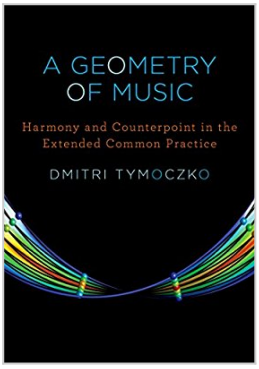

A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice (Oxford Studies in Music Theory)

By Dmitri Tymoczko

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How is the Beatles' "Help!" similar to Stravinsky's "Dance of the Adolescents?" How does Radiohead's "Just" relate to the improvisations of Bill Evans? And how do Chopin's works exploit the non-Euclidean geometry of musical chords?

In this groundbreaking work, author Dmitri Tymoczko describes a new framework for thinking about music that emphasizes the commonalities among styles from medieval polyphony to contemporary rock. Tymoczko identifies five basic musical features that jointly contribute to the sense of tonality, and shows how these features recur throughout the history of Western music. In the process he sheds new light on an age-old question: what makes music sound good?

A Geometry of Music provides an accessible introduction to Tymoczko's revolutionary geometrical approach to music theory. The book shows how to construct simple diagrams representing relationships among familiar chords and scales, giving readers the tools to translate between the musical and visual realms and revealing surprising degrees of structure in otherwise hard-to-understand pieces.

Tymoczko uses this theoretical foundation to retell the history of Western music from the eleventh century to the present day. Arguing that traditional histories focus too narrowly on the "common practice" period from 1680-1850, he proposes instead that Western music comprises an extended common practice stretching from the late middle ages to the present. He discusses a host of familiar pieces by a wide range of composers, from Bach to the Beatles, Mozart to Miles Davis, and many in between.

A Geometry of Music is accessible to a range of readers, from undergraduate music majors to scientists and mathematicians with an interest in music. Defining its terms along the way, it presupposes no special mathematical background and only a basic familiarity with Western music theory. The book also contains exercises designed to reinforce and extend readers' understanding, along with a series of appendices that explore the technical details of this exciting new theory.

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Product Description

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Author Dmitri Tymoczko

Amazon Exclusive: A Conversation Between Dmitri Tymoczko, Author of *The Geometry of Music*, and Suzanne Ryan, Music Editor at Oxford University Press Suzanne Ryan: Tell us about the book. **Dmitri Tymoczko:** Well, I start with five well-known musical features that contribute to tonality and musical coherence. The book's basic claim is that these five features constrain each other in unexpected ways, so that musicians cannot freely pick and choose among them: if you want harmonic and melodic coherence, for

