

Marc Sabat: Chords, melodies: a look at harmony by numbers

First Doctoral Presentation, 19. October 2024, Organo, Musiikkitalo, 16:00

DocMus Applied Study Scientific/Artistic Research | Sibelius Academy, Uniarts Helsinki

Program

Lecture by Marc Sabat: *“Chords, melodies: a look at harmony by numbers.”*

Case Study 1: Tuning Bach – an experimental recomposition of the three solo violin sonatas”

Concert by Sara Cubarsi and Xenia Gogu, violins:

Marc Sabat: *Streams barely in winter* (2019) 1. *Cold* 2. *Sun* 3. *Stones*

three beginnings for Walter played before Bach for two violins

J.S. Bach | Marc Sabat: *Sei Bach-Intonazioni per Violino Solo* (2000–17) *Ia Ila IIIa*

adaptations in just intonation for violin solo with violin bordun counterpoint

Tuning Bach: an auto-ethnographic sketch

I am a violinist and composer fascinated by tuning sounds and how tuning shapes our experiences of sound and music. My doctoral project is focussed on making tools for listeners, players, and composers interested in microtonal music and, in particular, rational or just intonation (JI). Contemplating what it would be like to make JI interpretations of Johann Sebastian Bach’s *Sei Solo a Violino senza Basso accompagnato* has captivated me ever since Wolfgang von Schweinitz and I, working in collaboration, devised the Extended Helmholtz-Ellis JI Pitch Notation (HEJI) in the years 2000–04.

In 2001, I presented a lecture and performed a demonstration on solo violin of the *Adagio* from BWV 1001 in three different versions: Pythagorean (3-limit), Ptolemaic (5-limit), and extended (19-limit) JI¹; in the same year Wolfgang and I co-composed an intonation² of the 3-part *Ricercar* from *Musikalisches Opfer*. Over the following years, from time to time I returned to the *Sei Solo*, pencilling in possible tunings of a movement here and there, without pursuing the project to completion. At some point, my sketches began including a sustaining second violin part, primarily composed from open strings and harmonics, providing a subtle framework to more accurately tune the just intonation harmonies by ear.

It was finally an encounter with violinist Sara Cubarsi-Fernandez at Catherine Lamb’s flat in Berlin, during which we sight-read my two-part sketches, which inspired the complete adaptation of all three Sonatas, which will be premiered today. Sara’s keen interest in researching precise tuning and her ability to realise the detailed colours of different harmonic intervals motivated me to compose an intonation of Bach’s music which establishes some of the tertial, quintal, and septimal (7-limit) harmonies suggested to me by his tonal contexts, sounds which may be accurately, exactly tuned by ear. The second violin bordun part has evolved from its original role as a minimal drone-accompaniment into an experimental, slow-motion counterpoint in its own right, sometimes suggesting a bass line, at other times a discant or inner voice. I hope that its gentle tracery might be appreciated in the context of enabling a special realisation of some of Bach’s harmonic explorations, which to my ears are suggestive of a future music only now coming into being, created with conscious awareness and explicit notation of microtonal rational intonation.

¹ “Limit” is a term devised by composer Harry Partch. It refers to the highest prime-numbered harmonic partial used in creating intervals of a given tuning system. For example, 3-limit builds intervals using only the primes 2 and 3 (by perfect fifths and fourths). “Extended JI” is a term pioneered by composer Ben Johnston referring to JI tuning designs using higher primes (7, 11, 13, etc.).

² An “intonation” refers to an explicit microtonal annotation of an existing score, specifying the exact intonation to be played.

For her invaluable advice, musical experience and patient, relentless criticisms guiding my often-unorthodox exploration of voice-leading in a Baroque context I am indebted with warmest thanks to Natalie Pfeiffer.

Composed in 2019, the three miniature preludes comprising *Streams barely in winter* take inspiration from their respective Bach sonata and place details of the three intonations into focus. Today's concert is the first live performance of the entire cycle. Feedback from the audience about this project is most welcome. Please send an email to masa@plainsound.org with any thoughts, reflections, comments, or critique.

Research task overview

This doctoral project aims to create theoretical writings, practical tools, and artistic research in the form of composed music based on the sounds of rational or just intonation (JI). The subject of microtonality, and JI in particular, is a field of growing interest in various branches of contemporary music, from instrumental music to electronic production, ranging across a diversity of genres and global traditions. Rather than adopting one standard tuning to suit all situations, commonly 12 or 24 edo³, many musicians⁴ see such fixed systems merely as convenient (but rough) approximations that, in practice, must open into a fluid, infinite realm of contextual shadings. To work with JI, listeners, players, and creators learn ways of differentiating and tuning many intervals by ear, learn notations and naming methods to distinguish such microtonal variations. They experience and explore the sonorities of tuneable chords and melodies, therewith shaping new, evolving practices of hearing, playing, and composing music.

In this presentation, a JI adaptation of Bach's three solo violin sonatas and three new preludes, composed by Marc Sabat, will be played live for the first time. Knowledge gathered from Sara Cubarsi's learning process while working on this project over the past decade will be central to shaping the development of my planned set of JI learning tools.

