

# Music 3991A: Meter & Timing Across Cultures

Department of Music, Mount Allison University

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Prerequisite: MUSC 2703 [second-year Aural Musicianship]; or permission of the Department

This course explores meter and timing in recorded music from around the world. Central topics include theories of meter, analysis and representation of rhythm and expressive timing, and issues in cross-cultural analysis and performance analysis. Case studies include Romantic piano music, Indigenous musics of North America, West African dance drumming, and sacred chant from various Silk Road cultures. Assignments provide experience in computer-assisted transcription and in the design of analytical figures. Final projects may center on any style of recorded music, from anywhere in the world, and may include performance and/or multimedia elements.

The course builds on the training in rhythmic dictation provided in MUSC 1703 and 2703 [first- and second-year Aural Musicianship] and cultivates listening and analytical skills relevant to many [career paths in music](#). This course may be of particular interest to those intending to apply for graduate studies in music theory, composition, ethnomusicology, or music cognition.

Learning outcomes -- By taking this course, students will learn to:

1. create clear and accurate transcriptions of music in several different styles, with supporting analytical figures informed by recent writings on meter and expressive timing;
2. create effective graphic notations, analytical figures, and animations using computer software;
3. write accurate summaries and well justified critiques of recent scholarly literature on meter, expressive timing, and cross-cultural analysis; and
4. develop an original project consisting of a formal proposal (with examples), presentation text, slideshow, and presentation video.

**Instructor:** Dr. Alan Dodson [adodson@mta.ca](mailto:adodson@mta.ca)

**My commitment:** I'll try my best to provide clear instruction, create a supportive and inclusive learning environment, and assess all students' work fairly.

**Course materials:** Course readings and audio examples (links in Moodle) free  
[Sonic Visualiser](#) and Mazurka Project [plugins](#) and [tools](#) free

**Schedule** (tentative – see Moodle course page for updates):

- weeks 1–6: analytical techniques (Tues), contexts and controversies (Thurs), weekly transcription exercises
- weeks 7–10: case studies in four focus areas (Romantic piano music, Indigenous musics of North America, West African dance drumming, sacred chant from the Silk Road)
- weeks 11–12: final project development, focusing on musical examples and argumentation

**Assigned readings** (see below for the course bibliography, see Moodle for links to full text)

In weeks 1–6, the whole class will read the following items from sections A and B of the course bibliography. For each item, certain sections will be singled out for close reading, and the remainder can be read more lightly. See the Moodle course page for details and some discussion prompts.

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	Tues: theory and analysis	Thurs: contexts and controversies
week 1	Cohn 2019	Cottrell 2010, Mundy 2009 <sup>1</sup>
2	Lerdahl & Jackendoff 1983, Ch. 2&4	Nettl 2005a, Robinson Intro. & Ch. 1
3	London 2012, Ch. 1–3	Roberts 1936, Bartók 1951
4	Murphy 2015	Seeger 1958, Shelemay 2000
5	Ohriner 2019	England et al. 1964, Stanyek et al. 2014
6	Dodson 2020	Killick 2020 and responses

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In weeks 7–10, the whole class will study one reading from section C per week, as follows:

week 7	Cook 2013
8	Levine 2002
9	Agawu 2016
10	Roeder 2019a

During these weeks, individual students will also present summaries of other articles from section C of the course bibliography (approximately 2–3 presentations per week).

Finally, in weeks 11–12, each student will give regular updates on the development of the final project, including some original work (preliminary transcriptions and analytical remarks) as well as comments on some relevant readings. Section D of the course bibliography is intended to help you get started on your research for the final project

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<sup>1</sup> Mundy 2009 includes an overview of the history of birdsong transcription techniques, including the emergence of electronic devices and software as alternatives to staff notation. Parallel developments in ethnomusicology and (more recently) in the study of recordings of Western art music are discussed in Cottrell 2010 and in the readings for weeks 4 and 7.