example, there are only a few options at your disposal. It follows that (broadly) tonal music, rather than being one of many workable musical systems, is much closer to being a unique solution. Instead of a million habitable musical planets, each accessible via a short rocket flight, it may be that there are relatively few fertile musical worlds.The first half of the book argues for this claim in terms that I hope are accessible to readers with only basic musical and mathematical knowledge. The second half uses the tools to examine pieces spanning the entire history of Western notated music. **Ryan:** One of the unusual features of the book is the use of non-Euclidean geometry. Is this a metaphor? Did you just draw some arbitrary pictures? **Tymoczko:** No, absolutely not! My goal was to construct geometrical representations in which every conceivable chord is represented, and in which distance corresponds to the total amount of physical effort required to move from one chord to another on an instrument like the piano. (Theorists almost universally agree that this notion of distance is vital to making music.) It turns out that these two simple constraints completely determine a rich collection of geometrical spaces, leaving little or no room for arbitrary personal choices on the part of the theorist. What is surprising is that such simple constraints can generate such interesting geometries, geometries that are rich enough to contain every possible chord in every possible scale, or even in the absolutely continuous musical universe that has no smallest distance. **Ryan:** Is that why these ideas have interested people outside of music theory? **Tymoczko:** I think so. Though most of my earlier theoretical articles have appeared in specialist music-theory publications, the geometrical approach has proved interesting to a much broader public—to the point where people even seem to want to talk with me about it at cocktail parties. **Ryan:** So how does this new geometrical perspective help people understanding music? **Tymoczko:** By providing a comprehensive picture of the possibilities confronting composers. Previous composers have navigated through musical space in a fairly intuitive way, sometimes achieving remarkable results, but without any systematic map or guide. These new theoretical tools allow us to understand composers' choices in light of simple diagrams that display the possibilities available to them. This can lead to interesting insights: for instance, in the book I show that the same techniques used to connect chords in Chopin are also used by composers as diverse as Beethoven, Schubert, Jimi Hendrix, Radiohead, Grieg, Janacek, and many others; it also turns out that these techniques play a role in connecting scales, both in traditional modulation and in the more recent music of Debussy, Shostakovich, Steve Reich, and jazz improvisers. **Ryan:** And how can your approach contribute to our understanding of music history? **Tymoczko:** In the book, I begin at the very dawn of Western notated music, showing that three of my five properties are already in place in the eleventh century. I then leap ahead several hundred years, to about 1450, because that is the time at which the next feature really starts to play a crucial role. (Virtually everyone agrees that the intervening music, while beautiful and interesting, exhibits the same three features as my initial example.) This leads to a discussion of the ways in which classical music, romantic music, impressionism, jazz, and contemporary notated music form a continuous tradition, in which each new style manages to find solutions to problems inherited from its predecessors. In particular, I am very passionate about the idea that impressionism and jazz are actually very close together, and that they constitute a really fundamental advance in musical thinking.

Review

"As far as I know, the intersection of those who are distinguished composers and those who have published in *Science* contains one member: the author of this book. If you are interested in tonality in music, you must read it, because it describes by far the most comprehensive theory of what makes tonal music work." --Philip Johnson-Laird, Stuart Professor of Psychology, Princeton University

"*A Geometry of Music* is an epoch-making publication in music theory and will certainly stimulate other new and innovative work in the field. Tymoczko has produced an outstandingly original synthesis of new music theory that unifies quite a large number of separate subfields and realizes the theorist's dream of finding the

rational basis for tonality and tonal-compositional practices in music." --Daniel Harrison, Allen Forte Professor of Music Theory and Chair, Yale University Department of Music

"A provocative and ingenious melding of music, geometry, and history that promises to change the way that composers, music theorists, and cognitive scientists view music." --
Gary Marcus, Professor of Psychology, New York University and author of *Kluge: The Haphazard Evolution of The Human Mind*

"Tymoczko's *A Geometry of Music* is an appealingly written, substantial treatise on tonal harmony. The author introduces his original concepts with clarity and fearlessness. Musicologists, musicians, and listeners with an analytical bent will find plenty of ideas to chew on in this intriguing, rewarding book." --Vijay Iyer, musician

"Tymoczko confronts with apparent relish the daunting challenge of selling his ideas to a broad audience of theorists, composers, musicians, and students, and his ability to capture the intricacies of complex material while presenting it clearly and comprehensibly is praiseworthy...If the author's way of doing music theory or promulgating his results is not quite like most of the music theory that we have learned and taught, that is hardly a sufficient reason why we should not give his powerful ideas the attention they deserve." --*Music Theory Online*

"A tour de force, a rich and suggestive summation of an exciting new perspective, -a jumping-off point for further explorations. His geometric diagrams provide new kinds of spatialized representations of the aural facts of tonal experience. They may help composers and musicians to 'see' new possibilities within that intricate labyrinth, as well as to bring the old ones to life anew." --*Times Literary Supplement*

"Formidable...The strongest aspect of Tymoczko's book is the case that he gives for voice-leading in the common practice." --*Reason Papers*

About the Author

Dmitri Tymoczko is a composer and music theorist who teaches at Princeton University. His CD *Beat Therapy* is available from Bridge records.

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Alta Valentin:

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