and mathematics.

Go behind the scenes with the musician The New York Times called "a guitar God!" Of-hailed as the Jimi Hendrix of his genre of instrumental guitar rock. Joe's 6-string secrets have astounded listeners around the world for nearly 30 years. In this book, Joe Satriani and coauthor, music biographer Jake Brown, take fans on their first authorized tour of the story. The New York Times called "a guitar God!" Of-hailed as the Jimi Hendrix of his genre of instrumental guitar rock. Joe's 6-string secrets have astounded listeners around the world for nearly 30 years. In this book, Joe Satriani and coauthor, music biographer Jake Brown, take fans on their first authorized tour of the story. The New York Times called "a guitar God!" Of-hailed as the Jimi Hendrix of his genre of instrumental guitar rock. Joe's 6-string secrets have astounded listeners around the world for nearly 30 years. In this book, Joe Satriani and coauthor, music biographer Jake Brown, take fans on their first authorized tour of the story. The New York Times called "a guitar God!" Of-hailed as the Jimi Hendrix of his genre of instrumental guitar rock. Joe's 6-string secrets have astounded listeners around the world for nearly 30 years. In this book, Joe Satriani and coauthor, music biographer Jake Brown, take fans on their first authorized tour of the story. The New York Times called "a guitar God!" Of-hailed as the Jimi Hendrix of his genre of instrumental guitar rock. Joe's 6-string secrets have astounded listeners around the world for nearly 30 years. In this book, Joe Satriani and coauthor, music biographer Jake Brown, take fans on their first authorized tour of the story. The New York Times called "a guitar God!" Of-hailed as the Jimi Hendrix of his genre of instrumental guitar rock. Joe's 6-string secrets have astounded listeners around the world for nearly 30 years. In this book, Joe Satriani and coauthor, music biographer Jake Brown, take fans on their first authorized tour of the story. The New York Times called "a guitar God!" Of-hailed as the Jimi Hendrix of his genre of instrumental guitar rock. Joe's 6-string secrets have astounded listeners around the world for nearly 30 years. In this book, Joe Satriani and coauthor, music biographer Jake Brown, take fans on their first authorized tour of the story.
An invaluable introduction to the art and craft of musical composition from a distinguished teacher and composer. This essential introduction to the art and craft of musical composition is designed to familiarize beginning composers with principles and techniques applicable to a broad range of musical styles, from concert pieces to film scores and video game music. The first of its kind to utilize a style-neutral approach, in addition to presenting the commonly known classical forms, this book offers invaluable general guidance on developing and connecting musical ideas, building to a climax, and other fundamental formal principles. It is designed for both classroom use and independent study.

With contributions by numerous experts

The Geometry of Musical Rhythm: What Makes a "Good" Rhythm Good? is the first book to provide a systematic and accessible computational geometric analysis of the musical rhythms of the world. It explains how the study of the mathematical properties of musical rhythm generates common mathematical problems that arise in a variety of seemingly disparate

In this book, David Temperley addresses a fundamental question about music cognition: how do we extract basic kinds of musical information, such as meter, phrase structure, counterpoint, pitch spelling, harmony, and key, from music as we hear it? Taking a computational approach, Temperley develops models for generating these aspects of musical structure. The models he proposes are based on preference rules, which are criteria for evaluating a possible structural analysis of a piece of music. A preference rule system evaluates many possible interpretations and chooses the one that best satisfies the rules. After an introductory chapter, Temperley presents preference rule systems for generating six basic kinds of musical structure: meter, phrase structure, contrapuntal structure, harmony, and key, as well as pitch spelling (the labeling of pitch events with spellings such as A flat or G sharp). He suggests that preference rule systems not only show how musical structures are inferred, but also shed light on other aspects of music. He substantiates this claim with discussions of musical ambiguity, retrospective revision, expectation, and music outside the Western canon (rock and traditional African music). He proposes a framework for the description of musical styles based on preference rule systems and explores the relevance of preference rule systems to higher-level aspects of music, such as musical schema, narrative and drama, and musical tension.

Portrays Schoenberg's atonal music as successions of motives and pitch-class sets that flesh out 'musical idea' and 'basic image' frameworks.

Exceptionally clear, systematic presentation of the evolution of musical style from Gregorian Chant (AD 700) to mid-20th-century atonal music. Over 140 musical examples. Bibliography.