## Written work

discussion forums: In the discussion forums, each student will comment on a series of quotes from the readings, respond to peers' comments, and write some questions that could be posed to the author.

transcription exercises: Short audio excerpts (mostly under 20 seconds) will be transcribed using various notational formats with supporting analytical figures. Aim for maximum clarity and accuracy. Remember to clap, sing, and play what you hear as you develop your transcription, and be prepared for your perceptions to change with repeated listening. Also experiment with various shorthand notations in your rough work, and with creative modifications of staff notation in your good copy. Examples will be from a variety of sources, including [Global Jukebox](#), [Naxos World](#), [Naxos Music Library](#) (for Western art music examples), [VoxGuru](#) (Carnatic singing tutorials), [Voceux](#) (isolated vocals from popular music), and [Xeno-Canto](#) (birdsong archive).<sup>2</sup>

case study assignments: Transcriptions of longer and more complex excerpts, with commentary.

animation assignment: Use [Wick Editor](#) (free animation software) to transform one analytical figure into a moving image.

final project: Proposal, presentation text, PowerPoint slides, and presentation video (20 minutes including examples). Follow the [SMT proposal guidelines](#) for single-author papers, and use [parenthetical \(author-date\) references](#) in the proposal and text. The slides should include all of your direct quotations, transcriptions (with audio), and analytical figures, as well as a bibliography at the end. I encourage you to try using animations in place of the analytical figures and/or to incorporate video clips of your own “musicking” activities in response to the recordings you discuss. The project can be on any type of music, to be chosen in consultation with the instructor.

Further instructions and due dates will be given in Moodle.

All graded work will be submitted and returned through Moodle.

### **Important:**

**Collaboration is strictly forbidden** on all graded work for this course. You are encouraged to discuss readings, course concepts, and transcription and analysis *strategies* with your peers, but you must never look at another student's work or show anyone your own work prior to submission. The consequences of such actions are described in the University's Policy on Academic Integrity [link removed].

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<sup>2</sup> The idea of including birdsong transcription exercises comes from Michael Tenzer's “Musical Rhythm and Human Experience,” for which he received the SMT Award for Diversity Course Design in 2021.

## **Grading:**

Your final grade will be determined using “method A” or “method B,” whichever results in a higher grade. An interim grade will be provided at the end of week 6

### method A (holistic, tied to the four learning outcomes listed on p. 1)

- A+ excellent, attained all four learning outcomes to an exceptionally high standard
- A very good, attained all four learning outcomes to a high standard
- A- good, attained all four learning outcomes to a fairly high standard
- B+ above average, but did not attain all four learning outcomes
- B average; attained some learning outcomes, made satisfactory progress towards the others
- B- below average, attained at least one learning outcome, satisfactory progress towards others
- C- to C+ grades in this range indicate more serious shortcomings in the attainment of and progress towards the four learning outcomes, perhaps after falling behind on course activities; students with an interim grade in this range (or lower) should come for help immediately
- F to D+ grades in this range indicate that the learning outcomes have not been met; the differences within this range have to do with the level of effort and progress shown

### method B (traditional weighted average)

- 10% participation in Moodle discussion forums on readings
- 30% 6 transcription exercises, weeks 1–6 (5% each)
- 20% 4 case study assignments, weeks 7–10 (5% each)
- 10% animation assignment, week 11
- 30% final projects

## **Unsatisfied with an assignment grade?**

Read the feedback carefully, and then submit a revised version for a higher grade within one week.

## **Unsure if you're on the right track with the final project?**

Submit drafts for feedback and discussion. This will not affect your grade.

## Course policies

1. Office hours: All students are warmly invited to schedule appointments for help outside of class, either in person or on Zoom. **I am available 2–4 pm most weekdays and eager to support your learning, so please don't hesitate to reach out.**
2. Academic accommodations: All academic accommodations should be arranged well in advance. Students with documented disabilities may apply for accommodations through the University's accessibility support center [link removed for anonymity].
3. Attendance and punctuality: If you miss a class, please check in with me by email so I can bring you up to speed. If you anticipate the need for an extended absence, please contact me as soon as possible so we can discuss suitable accommodations and develop a workable catch-up plan.
4. Late assignments: If you miss an assignment deadline, there will be a deduction for lateness unless an extension has been granted in advance, owing to illness or other extenuating circumstances.
5. Academic misconduct: As noted above, collaboration is not permitted on any of the graded work for this course. Plagiarism—using another person's words or ideas without properly citing the source—is also prohibited. All cases of suspected academic misconduct will be investigated, and all confirmed cases will be reported to the Department Head and Academic Dean as required under the University's Policy on Academic Integrity. For unauthorized collaboration, I usually recommend to the Dean that the grade be divided equally between the students involved (e.g., divided in half if two students are involved). In the case of plagiarism, I generally recommend a failing grade (and in some cases a grade of 0%) on the item in question.

