11-2022

How Notation Dictates Our Musical Understanding: Annotated Bibliography

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Musical notation has a long and diverse history. The traditions of ancient Greece differ substantially from that of India or China in both content and technique, and even the Greek church has distinct notation from the Latin church. In our modern world there is an accepted notational style utilized for Western classical music, but the disparate regional and cultural styles that we may observe in history yields a deeper understanding of those cultures: what musical elements were prioritized over others, what performers were expected to interpret instead of purely reading, how their tonal structure is imparted. Contemporary musical notation has developed alongside technology which has enabled greater musical freedom, but in studying the history of music notation greater insights may be obtained and the understanding of general notation will be expanded.

Cline, David. *The Graph Music of Morton Feldman*. Cambridge, UK: Cambridge University Press, 2016.

In the Western musical tradition, the graphs introduced by Morton Feldman have served as significant additions to the notational practices. A prior fellow of the Institute of Musical Research at the School of Advanced Study, University of London, Dr. Cline provides an insight into this notational technique, which held significant power in both their innovation and unique presentation. While other experts deride Feldman's graphs as imprecise and irrelevant, Dr. Cline presents a case for taking a deeper examination of their value and importance to music in the latter 21st century. To this end, Dr. Cline utilizes the graphs themselves with original analysis and extensively cites the views held both by Feldman's defenders and critics. This work is successful in engaging multiple viewpoints, despite its clearly stated stance as a defense of Feldman's techniques. Despite the previously unpublished nature of some sources, they remain highly authoritative and are utilized to great effect. While these graphs represent an entirely different musical world than those utilized in early music, it is vital to look towards the future when studying the past and maintain awareness of our current environment.

Grier, James. *Musical Notation in the West*. Cambridge, UK: Cambridge University Press, 2021.

Dr. Grier is a professor of Music History at the University of Western Ontario, as well as a fellow of the Royal Society of Canada. This work focuses exclusively on the Western musical tradition, from plainsong chant to more advanced notation with polyphonic and rhythmic notation. Scores are extensively used, as are historical documents that provide concrete,

verifiable evidence in favor of the narrative issued by Dr. Grier. The view of music as a symbolic language that needs to simultaneously communicate the information to the performer while facilitating real-time performance represents a delicate balance between two forces: the desire to perfectly communicate a musical idea, and the desire to quickly understand said musical idea. The further discussion of precedent is also very important: whether "…musical developments stimulated notational attributes, or notational innovations made practicable advances in musical style." While this work represents a repository of information rather than defending a particular view or propagating an argument, it represents a valuable insight into the notational tradition of Western classical music.

Hulkova, Marta. "Central European Connections of Six Manuscript Organ Tablature Books of the Reformation Era from the Region of Zips (Szepes, Spiš)." *Studia Musicological* 56, no. 1: 3–37.

Tablatures provide an incredibly useful source for viewing 16th- and 17th-century polyphonic music, as their widespread dissemination during the Protestant Reformation for church usage throughout Germany has allowed them to survive until the present day. Dr. Hulkova is an esteemed scholar at Comenius University, Bratislava, where she specializes in Slovak music in the medieval period, renaissance, baroque and classicism. In this article, Dr. Hulkova traces the routes of dissemination in comparison with the wider spread of general Central European musical repertoire. In this pursuit, she conducts original analysis on six manuscript organ tablature books. While first-hand accounts and other authorities on the subject are also incorporated in her article, this article represents an original contribution to the musical literature regarding music in the Reformation. Her argument, that the tablature books reveal close musical connections across Germany, is clearly made and effectively defended by both the amassed literature and her own analysis. In the interest of notation, Dr. Hulkova's article provides an interesting perspective on the cultural and historical trends of Protestant musical traditions during the Reformation Era.

Kuijken, Barthold. *The Notation Is Not the Music: Reflections on Early Music Practice and Performance*. Bloomington, IN: Indiana University Press, 2013.

Barthold Kuijken is a Belgian flautist known primarily for his authentic baroque performances who has specialized in performing on authentic instruments, utilizing period techniques. In this work, he states: "…notation gives us the raw but lifeless material from which we have to reinvent he actual music, applying the reading and performing conventions." In making this argument, he openly states that, rather than reading as a musicological study, he intends this work to serve as a conduit for his private opinions regarding the theory and practice of Early Music. As expected, he is quite one-sided in his conversation, immediately countering any contrary views that view notation as more valuable. The sources provided do succeed in illustrating both views on the value of notation, but the frank bias of the author clearly shows through the narrative. This focus on the performance over the notation remains valuable, however, in the discussion of early notation. As music existed for millennia before the

development of any notation, it is a valuable addition to the conversation to include such an ardently anti-notation work.

Park, So Jeong. “Sound and Notation: Comparative Study on Musical Ontology.” Dao: a Journal of Comparative Philosophy 16, no. 3: 417–430.