Research questions

What are the fundamentals of just or rational intonation (JI)? *What are the underlying mathematical and psychoacoustic principles? What special knowledge and skills help to work with JI? What does it sound like?*

What kind of tools help listeners, players, creators of music explore JI as part of their practice? *How may these tools be made approachable and useful for various users? What kind of examples are needed to learn to hear and play JI, to work with tuneable intervals, chords, and melodies?*

How do these tools apply to musical repertoire? *How does one make decisions about tuning an existing piece in JI? How does such an approach relate to historically aware performance practices of earlier music? What new forms of music are emerging from practices based on JI? How can knowledge about intonation inform cross-cultural collaborations and shape the creation of new music?*

Research Methods

- theoretical writings
- artistic research (creation and realisation of new compositions)
- public presentation (lecture-concerts) of two case studies with violinist Sara Cubarsi
- design and programming of open source applied study tools for learning about rational intonation
- final report and documentation (published papers, tools, scores, recordings)

³ "Equal divisions of an octave".

⁴ For example, Indian musicians and theorists distinguish the concepts *svara* (notes) and *śruti* (intonations); similarly, period performance practitioners in the European tradition adopt (and invent) a diversity of tunings and temperaments.

Biographies

Marc Sabat (*1965) is a Canadian composer of Ukrainian descent, based in Berlin since 1999. He makes pieces for concerts and installations, drawing inspiration from ongoing research about the sounding and perception of microtonal rational intonation (JI). He relates his practice to various music forms, seeking points of shared exploration and dialogue between different modes of experience and cultural traditions. Largely self-taught as a composer, Sabat studied violin at the University of Toronto, at the Juilliard School in New York, and computer music at McGill University, as well as working privately with Malcolm Goldstein, James Tenney and Walter Zimmermann, among others. With Wolfgang von Schweinitz he developed the Extended Helmholtz-Ellis JI Pitch Notation and is a pioneer of instrumental music written and performed in JI. Sabat's work is presented internationally, available online and in numerous published editions. He teaches composition and the theory and practice of intonation at the Universität der Künste Berlin and is currently a doctoral research fellow at the Sibelius Academy Helsinki. Together with colleagues Catherine Lamb and Rebecca Lane he co-initiated the Harmonic Space Orchestra in 2019.

Sara Cubarsi explores how putting vibrant matter in and out-of-sync reveals the fragility of the world in which we live, particularly in the attempt to stabilize vibrations in rational tuning. Acoustic and non-material processes of resonance are a main interest for her, both as a violinist and composer, experimenting with gut strings, instruments with resonance strings (viola d'amore, hardanger fiddle, tromba marina), as well as with melting wax paintings through which Sara reflects on the materiality of tuning, avoiding a partition of the sensible. Sara studied composition with Wolfgang von Schweinitz and Michael Pisaro at CalArts, where she completed her doctoral degree in 2018 with a full scholarship from La Caixa.

Sara's music has been premiered at St. John Smith's Square in London by ensemble x.y, at the Fundación Juan March in Madrid and at Art Share Los Angeles by the Euler Quartet. In September 2023, her new piece for natural horn and keyboard titled "La langue des gargouilles" was premiered at the Lucerne Festival. Current projects that Sara is excited about include: the ongoing artistic project about the tromba marina, for which she is writing a new piece, two new works by Sven-Ingo Koch that Sara will premiere in 2025 (for violin and cembalo, and for violin and vocal ensemble), a CD release of Marc Sabat's Bach Intonazioni together with her violin trio Harmonic Flow, a double e-violin concerto by Katharina Rosenberger, and the complete performance of Bach's Sonatas & Partitas at El Petit Palau (Barcelona, Dec 2024).

Sara regularly performs new music as a violinist of Ensemble Musikfabrik in Cologne, and barroc violin in the freelance scene, often with her early music and experimental duo Lo Desconcert. She has performed as a soloist in L'Auditori de Barcelona, El Palau de la Música Catalana and Berlin Philharmonie among other places.

Moldovan-Spanish violinist **Xenia Gogu** specializes in historical performance, combining solo, chamber music, and orchestra projects as part of her artistic life. She is a prizewinner at the Göttingen Händel Competition and at the Biagio Marini Early Music Competition alongside her chamber music partners, performing with them at the Kölner Philharmonie and at the Semana de Música Antigua Estella-Lizarra in Spain amongst others. She is a core member of Parnassus, having performed with them at the Festival Laus Polyphoniae in Belgium.

Xenia is currently studying Early Music at the Hochschule für Künste Bremen with Veronika Skuplik. She has previously obtained her Master's degree at the Hochschule für Musik und Theater Hamburg and her Bachelor's degree at the Hanns Eisler Hochschule für Musik Berlin. She also attended the Escuela Superior de Musica Reina Sofia in Madrid with Prof. Zakhar Bron. She participated in masterclasses with Amandine Beyer, Sirkka-Liisa Kaakinen-Pilch, Mauricio Fucks, Natalia Boyarski, Eduard Grach amongst others.

Her interest in historically informed performance practice brought her into taking part in the Apprentices Programme of Monteverdi Choir and Orchestras under the baton of Sir John Eliot Gardiner and the participation in the Collegium Vocale Gent Academy under the baton of Philippe Herreweghe. She is a co-founder of the Festival Impulso in La Palma. Further orchestral experiences include the Akademie Programme at the Rundfunk Sinfonieorchester Berlin, as well as regular collaborations with Kammerakademie Potsdam Mahler Chamber Orchestra and Deutsche Kammerakademie Neuss am Rhein.