## University-wide Academic Regulations (from the Calendar)

The current university-wide academic regulations can be found [here](#).

See especially the following subsections:

- 10.4 Changes in Registration and Withdrawal
- 10.6 Academic Integrity
- 10.7 Missed Coursework or Tests
- 10.8 Examination Regulations
- 10.9 Evaluation of Student Performance

See also [Policy 1010](#) on Anti-Racism Education and Response.

# Bibliography for Music 3991a: Meter and Timing Across Cultures

Some of these readings will be assigned, and the remaining items are optional further reading.  
Sources are listed chronologically within each section.

## A. Analytical techniques (weeks 1–6, Tuesdays)

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### 1. Meter

Lerdahl, Fred, and Ray Jackendoff. 1983. *A Generative Theory of Tonal Music*. Cambridge, MA: MIT Press.

Clayton, Martin, Rebecca Sager, and Udo Will. 2005. "In Time with the Music: The Concept of Entrainment and its Significance for Ethnomusicology." *European Meetings in Ethnomusicology* 11 (2005): 3–75.

London, Justin. 2012. *Hearing in Time: Psychological Aspects of Musical Meter*. Second edition. Oxford and New York: Oxford University Press.

Murphy, Nancy Elizabeth. 2015. "Metric Theories and the Aspects of Meter" [includes a concise introduction to Hasty's theory of meter-as-projection]. In "'The Times They Are A-Changin'": Flexible Meter and Text Expression in 1960s and 70s Singer-Songwriter Music," 11–49. Ph.D. dissertation, University of British Columbia.

Cohn, Richard. 2019. "Meter." In *The Oxford Handbook of Critical Concepts in Music Theory*, ed. Alexander Rehding and Stephen Rings, 207–33. Oxford and New York: Oxford University Press.

### 2. Timing

Clarke, Eric. 2004. "Empirical Methods in the Study of Performance." In *Empirical Musicology: Aims, Methods, Prospects*. Oxford and New York: Oxford University Press.

Cook, Nicholas, and Daniel Leech-Wilkinson. 2009. "A Musicologist's Guide to Sonic Visualiser." Website of the [Centre for the History and Analysis of Recorded Music](#) (CHARM).

Ohriner, Mitchell. 2019. "Expressive Timing." In *The Oxford Handbook of Critical Concepts in Music Theory*, ed. Alexander Rehding and Stephen Rings, 369–96. Oxford and New York: Oxford University Press.

Dodson, Alan. 2020. "Visualizing the Rhythms of Performance." In *The Cambridge Companion to Rhythm*, ed. Russell Hartenberger and Ryan McClelland, 41–60. Cambridge: Cambridge University Press.

## B. Contexts and controversies (weeks 1–6, Thursdays)

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### 1. Phonomusicology

Leech-Wilkinson, Daniel. 2009. *The Changing Sound of Music: Approaches to Studying Recorded Musical Performances*. Website of the [Centre for the History and Analysis of Recorded Music](#) (CHARM).

Mundy, Rachel. 2009. "Birdsong and the Image of Evolution." *Society and Animals* 17: 206–23.

Cottrell, Stephen. 2010. "The Rise and Rise of Phonomusicology." In *Recorded Music: Performance, Culture and Technology*, ed. Amanda Bayley, 15–36. Cambridge: Cambridge University Press.

