Spring 2009 Course Announcement

MUS–T658: Seminar in Music Theory (26493)
Musical Spaces and Transformations

Professor Julian Hook (***juhook@indiana.edu***)
Tuesday and Thursday, 2:30–3:45 p.m., room M 263

Within the last two decades, a variety of sophisticated techniques from group theory and other areas of mathematics have been applied to the study of music. Students in this seminar will explore some of these exciting developments.

The concepts fundamental to this exploration are the ***spaces*** in which musical objects reside, and ***transformations*** defining relationships among objects in those spaces. Familiar examples of musical spaces include ***pitch space*** and ***pitch-class space***; there are also ***chordal spaces***, ***rhythmic spaces***, and many others. Spaces can be finite or infinite, discrete or continuous, chromatic or diatonic. Many musical spaces have appealing geometric representations. ***Transformations*** are mappings defined on spaces (what mathematicians call "functions"); examples include the familiar transposition and inversion operators. As David Lewin has shown, transformations are intimately related to a general notion of the ***interval*** between two musical objects.

Our study will cover essential concepts in the areas generally known as ***transformation theory*** and ***neo-Riemannian theory***. There will also be some intersections with ***diatonic set theory*** (which explores the subtle and complex relationships between diatonic and chromatic spaces). The subject matter is more theoretical than analytical in nature, but our readings will include analytical applications to a variety of repertoires, both tonal and atonal, and individual projects will offer an opportunity for students to pursue further analytical work.

Required text: David Lewin, ***Generalized Musical Intervals and Transformations*** (1987; reprinted 2007, Oxford University Press). Other readings will likely include articles by Lewin, Richard Cohn, John Clough, David Kopp, and the instructor.

Requirements: assigned readings and discussion; additional individual readings and class presentations; one or two short papers or other written assignments; one major paper and final presentation.

Prerequisites: Students enrolling in T658 should be familiar with the fundamentals of pitch-class set theory as covered, for instance, in T556, Analysis of Music Since 1900. There are no specific mathematical prerequisites; mathematical concepts will be introduced as needed during the semester.