Notensatz im 21. Jahrhundert

Entwicklungen und Perspektiven

17.–19. Januar 2020

Eine Veranstaltung des Departments für Komposition und Musiktheorie
in Zusammenarbeit mit der Gesellschaft für Musiktheorie

Universität Mozarteum Salzburg
Mirabellplatz 1, 5020 Salzburg, Österreich

notensatz-konferenz@moz.ac.at

uni-mozarteum.at/de/kunst/notensatz-konferenz.php (deutsch)
uni-mozarteum.at/en/kunst/music-engraving-conference.php (english)

Organisations- und Programmkomitee:
Werner Lemberg (Universität Mozarteum Salzburg)
Urs Liska (Hochschule für Musik Freiburg)
Lukas-Fabian Moser (Universität Mozarteum Salzburg)

Freitag, 17. Januar 2020, Konferenztag 1

Registrierung (Eingangsaula)

09:00 Beginn

Eröffnung (Kleines Studio)

10:30 *Häringer Boarischer* (Lena Stögmüller)
Begrüßung (Rektorin Elisabeth Gutjahr)
Höllenfahrt-Polka (Marcel Mölschl)
Keynote: *Does everyone need high-quality engraving?* (Elaine Gould)

There is a direct relationship between the quality of music engraving, the notation selected, the presentation on the page and the resulting quality of performance. This is evident especially in the instances of errors that occur in rehearsals of performance materials.

The most beautiful-looking page is no guarantee that it is fit for purpose. My talk will focus on being in tune with what the practising musician needs from us.

Diskussion

12:00 Mittagspause

Meta-Aspekte (Hörsaal)

13:30 *Geschichte der Musiknotation* (Werner Lemberg)

From the oldest available sources written in Akkadian cuneiform to the present-day notation for classical music, this talk gives a short overview of how mankind tried to preserve music in a written form. Language: German.

14:00 *On becoming visible* (Werner J. Wolff)

An attempt of a job description: environment, participants and their roles – assessment of the situation today – looking back: milestones in music printing and looking forward: (re-)professionalisation, digitisation and innovation – processes and perspectives in the industry. Language: English.

14:30 Pause

14:45 *Are we digital yet?* (Thomas Weber)

When Karl Hader published his book "Aus der Werkstatt eines Notenstechers" ("From a music engraver's workshop") in 1948, it already was a backward looking report about a craft in decline. A music typesetter's work has since changed tremendously. It is time to have another look at our trade. What are our conditions and workflows today? What chances and downsides does the continuing digitisation bring for us? Language: English.

15:15 *Locked in time: utilizing blockchain technology for the long-term preservation of engraved music* (Tassos Kolydas)

A method for digital preservation and copyright protection of engraved music is presented. The method utilizes blockchain technology for trusted timestamping digital scores. Stored records are immutable, and every digital document is timestamped. The solution interacts directly with the blockchain and is platform-independent, without any third-party involvement. The verification of authenticity takes place without disclosing the document's content, ensuring that users own and control their personal data. Language: English.

15:45 Kaffeepause

Produktspezifisches (Hörsaal)

16:15 *A guided tour of* Verovio's *toolkit* (Laurent Pugin)

Verovio is an open-source library for engraving MEI scores. It is designed to be generic, light and usable in a wide range of environments. The primary input format for *Verovio* is MEI but it also supports Plaine and Easie, MusicXML, Humdrum and ABC. It can be used in a wide range of environments, including web-pages using its JavaScript toolkit version. This talk will give a tour of the features currently available and presenting example research projects or applications the uses the MEI and *Verovio* ecosystem. Language: English.

16:45 Perfect Layout, *ein Plug-in für* Finale (Jan Angermüller)

Perfect Layout v1.5 is a "one click" solution that does layout automation in the notation software *Finale* – including collision removal, improved music symbol alignment, automatic system layout and a better MusicXML import. This talk gives a short overview of the plug-in and focuses on some special features like its music font engine, which recognizes music symbols from 500 music fonts. Language: German.

17:15 Pause

17:30 *News on* Dorico (Daniel Spreadbury)

Product manager Daniel Spreadbury demonstrates some of the new features and improvements in *Dorico 3*, including the brand new *Dorico 3.1* update. A number of interesting improvements to the software's engraving capabilities will be on show, including automatic condensing of the conductor's score, harmonics, lines of various kinds, bracketing for noteheads and accidentals, and more. Language: English.