## 2. Cross-cultural analysis

- Roberts, Helen. 1936. "The Viewpoint of Comparative Musicology." *Papers Read by Members of the American Musicological Society*: 29–34. [Roberts was a founding member of the AMS.]
- von Hornbostel, Erich. 1936. "Fuegian Songs." *American Anthropologist* 38: 357–67. [This is a representative example of comparative musicology as practiced in the early 20<sup>th</sup> c.]
- Meyer, Leonard B. 1960. "Universalism and Relativism in the Study of Ethnic Music." *Ethnomusicology* 4: 49–54. [See also his 1998 article "A Universe of Universals," easily found through RILM.]
- Nettl, Bruno. 2005a. "You Will Never Understand This Music: Insiders and Outsiders." In *The Study of Ethnomusicology: Thirty-One Issues and Concepts*, 149–60. Revised edition. Urbana and Chicago: University of Illinois Press.
- Tenzer, Michael. 2006. "Introduction: Analysis, Categorization, and Theory of Musics of the World." In *Analytical Studies in World Music*, ed. Michael Tenzer, 3–38. Oxford and New York: Oxford University Press. [See also the Afterword in Tenzer & Roeder 2011, cited in section D1.]
- \_\_\_\_\_. 2011. "Temporal Transformations in Cross-Cultural Perspective: Augmentation in Baroque, Carnatic and Balinese Music." *Analytical Approaches to World Music* 1.1: 152–75.
- Savage, Patrick E., and Steven Brown. 2013. "Towards a New Comparative Musicology." *Analytical Approaches to World Music* 2.2: 148–97. [See also the responses in AAWM 3.2 (2014).]
- Robinson, Dylan. 2020. *Hungry Listening: Resonant Theory for Indigenous Sound Studies*. Minneapolis: University of Minnesota Press.
- Hu, Zhuqing (Lester) S. 2021. "Chinese Ears, Delicate or Dull? Toward a Decolonial Comparativism." *Journal of the American Musicological Society* 74: 501–69.

## 3. Representing music visually

### (a) notation and transcription

- Bártok, Béla. 1951. "Introduction to Part One." In *Serbo-Croatian Folksongs: Texts and Transcriptions of Seventy-Five Folk Songs from the Milman Parry Collection and a Morphology of Serbo-Croatian Folk Melodies* by Béla Bártok and Albert B. Lord, 3–20. New York: Columbia University Press. [We'll also look at Bártok's Musical Examples 1–2 and 43 (pp. 95–97 and 208–09).]
- Seeger, Charles. 1958. "Prescriptive and Descriptive Music Writing." *The Musical Quarterly* 44: 184–95.
- England, Nicholas M., et al. 1964. "Symposium on Transcription and Analysis: A Hukwe Song with Musical Bow." *Ethnomusicology* 8: 223–77.
- Kaufmann, Walter. 1967. *Musical Notations of the Orient: Notational Systems of Continental, East, South, and Central Asia*. Bloomington: Indiana University Press.
- Koetting, James. 1970. "Analysis and Notation of West African Drum Ensemble Music." *Selected Reports in Ethnomusicology* 1: 116–46.
- Ellingson, Ter. 1992a. "Transcription." In *Ethnomusicology: An Introduction*, ed. Helen Meyers Brown, 110–52. London: Macmillan.
- \_\_\_\_\_. 1992b. "Notation." In *Ethnomusicology: An Introduction*, ed. Helen Meyers Brown, 153–64. London: Macmillan.

Shelemay, Kay Kaufman. 2000. "Notation and Oral Tradition." In *The Garland Handbook of African Music*, ed. Ruth M. Stone, 24–43. New York: General Music Publishing.

Nettl, Bruno. 2005b. "I Can't Say a Thing Until I've Seen the Score: Transcription." In *The Study of Ethnomusicology: Thirty-One Issues and Concepts*, 74–91. Revised edition. Urbana and Chicago: University of Illinois Press.

Kelly, Thomas Forrest. 2014. *Capturing Music: The Story of Notation*. New York: W.W. Norton.

Stanyek, Jason, et al. 2014. "Forum on Transcription." *Twentieth-Century Music* 11: 101–61.

Killick, Andrew. 2020. "Global Notation as a Tool for Cross-Cultural and Comparative Music Analysis." *Analytical Approaches to World Music* 8.2. [See also the responses in the same issue.]

(b) analytical figures and animations

Roeder, John, et al. 2009. Special Issue: "Animating the 'Inside'." *Music Theory Online* 15.1 (March).

