Introduction

Tonal harmonic theory has been a subject of theoretical speculation and practical teaching since its emergence in the first years of the eighteenth century. Although there are many models of its optimum theoretical configuration, each divergence of approach came about primarily from efforts to improve whatever had gone before. The pursuit of multiple approaches was not generally thought to be counter to orthodoxies so much as it was exploratory—always seeking a more comprehensive way to view an ever growing range of musical styles and purposes. Some of this congeniality broke down as tonality itself began to be eclipsed by post-tonal experimentation in the first years of the twentieth century.

The first years of the current century have brought new challenges to theories of tonal music and its analysis in a digital environment. These challenges are motivated by the increasing availability of musical data in a wide range of machine-readable formats. Although the data fed to automatic routines will influence outcomes, we ignore that issue here in order to concentrate on the ways in which researchers centrally involved in tonal harmonic analysis are confronting the challenges of modeling tonal harmony. While results are provisional and the pursuit of harmonic analysis by computer is still in its infancy, amazing progress has been made in the past ten years. Even though theories of harmony were, before recent decades, mainly the pursuit of composers and mathematicians, they arise today in a wider range of fields—cognitive psychology, neurobiology, informatics, computer science, and operations research as well as music theory and mathematics.

These new approaches, many of them developed over several years of investigation, are able to provide models and results of kinds not possible two decades ago. Readers will quickly note some overlap of interests, as well as some divergence of musical assumptions in moving from one contribution to another. Many of the contributors are well informed about the work of other contributors. Thus many opportunities for close comparison are available. Since part of the point of the collection is to clarify fine-grained differences, we advise readers to consider them all. While there is more work in this field than can be accommodated here, we believe that the range of work presented is representative of the breadth and depth of all computer-assisted tonal harmonic theory and analysis in Europe and North America. This issue (like its predecessors) is intended to be accessible to those not steeped in the discipline-specific jargon of the individual fields from which it has come.

No natural order or implied ranking is intended by the order in which articles are presented. Readers may wish to group them according to their own interests. Audio

applications are of primary interest to İzmirli (**Ch. 1**), who investigates influences of timbre on specific arrays of tonal usage. Purwins et al. (**Ch. 5**) have a primary interest in cross-referencing models in music theory to findings in perceptual research, but the application of some of their work is to audio analysis based on various kinds of pitch-usage profiles. One of Temperley's abiding interests (**Ch. 2**) is cognition of musical structure. This is not entirely foreign to Janata's work (**Ch. 3**), but Janata's focus is on auditory attention to specific harmonic progressions, while Temperley's focus here is on specific (little distinguished) aspects of tonality which may be of value in harmonic analysis. Pitch relations play a foundational role in the work of Chew (**Ch. 4**), Purwins (**Ch. 5**), and Sapp (**Ch. 6**), but Sapp is also motivated by practical strategies for industrial-strength chordal analysis and results which can eventually support audio applications in tandem to musical data of a symbolic nature. All three relate their approaches to the German *Tonnetz* of the nineteenth century but diverge with respect to the other models of tonal relations they consider.

Three practical contributions bring us into contact with the application of both standard approaches and new models and methods. Van Kranenburg (**Ch. 7**) compares digital and analogue methods for assessing disputed authorship for certain works in the Bach catalogue. Volk considers possible synergies between metric and tonal structures in a single work by Brahms (**Ch. 8**) and compares her results with published analyses. Ferkova et al. offer a practical approach to MIDI-based harmonic analysis (**Ch. 9**) and its application in the analysis of three piano repertories. The self-organizing maps mentioned by Janata (**Ch. 3**) and advocated by Purwins et al. (**Ch 5**) are demonstrated by Toiviainen (**Ch. 10**), who compares maps generated by different encapsulations of tonal data for harmonically complex musical examples.

We are indebted to the authors for their painstaking work as well as their patience and perseverance. To eliminating unnecessary duplication without obliterating information essential to understanding the approach and without biasing the material in favor of one or another contribution proved to be difficult tasks. Standardizing terminology enough to render all the articles comprehensible across several fields took significant quantities of time and attention. We are likewise indebted to our reviewers, whose role was perhaps more vital for this issue than for any of its predecessors. The final product is undoubtedly both richer and more accurate on account of their thoughtful and constructive comments. The production of Computing in Musicology owes a great deal to Don Anthony (typesetter of many musical examples), Craig Sapp (solver of myriad technical problems), and Edmund Correia, Jr. (editor and multilingual proof-reader *par excellence*). My interest in harmonic theory was cultivated over seven years of study and teaching with Dika Newlin (1923-2006), and I believe that indirectly this collection owes much to her endless knowledge.

Eleanor Selfridge-Field (for the editors)
Center for Computer Assisted Research in the Humanities, Stanford University
December 22, 2007

Title: Introduction

Author(s): Eleanor Selfridge-Field

Source: Computing in musicology 15 (2007-2008) 9–10
ISSN: 1057-9478

Publisher: Stanford University