Workshops (MediaLab)

14:30 Frescobaldi (90', Wilbert Berendsen)
17:00 *Mixing text and music* (90', Kieren MacMillan, Urs Liska)

18:30 Kaffeepause

Diskussion (Hörsaal)

19:00 Round-Table: *Computernotensatz und Komponieren heute*

Computer-assisted notation has thoroughly changed the workplace of engravers, but also of everyone else dealing with notation. To what extent have the practical workflows of today's composers been modified, and is there even a noticeable influence on aesthetic thinking? These issues are discussed with editors, engravers, and, above all, composers. Language: German.

Teilnehmer: Achim Bornhöft, Moritz Eggert, David Kosviner, Urs Liska (Moderator), Martin Schüttler, Werner J. Wolff

Samstag, 18. Januar 2020, Konferenztag 2

Grundlagen (Hörsaal)

09:00 *Machine learning around music notation* (Dominik Hörnel)

Artificial Intelligence (AI) has become one of the fastest emerging technologies in the past years. Machine learning (ML) and deep learning use the possibilities of big data to optimize processes, find new solutions, and gain new insights.

In my talk I will share ideas how machine learning can be used in software related to music notation. Possible domains are: optical music recognition (OMR), music transcription from audio, and composition. I will present some concrete applications of ML to these topics and work out opportunities and challenges related to them. Language: English.

09:30 *Machine learning for the layout process* (Mike Solomon)

In this talk, we will explore a specific aspect of musical layout – slurs – as implemented in *LilyPond*. The first part will look at the evolution of the slur algorithm over twenty years, looking at the various parameters that were added, what they control, how they interact with each other and the various problems the current algorithm poses to musical layout. I will then present an alternative way of writing the algorithm, using machine learning, that predicts slur layout in scores. In addition to being faster, the ML-based algorithm is more resilient against errors and easier to adapt to corner cases in the literature, like staff-spanning slurs and slurs of alternating convexity and concavity. Language: English.

10:00 Pause
10:15 *An algorithm for pitch spelling* (Ben Wetherfield, James Bean, David Forrest)

We will present a pitch spelling system designed with post-tonal contexts in mind but also helpful for spelling tonal music. A style-agnostic spelling tool could be useful for a number of music engraving systems. In some complex situations spelling comes down more to an author or reader's preferences than one correct answer. In the workshop, we will demonstrate how preferences can be fed into the algorithm, and how the output can be affected at several interaction points. Language: English.

10:45 *Introduction to MusicXML* (Jacques Menu)

> This talk presents a basic view of MusicXML and a couple of short examples illustrating how MusicXML represents a music score. The goal is to give a flavor of what MusicXML definitions and data look like from a musician's point of view. All the examples mentioned can be downloaded from https://github.com/grame-cncm/libmusicxml/tree/lilypond/files/samples/musicxml. Language: English.

11:15 Orfeo, *a programming language for music* (Pierre-Emmanuel Lévesque)

> This talk introduces *Orfeo*, a high-level text based functional programming language which is useful for applications that need to organize data throughout time in a musical manner. Such applications could be for: music notation, music composition, audio synthesis, audio editing, video editing, robotics control, and much more. We'll look at *Orfeo's* syntax which is itself a type of musical notation, and talk about how it could be used in various notation settings like western music notation, Kepatihan notation (for Indonesian gamelan), and dance notation. Language: English.

Musiktheorie und Notensatz (Bösendorfersaal)

09:00 *Praxisberichte: Notensatz als Arbeitswerkzeug in der Musiktheorie* (Konrad Georgi, Lukas-Fabian Moser u.a.)

> If you teach theory or aural training classes, the need to produce hand-tailored music examples arises every day: *particelle*, reductions, clozes, added harmonic analysis symbols, etc. Of course, these should look magnificent, and as always, time is scarce. This session will give a glimpse of various everyday workflows for creating good-looking worksheets in a reasonably efficient manner. Language: German.