Hanninen, Dora. 2019. "Images, Visualization, and Representation." In *The Oxford Handbook of Critical Concepts in Music Theory*, ed. Alexander Rehding and Stephen Rings, 699–741. Oxford and New York: Oxford University Press.

### C. Focus areas for study and practice (weeks 7–10)

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#### 1. Romantic piano music

Rosenblum, Sandra. 1994. "The Uses of Rubato in Music, Eighteenth to Twentieth Centuries." *Performance Practice Review* 7: 33–53.

Yorgason, Brent. 2008. "Tracing the Path of Metric Focus in Four Chopin Études." In *Musical Currents from the Left Coast*, ed. Jack Boss and Bruce Quaglia, 2–19. Newcastle: Cambridge Scholars.

Dodson, Alan. 2009. "Metrical Dissonance and Directed Motion in Paderewski's Recordings of Chopin's Mazurkas." *Journal of Music Theory* 53: 57–94.

\_\_\_\_\_. 2012. "Solutions to the 'Great Nineteenth-Century Rhythm Problem' in Horowitz's Recording of the Theme from Schumann's *Kreisleriana*, Op. 16, No. 2." *Music Theory Online* 18.1 (April).

Cook, Nicholas. 2013. "Close and Distant Listening." In *Beyond the Score: Music as Performance*, 135–75. Oxford and New York: Oxford University Press.

#### 2. Indigenous musics of North America (see also Robinson 2020, cited in section B2)

Levine, Victoria Lindsay, ed. 2002. *Writing American Indian Music: Historic Transcriptions, Notations, and Arrangements*. Middleton, WI: A-R Editions. [Includes contributions by Indigenous scholars and musicians.]

Levine, Victoria Lindsay, and Bruno Nettl. 2011. "Strophic Form and Asymmetrical Repetition in Four American Indian Songs." In *Analytical and Cross-Cultural Studies in World Music*, ed. Michael Tenzer and John Roeder, 288 – 315. Oxford and New York: Oxford University Press.

Diamond, Beverley. 2007. *Native American Music in Eastern North America*. Oxford and New York: Oxford University Press.

Browner, Tara, ed. 2009. *Songs from 'A New Circle of Voices': The Sixteenth Annual Pow-Wow at UCLA*.



Middleton, WI: A-R Editions. [Includes an introductory essay and explanatory notes.]

Nielsen, Kristina F. 2020. "Indigenous Rhythm and Dance in North and South America." In *The Cambridge Companion to Rhythm*, ed. Russell Hartenberger and Ryan McClelland, 298–311. Cambridge: Cambridge University Press.

Attas, Robin. 2022. "The Many Paths of Decolonization: Exploring Colonizing and Decolonizing Analyses of A Tribe Called Red's 'How I Feel'." *Music Theory Online* 28.2 (June).

### 3. West African Dance Drumming

[Anku, Willi. 2000.](#) "Circles and Time: A Theory of Structural Organization of Rhythm in African Music." *Music Theory Online* 6.1. [See also [Kofi Agawu's lecture](#) on Anku's work.]

Agawu, V. Kofi. 2003. *Representing African Music: Postcolonial Notes, Queries, Positions*. New York and London: Routledge.

[Polak, Rainer, and Justin London. 2014.](#) "Timing and Meter in Mande Drumming from Mali." *Music Theory Online* 20.1.

Agawu, Kofi. 2016. "The Rhythmic Imagination." In *The African Imagination in Music*, 155–94. Oxford and New York: Oxford University Press.

Paulding, Ben. 2017. "Meter, Feel, and Phrasing in West African Bell Patterns: The Example of Asante kete from Ghana." *African Music* 10: 62–78.

Nicely, Tiffany N. 2021. "A Community-Driven Musical Syntax: Collaboration and Momentum in Guinean Malinke Dance Drumming." Ph.D. dissertation, University at Buffalo. [See esp. Ch. 4.]

### 4. Vocal genres in free rhythm from the Silk Road

Tsuge, Gen'ichi. 1970. "Rhythmic Aspects of the Avâz in Persian Music." *Ethnomusicology* 14: 205–27.