Dr. Park takes a pure, direct approach to musical notation. By breaking down the approaches taken by two different cultures, China and Greece, the inherent similarities held by both are revealed. Despite their differences, with Greece focusing on abstract structure and China preferring a framework of sound, both agree that music is a phenomenon that is able to be understood. Dr. Park, an associate professor at Sungkyunkwan University in South Korea specializing in musical philosophy, argues that the Chinese methodology, which sees music as “an everchanging process, rather than.. an object fixed in a presumably stationary world,” is a more useful lens than the current Western classical perspective. In making such an argument, current scholars and ancient writings are extensively utilized effectively in portraying both perspectives. By taking a philosophical approach in the discussion of notation, rather than focusing on the theory or performance, a unique branch of discussion has been introduced. This paradigm shift in musical portrayal is fascinating and will provide an invaluable view in the discussion of early notation.

Rajan, M. Ragesh, Deepu Vijayasenan, and Ashwin Vijayakumar. “Predicting Gamaka s-The Essential Embellishments in Karnatic Music.” *IEEE Access* 7 (2019): 175386–175395.

In Karnatic music, the musical tradition followed in southern India, *gamakas* are musical embellishments that must be predicted from the notation, despite there being no rules that define when and where a *gamaka* should be placed. This article puts forward a method to detect these embellishments from annotated music alone through the process of data analysis. Their data-driven approach is supplemented with contemporary research on the topic, and the majority of their work represents original contributions to the literature of machine learning and music production. Their argument, that this predictive method is both useful and effective, is delivered through analysis performed with a scientific aim, to successfully identify as many *gamaka* placements as possible with the overarching goal of performing Karnatic music with music synthesizers, a field in which that these three authors are authorities: Dr. Rajan is a research scholar at the National Institute of Technology Karnataka, Surathkal, where he specializes in machine learning and music information retrieval; Dr. Vijayasenan is an associate professor at the National Institute of Technology Karnataka, Surathkal, where he specializes in machine learning and speech signal processing; and Dr. Vijayakumar received his PhD from the School of Interactive Computing, Georgia Institute of Technology. The research conducted by these men and their findings provide a unique synthesis of technology that can predict performance practice—practices that, by nature, are not bound by rigid rules—and turn these practices into musical notation. In the study of musical notation, the use of predictive analysis predicated on data collection is a truly unique approach that may provide significant benefits to future research.

Stinson, John, and Jason Stoessel. "Encoding Medieval Music Notation for Research." *Early Music* 42: 613-617. https://doi-org.du.idm.oclc.org/10.1093/em/cau093.

This article introduces *Scribe*, a program that was designed to encode medieval musical notation into a database that enables the independent search of specific text, note-shape, and pitch data. Newer versions, however, have been developed to keep up with the advancements in digital technology and changing formats. In this article, the functions and value of *Scribe* are provided, as well as the hopes for future improvements. While there is not an abundance of evidence provided and no argument is being made, the purpose of the article is to promote general knowledge of this program and the potential benefits it provides. The two authors, Stinson and Stoessel, are both authorities on this subject. Stinson has studied medieval music extensively, earning the Medal of the Order of Australia for his work and currently he is an Emeritus Scholar at La Trobe University. Stoessel is an adjunct research fellow at the University of New England, Armidale, Australia, where he specializes in late medieval music and humanism as well as digital musicology. While only tangentially related to the topic of notation, a program like *Scribe* may prove indispensable to a scholar interested in particular gestures or pitches in medieval music. Therefore, in the interest of promoting the greater conversation regarding notation, this article will be useful in its promotion of a novel method.

Tillyard, H. J. W. *Byzantine Music and Hymnography*. London, UK: Faith Press, 1923.

This work's exclusive focus on Greek Church Music represents an interesting perspective, especially given the emphasis in Western music on the Latin Church Music tradition. In tracing the origins of the Byzantine hymnography, Tillyard identifies Jewish influences as well as prominent hymnodists that contributed to the tradition. This trail culminates with the modern Russian church, and Tillyard makes an appeal to maintain the traditional manner of singing Greek music: "unaccompanied, save by the drone, and in free rhythm. For such performance no knowledge of the Byzantine notation would be needed." This statement resounds deeply with the sentiment of Byzantine music, which Tillyard argues should by nature remain free of rigid notation as the current Western classical tradition demands. In his preface, Tillyard is transparent in his disclosure regarding his sources: "…what I now offer to the reader is based more upon my own research than on the conclusions of earlier investigators." Such a disclosure is very helpful in identifying the evidence utilized: under the temporal restrictions in which Tillyard worked, much of the analysis and material represents an original contribution to literature. Tillyard's authority on this subject is beyond reproach: he was given the title "patriarch of Byzantine studies" and is credited with revitalizing academic interest in the subject. Despite the apparent anti-notation sentiment in this work, it represents an interesting perspective on notation, especially when compared to the Latin tradition.