MEI und Musiktheorie

> Diskussion der Möglichkeit, eine Interest Group Music Theory innerhalb der MEI (Music Encoding Initiative) zu gründen. Aufgabe der Interessensgruppe wäre die Erweiterung der MEI-Spezifikation zur Kodierung spezifisch musiktheoretischer Elemente (harmonische Analysesymbole, Generalbass etc.). Erörterung der Bedingungen und notwendigen Ziele einer solchen Erweiterung sowie ggfs. Gründung einer Interest Group (music-encoding.org/community/interest-groups.html). Language: German.

11:15 *Visualizing Webern's music: engraving Schenker graphs, tone-row matrices, and other analysis tools* (Kieren MacMillan)

> We examine multiple methods of expressing and illuminating the music of Anton Webern, focusing in particular on his chamber music (including Opp. 4, 7, 9, 27, and 28, and the *Langsamer Satz*). In addition to well-known techniques (e.g., Schenker graphs), we present several less widely-known approaches. Language: English.

11:45 Kaffeepause

Editions-Beispiele (Hörsaal)

12:15 *Johann Sebastian Bachs Markus-Passion* (Jan-Peter Voigt)

> This talk is about creating the published edition of the St. Mark Passion by J. S. Bach. The creation of the full score, the instrumental parts and the piano reduction from one source of notes with its different layout requirements will be presented. The idea behind the used templating-engine will be explained. Finally, the use of *LilyPond's* edition-engraver for the different layouts will be shown. Language: German.

12:45 *Leopold Mozart – Violin School. Music Examples for a Digital Edition* (Urs Liska)

> Preparing the music examples for a new digital edition of Leopold Mozart's *Violin School* was a challenge on multiple levels. The presentation describes how non-standard notation tasks and the requirement of "readable" encoding were handled with a custom project infrastructure for the *LilyPond* notation software, and it discusses how project management needs triggered substantial additions to the *Frescobaldi* editing environment. Language: English.

Workshops (MediaLab)

10:00 Perfect Layout, *ein Plug-in für* Finale (90', Jan Angermüller)
12:30 *MusicXML in practice* (90', Jacques Menu)

Workshops (Bösendorfersaal)

12:00 *Wetherfield pitch spelling algorithm* (60', Ben Wetherfield, James Bean, David Forrest)

13:15 Mittagspause

Editions-Probleme (Hörsaal)

14:45 *Notationsprobleme in den Liedern Max Regers* (Dennis Ried)

Reger's notation is sometimes extremely meticulous, but the denser the individual passages are set, the more often inaccuracies in the notation and individual solutions become apparent. In most passages a transcription is possible, but the question often arises whether the intervention in the invoice of the work is still responsible. This article is intended to provide insights into Max Reger's notation practice and its problems by means of case studies. Language: German.

15:15 *Umgang mit falschem Notensatz: Erfahrungen mit den Klavierskizzen von Kurt Schwitters Ursonate* (Daniel Fütterer)

Usually, the engraver's goal is a correct engraving of a given source. In my project on drafts by Kurt Schwitters, I had to deal with incorrectly notated music, but I had to conserve the errors and encode them into MEI. Is there a best practice in engraving errors? Which "errors" are worth being conserved and which can be corrected without altering the contained information? Language: German.

15:45 Pause

16:00 *Fux und* Sibelius *– eine glückliche Symbiose? Barockmusik als notensatztechnische Herausforderung* (Ramona Hocker)

The works by Johann Joseph Fux (ca. 1660–1741) are currently edited with *Sibelius*. I will present the editorial workflow and the interfaces between *Sibelius* and other software. Case studies give a closer insight into the edition of baroque music and possible problems in music notation, especially in genres with a large amount of text. An edition is not only determined by philological methods, but also by the possibilities and limitations of notation. Language: German.

16:30 *Cut the cue. Engraving of historical film music* (Timur Sijaric)

Hitherto a scarcely applied practice, the historical-critical edition of film music generates new perspectives and challenges – not only in the investigation of creative strategies, but also in the music engraving, which is considered not just a tool, but a crucial component in mediating the understanding of film music. Utilizing the experiences garnered through two projects and their respective feature films, this paper aims to showcase the methodology, processes, challenges and outcomes of such editions. Language: English.