Trần, Văn Khê. 1984. "Buddhist Music in Eastern Asia." *The World of Music* 26: 22–32.

Nelson, Kristina. 2001. *The Art of Reciting the Qur'an*. Cairo and New York: The American University in Cairo Press.

Qian, Rong. 2002. "Cultural Connotations of the Flexible Beating in Traditional Chinese Music." Translated by Xin Guo. *Journal of Music in China* 4: 35–40.

Rapport, Evan. 2016. "Prosodic Rhythm in Jewish Sacred Music: Examples from the Persian-Speaking World." *Asian Music* 47: 64–102.

van Kampen, Dirk. 2017. "The Rhythm of Gregorian Chant: An Analysis and an Empirical Investigation." *Journal of Music Research Online* 8: 1–17.

Roeder, John. 2019a. "Formative Processes of Durational Projection in 'Free Rhythm' World Music." In *Thought and Play in Musical Rhythm: Asian, African, and Euro-American Perspectives*, ed. Richard K. Wolf, Stephen Blum, and Christopher Hasty, 55–74. Oxford and New York: Oxford University Press.

#### D. Further reading for class presentations and final projects (weeks 11–12)

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##### 1. Essay collections on world music analysis (various musical traditions)

Tenzer, Michael, ed. 2006. *Analytical Studies in World Music*. Oxford and New York: Oxford University Press.

Tenzer, Michael, and John Roeder, eds. 2011. *Analytical and Cross-Cultural Studies in World Music*. Oxford and New York: Oxford University Press.

Wolf, Richard K., Stephen Blum, and Christopher Hasty, eds. 2019. *Thought and Play in Musical Rhythm*. Oxford and New York: Oxford University Press.

McClelland, Ryan, and Russell Hartenberger, eds. 2020. *The Cambridge Companion to Rhythm*. Cambridge: Cambridge University Press.

Shuster, Lawrence B., Somangshu Mukherji, and Noé Dinnerstein, eds. 2022. *Trends in World Music Analysis*. New York: Routledge.

##### 2. Meter and timing in various repertoires (case studies)

Arom, Simha. 1991. *African Polyphony and Polyrhythm: Musical Structure and Methodology*. Cambridge: Cambridge University Press. [Centers mainly on the music of the Aka people.]

Butterfield, Matthew. 2006. "The Power of Anacrusis: Engendered Feeling in Groove-Based Musics." *Music Theory Online* 12.4 (December).

Benadon, Fernando. 2009. "Time Warps in Early Jazz." *Music Theory Spectrum* 31: 1–25.

Roeder, John, and Michael Tenzer. 2012. "Identity and Genre in Gamelan *gong kebyar*: An Analytical Study of *Gabor*." *Music Theory Spectrum* 34: 78–122.

[Poole, Adrian. 2013.](#) "Groove in Cuban Dance Music: An Analysis of Son and Salsa." Ph.D. diss., Open University. [See also the article version in *JRMA* 146 (2017): 117–45.]

Danielsen, Anne. 2015. "Metrical Ambiguity or Microrhythmic Flexibility? Analysing Groove in 'Nasty Girl' by Destiny's Child." In *Song Interpretation in 21<sup>st</sup>-Century Pop Music*, ed. Ralf von Appen, André Doehring, Dietrich Helms, and Allan F. Moore, 53–71. Farnham, UK: Ashgate.

Klorman, Edward. 2016. "Multiple Agency and Meter." In *Mozart's Music of Friends: Social Interplay in the Chamber Works*, 198–266. Cambridge: Cambridge University Press.

Poole, Adrian. 2017. "Comparing Timeline Rhythms in Pygmy and Bushmen Music." *Empirical Musicology Review* 12/3–4: 172–93. [Commentaries on this article by London and Grauer appear in the same issue.]

Senn, Olivier, Lorenz Kilchenmann, Toni Bechtold, and Florian Hoesl. 2018. "Groove in Drum Patterns as a Function of Both Rhythmic Properties and Listeners' Attitudes." *Plos One* 13.6 (June): 1–33.