van der Meer, W. "Visions of Hindustani Music." *World of Music* 47, no. 2: 105–118.

van der Meer takes a multifaceted approach in article, analyzing the dance, painting, and sculpting alongside writing, graphing, and mental imaging. In this article, he argues in favor of awareness in our viewing of every form of music: "…scores are not music and neither are recordings, no more than graphs, pictures and transcriptions… we must attempt to constantly be aware of the way in which we perform the transformation." This argument, approaching music from a broad artistic standpoint and equating every form of notation, provides an interesting facet to the broader conversation of notation. van der Meer successfully provides a rich dialogue, introducing the cultural observations of Indian nuclear physicist Homi J. Bhabha alongside the teachings of Dilip Chandra Vedi, a renowned Indian scholar and musician who van der Meer himself studied with. van der Meer is the professor of cultural musicology and Indic musicology at the University of Amsterdam, and he has received international recognition for his work on computer assisted research in musicology. In this article, he provides original transcriptions and digital representations of the notation to help convey the simplifications of reality and tonal space. From this perspective, van der Meer offers a fascinating insight into the limitations of notation, and his urging to remain aware when viewing how we transform and fix music provides a unique contribution to the discussion of notation.

Weibel, Peter, Ludger Brummer, and Sharon E. Kanach. *From Xenakis's UPIC to Graphic Notation Today*. Berlin, Germany: Hatje Cantz, 2020.

Weibel, the chairman and CEO of ZKM (Center for Art and Media Technology in Karlsruhe, Germany), Brummer, the head of department at ZKM, , and Kanach, the vice-president of ZKM, are possibly the three individuals most qualified to present such a complicated topic as UPIC (Unité Polyagogique Informatique CEMAMu), a computerized musical composition tool utilized and designed by Iannis Xenakis. While their work is much more of a technical discussion meant to elucidate a perplexing topic rather than argue a certain view, it is successful in informing the reader about both the musical and scientific mechanics of the machine. Extensive visual displays with graphs of wavelengths and diagrams of the machine, coupled with first-hand accounts and the historical backgrounds, provide an engrossing explanation of the UPIC. This machine transforms drawings into musical pieces, as well as presenting real-time performances through the images created by a stylus. This technological approach to notation, replacing written notes with computer code that interprets a two-dimensional stroke into a pitch, a sound wave with a particular waveform and period, is completely alien to any idea of notation held by pre-industrial scholars. The dramatic difference in what the UPIC offers in terms of notation compared to traditional views is exemplary of how far the Western classical tradition has traveled, and this work provides a benchmark to see just how detached the two spheres have become.

Yingshi, Chen. "Ancient Chinese Music Notation." *Anuario Musical* 44: 239–239.

Dr. Yingshi is a professor at Shanghai Conservatory of Music, specializing especially on the Tang Dynasty. This work displays his expertise, and Dr. Yingshi provides the traditional

Chinese notation alongside the more traditional Western notation. This article is divided into several sections, each detailing a different aspect of ancient Chinese notation. The sections utilize tables that clearly display the similarities between the ancient Chinese and modern notations, which are highly effective in allowing the reader to enter the discussion. The examples referenced in the article are original transcriptions that Dr. Yingshi produced, and besides these scores traditional Chinese characters are provided alongside their corresponding Western notational counterparts. While an overriding argument is absent from this article, he concludes with a recommendation to reform staff notation to distinguish between subtle pitch differences. In the greater discussion of ancient notation, this article will serve as a beneficial perspective on the style of ancient Chinese music, which significantly differs from both ancient and modern Western music and notation.

Zhang, Xinmei. "Implementation of Computer-Aided Piano Music Automatic Notation Algorithm in Psychological Detoxification." *Occupational Therapy International* 2022: 1-13. https://doi.org/10.1155/2022/4457167.

Zhang's proposal for an optimal temporal structure model to maintain musical coherence while ensuring interdependence between the track and music generation is a unique approach in the topic of notation. Psychological detoxification is a state characterized by the lack of restraint that occurs in manic episodes, and the ability for music to help alleviate such problems is remarkable. Extensive data sets are analyzed and other experts in the field are cited. The figures and tables presented represent the original work of data analysis and visualizations of the mechanical processes by which the notation is derived. This article was published in 2022 from the Shaanxi Normal University School of Music, and there is an academic editor listed as well. From this, and the lack of other available details online, there is no reason to believe that Zhang is an authority on this subject. Their sources are reputable, however, and the journal that this article is published in, Occupational Therapy International, is a peer reviewed scholarly journal, so there is no reason to condemn the quality of this article. With the assumption that the information provided by this article is reputable, an interesting new approach to notation is outlined by Zhang. Automated piano music is far removed from the subject of early notation, but it provides a fascinating example of a real-life example where musical notation is utilized in a different field.