17:00 Kaffeepause

Verschiedenes (Hörsaal)

17:30 *Conduct of code – how should code be architectured to be welcoming to a wide range of contributors* (David Kastrup)

Recently "codes of conduct" have become talking points for making people more comfortable working on common projects and dealing with conflicts. However, project and code architecture can do a lot to keep people from having to deal with one another rather than solving problems. *Emacs*, LaTeX, *LilyPond* are used to show how code architecture structures and organises people's cooperation and focus. While the lessons are doubly important for projects relying on volunteer enthusiasm, they extend to commercial projects as well. Language: English.

18:00 *Formale Modellierung Gregorianischer Neumen zur Repräsentation in Notationssoftware am Beispiel von* LilyPond (Jürgen Reuter)

Supporting Gregorian neumes in music notation software requires formal modelling of music representation, as storage format and as input language. Since neumes notation differs significantly from subsequent music notation, we give a short historical survey and explore a concept for musically adequate modelling based on the Solesmes monks' 19th century research and more recent findings, including composition of ligatures from basic neumes, and compare it with different approaches. Language: German.

18:30 *Musikedition 3D* (Stefanie Steiner-Grage)

In this talk, a recently started project in collaboration with the "CyberRäuber," Berlin, is presented. The purpose of the project is the development of a 3D music edition prototype, using Virtual Reality techniques. Equipped with special VR glasses, the user of the 3D edition can enter a virtual room with manuscript scans. He/she can virtually walk around the musical sources, hearing the music and reading the annotations of the critical report at the same time. Furthermore, users can interactively decide where to go and what to see according to their own interests and questions. Language: German.

Workshops (MediaLab)

15:00 Dorico (90', Daniel Spreadbury)
17:30 Verovio (90', Laurent Pugin)

19:00 Verabschiedung

Geselliges Beisammensein

20:00 Abschlussessen für aktive Konferenzteilnehmer

Sonntag, 19. Januar 2020, Unconference Day

Sunday is not a regular conference day but an opportunity to meet between various groups of interest. Spontaneous gatherings are just as welcome as arranged mini-conferences. If you are interested in organizing or proposing a meeting in advance please contact the team through the conference e-mail. Others may want to regularly check the conference website for updates.

LilyPond Entwickler-Treffen (Hörsaal)

Please note that the time slots below might vary, depending on the necessary amount of discussion!

Vormittag

09:00 *Exporting* LilyPond *to MusicXML, MEI, Humdrum, and more* (Jan-Peter Voigt)

> The current state of the export options is the topic of this talk. An export module is shown that can export a *LilyPond* score to any format for which a plugin is available. Right now there exist prototypes for Humdrum and MusicXML. The goal is an infrastructure that allows *LilyPond* to be a member of a multi-format environment. Language: English.

09:30 *xml2ly* (Jacques Menu)

> This talk presents *xml2ly*, a MusicXML to *LilyPond* translator written in C++ as part of a contribution to *libmusicxml2*. The design goals for *xml2ly* were
> - to perform at least as well as *musicxml2ly*;
> - to provide as many options as needed to adapt the *LilyPond* code generated to the user's needs.
>
> Emphasis is put on the possibilities of *xml2ly* and its multipass architecture. Language: English.

10:00 LilyPond-*Erweiterungen aus der Benutzerperspektive* (Hermann »Thomas Morley« Schubert)

> This talk discusses the prerequisites needed to write *LilyPond* extensions. A detailed, commented code example will be used to demonstrate how to retrieve details of *LilyPond*'s internals, how to modify them as necessary for the task at hand, and how to overcome obstacles, if possible. Finally, some thoughts will be shared on how to improve and simplify the coding of extensions in general. Languages: German and English.

10:30 Pause

10:45 *Unpure-pure containers* (Mike Solomon)

> Pure-unpure spanners was a project of mixed success that I spearheaded in *LilyPond* approximately ten years ago. At the time, it looked to repurpose the idea of pure functions, popular in functional programming, for musical layout, with the difference being that pure meant objects whose layout were not circularly dependent on other objects. By identifying which objects have this status, it allows for the building of a more accurate representation of how the staff will look, which allows more snug layout decisions and less airy scores. I will touch on the technical, musical, and human aspects of this project, hopefully giving some helpful pointers to anyone wishing to undertake their own large-scale musical layout project. Language: English.