Birenbaum Quintero, Michael. 2019. *Rites, Rights, and Rhythms: A Genealogy of Musical Meaning in Colombia's Black Pacific*. Oxford and New York: Oxford University Press.

Cooper, Alec. 2019. "Micro-temporal Interactions in Tabla and Sitar Duo Performance: An Analysis of a *Vilambit* Performance by Pt. Nikhil Banerjee and Zamir Ahmed Khan." *Analytical Approaches to World Music* 7.1: 1–32.

- Danielsen, Anne. 2019. "Glitched and Warped: Transformations of Rhythm in the Age of the Digital Audio Workstation." In *The Oxford Handbook of Sound and Imagination*, Volume II, ed. Mark Grimshaw, Mads Walther-Hansen, and Martin Knakkegaard, 595–609. Oxford and New York: Oxford University Press.
- Goldberg, Daniel. 2019. "What's the Meter of *elanino horo*? Rhythm and Timing in Drumming for a Bulgarian Folk Dance." *Analytical Approaches to World Music 7*: 69–107.
- Ohriner, Mitchell. 2019. *Flow: The Rhythmic Voice in Rap Music*. Oxford and New York: Oxford University Press.
- Roeder, John. 2019b. "Timely Negotiations: Formative Interactions in Cyclic Duets." *Analytical Approaches to World Music 7*: 1–19.
- Danielsen, Anne. 2020. "Pulse as Dynamic Attending: Analysing Beat Bin Metre in Neo Soul Grooves." In *The Routledge Companion to Popular Music Analysis: Expanding Approaches*, ed. Ciro Scotto, Kenneth M. Smith, and John Lowell Brackett, 179 – 89. Abingdon, UK: Routledge.
- Lemire, Chantal. 2021. "Speaking Songs: Music-Analytical Approaches to Spoken Word." Ph.D. dissertation, University of Western Ontario.
- Owen, Beth E. 2021. "To Speak – To Listen: To Write – To Read: To Sing: The Interplay of Orality and Literacy in Hebrew Torah Cantillation." Ph.D. dissertation, The Ohio State University.
- Hesselink, Nathan. 2022. "Cross-Cultural Resonance and the Cadential Hemiola." *Analytical Approaches to World Music 10*: 1–30. [Korean traditional music, British and American indie rock.]
- Murphy, Nancy Elizabeth. 2022. "The Times Are A-Changin': Metric Flexibility and Text Expression in 1960s and 1970s Singer-Songwriter Music." *Music Theory Spectrum 44*: 17–40.
3. Mathematical and computational approaches
- Chung, Moonhyuk. 2008. "A Theory of Metric Transformations." Ph.D. dissertation, University of Chicago.
- Mavromatis, Panyotis. 2009. "A Multi-Tiered Approach for Analyzing Expressive Timing in Music Performance." In *Mathematics and Computation in Music*, ed. Elaine Chew, Adrian Childs, and Ching-Hua Chuan, 193–204. Berlin: Springer.
- Colannino, Justin, Francisco Gómez, and Godfried Toussaint. 2009. "Analysis of Emergent Beat-Class Sets in Steve Reich's *Clapping Music* and the Yoruba Bell Timeline." *Perspectives of New Music 47*: 111–34.
- Wells, Robert Layton. 2015. "A Generalized Intervallic Approach to Metric Conflict." Ph.D. dissertation, Eastman School of Music, University of Rochester. [Includes a chapter on South Indian music.]
- Mazzola, Guerrino. 2018. *The Topos of Music. II. Performance: Theory, Software, and Case Studies*. Second edition. Cham, Switzerland: Springer.
- Yust, Jason. 2018. *Organized Time: Rhythm, Tonality, and Form*. Oxford and New York: Oxford University Press.
- Toussaint, Godfried F. 2020. *The Geometry of Musical Rhythm: What Makes a "Good" Rhythm Good?* Second Edition. Boca Raton, FL: Chapman & Hall / CRC.

# Appendix

## Transcription Exercises for Music 3991A: Meter & Timing Across Cultures

Begin each exercise by attempting to prepare an aural transcription using techniques learned in the prerequisite Aural Musicianship courses: sing back and conduct along to promote embodied musical understanding and memorization, and then use proto-notation to get a handle on rhythm and pitch categorization before trying to write the excerpt in staff notation.

If you are struggling with the transcription, you may use Sonic Visualiser to divide the excerpt into more manageable chunks.<sup>1</sup> Begin by tapping along with the tactus, and then narrow the playback to a manageable number of tactus-level timespans. Just remember to keep returning to the aural/embodied techniques mentioned above (singing back, conducting along) to ensure your transcription is true to life.

Without sinking more than an hour or two into each example, spend some time investigating the expressive timing in the recording. Where does it speed up/slow down? Are these changes gradual or sudden, and do they ever render the note values ambiguous? How equal/unequal are the timespans at various levels (measure, beat, subdivision)? How flexible are the various rhythmic values within the passage, i.e., what is the range of timespans/inter-onset intervals for each note value? And so on.

Excerpts from the following recordings will be assigned to the class (see Moodle for dates and links):

- 2 bird songs that I recorded in my back yard (warbler songs no. 1 and 2)
- Pablo Casals' recording of the Sarabande from J.S. Bach's Cello Suite No. 3 in C Major (don't look at the score!)
- Ariana Grande, "Dangerous Woman," a capella version on the ArianaGrande Youtube channel
- Hildegard von Bingen, "O ignee spiritus" (don't look at the score), recording from the playlist for Burstein & Straus's *Concise Introduction to Tonal Harmony*
- "Deva deva kalayami," performed by Pratibha Sarathy on the VoxGuru Youtube channel
- "Du," a bow song from Namibia<sup>2</sup>
- Katsushige Sato's recording of Maria Szymanowska's Nocturne in B-flat<sup>3</sup>
- *Native American Flute* (Folkways), track 5: "Have Good Dreams, My Grandchild"
- *Eskimo [sic] Songs from Alaska* (Folkways), track 8: "Helicopter Song"
- *Haida: Indian [sic] Music of the Pacific Northwest* (Folkways), track 11: "Hummingbird Song"

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<sup>1</sup> A 30-minute introductory workshop on Sonic Visualiser is offered near the beginning of the course, and students are given the "Sonic Visualiser cheat sheet" below. Thorough documentation is available on the Sonic Visualiser download page, and a useful reference guide (Cook & Leech-Wilkinson 2009) is cited in the course bibliography.

<sup>2</sup> This recording was the focus of a transcription forum in the journal *Ethnomusicology* in the 1960s (England et al. 1964). The recording is available on the journal's website. Students transcribe it before England et al. 1964 is assigned for discussion (or even mentioned to the class), putting them in good position to assess the published transcriptions critically and independently.

<sup>3</sup> Special instructions for this recording: Students are not responsible for transcribing the pitches or rhythmic values. Instead, the goal in this case is to track the beat in Sonic Visualiser and find a way to notate the expressive timing. Students may look at the score, available in IMSLP, only after completing the beat-tracking process.

Annotations and arrows in the image:

- open sound file; save SV session file; export data (points to File menu)
- adjust numbering counters (points to Layer menu)
- add spectrogram (points to Layer menu)
- add new time instants layer (points to Layer menu)
- select a region (points to selection tool icon)
- move a marker (tip: press escape key first) (points to marker tool icon)
- delete a marker (points to delete tool icon)
- layers superimposed on the waveform (points to the top two tracks)
- layers superimposed on the spectrogram (points to the bottom track)
- Space bar = play
- Semicolon = add a marker to the selected layer while audio is playing
- Escape key = deselect a region
- click and drag to navigate in the sound file (points to the bottom waveform)
- zoom in / out (points to the zoom slider)
- playback speed (-100% = half speed +100% = double speed) (points to the playback speed control)
- deselect to mute the clicktrack (points to the clicktrack control)
- change the clicktrack to cowbell (points to the clicktrack control)

Space bar  
=play

Semicolon  
=add a marker to the selected layer while audio is playing

Escape key  
=deselect a region

- To export data:
1. Select the layer that contains the time point markers you want to export.
  2. File: Export Annotation Layer
  3. Enter a file name and change file format to .CSV so you can open it in Excel.