11:15 *News on* Frescobaldi (Wilbert Berendsen)

> The original creator of the *Frescobaldi* editor will talk about how Frescobaldi came into being, and how it developed from a Kate plugin to a powerful stand-alone editor. Many features like the Score Wizard and the Quick Insert panel were already part of the LilyKDE plugin more than 11 years ago.
>
> Wilbert will explain how *Frescobaldi* evolved to quite a successful Free Software project with more than 50 contributors, and lay out some future plans. Language: English.

11:45 Mittagspause

Diskussion

13:30 *The future of* LilyPond*: Guile 2, Python 3, lack of developers, commonness and acceptance of* LilyPond*, and more*

15:00 Kaffeepause

Nachmittag

15:30 *openLilyLib – present and future* (Urs Liska)

openLilyLib is a powerful extension infrastructure for the *LilyPond* notation software. It provides both high-level packages for specific purposes and low-level building blocks to simplify the construction of medium-level constructs. Unfortunately the project is both incomplete and substantially underdocumented. The slot will be used for a short overview about the concept and existing tools and shortcomings, giving more room for discussion about possible improvements. Language: English.

16:00 *The Edition-Engraver: the benefits and limitations of tweaking* LilyPond *scores* (Kieren MacMillan)

Jan-Peter Voigt's edition-engraver — part of the openLilyLib repository of *LilyPond* extensions — represents a quantum leap in the ability to separate presentation from content in your *LilyPond* code. We look at some of the incredible benefits of using this framework, and discuss current obstacles and limitations in its implementation. Language: English.

16:30 Frescobaldi *on the Mac* (Davide Liessi)

Frescobaldi is based on multi-platform tools. However, different platforms have different conventions, and following them, which is expected by users, is often neither automatic nor easy. In this talk I present the efforts in adapting *Frescobaldi* to the Mac operating system, discussing past and current issues. These are mainly related to Python and Qt and to packaging applications on Mac, so they may be interesting beyond *Frescobaldi*. Language: English.

Facebook-Gruppe »Music Engraving Tips« (Bösendorfersaal)

facebook.com/groups/musicengravingtips

10:00 Wird nachgereicht.

Beschreibungen der Workshops

If not otherwise stated, the software and examples for the workshops are fully provided on the MediaLab's computers. Participants are of course free to bring their own laptops. If you intend on doing so, please state this with your registration so the lecturers may provide data for download.

Dorico (Daniel Spreadbury) Come and use *Dorico* in a hands-on setting, gaining an introduction to the software's capabilities, and with an opportunity to discuss specific engraving challenges with product manager Daniel Spreadbury. The *Dorico* software will be already installed on the computers in the MediaLab, so you do not need to bring your own computer, though you can do so if you wish.

Language: English.

Frescobaldi (Wilbert Berendsen) During this workshop, we will go through the basic tasks in *Frescobaldi*, like using the Score Wizard to set up a *LilyPond* document, using MIDI input or just typing the notes, modifying music, and using more advanced features like transposing or translating pitches, etc.

We will discuss the snippet manager and how it can be used to speed up writing music document using templates and Python scripts.

The workflow will be discussed, how it is recommended to split up large projects into separate files, and how to set a certain file to be the "master" document. Also we will shortly look at using Git for version control of *LilyPond* source files.

An important goal of *Frescobaldi* is to make the user (the music engraver!) help learn *LilyPond*, so *Frescobaldi* should never hide *LilyPond* internals or syntax, but help the user to understand them, and to speed up the process of creating and writing music.

There will be plenty of room to discuss what would be needed to improve *Frescobaldi* to achieve more of this goal.

Depending on the experience of the workshop attendants, we can also dive into the *Frescobaldi* code base, to make it easier to see how new features can be developed and added to *Frescobaldi*.

Language: English.

Mixing text and music (Kieren MacMillan, Urs Liska) This workshop has a two-fold objective and will be split accordingly. In a first section "Best Practices When Mixing Text & Music" will be discussed. When engraving scores for opera, musical theatre, art song, spoken word, dance, or any other genre, combining notated music with text of various kinds — lyrics, spoken dialogue, character names, stage directions, and so forth — is an art form all its own. In this workshop, we look at the most common notational situations, and discuss how to insert text information into a musical score with a maximum of clarity.

The second part of the workshop is describing solutions to mixing text and music specifically with *LilyPond* and *LaTeX*. After discussing the foundations of this integration easy-to-follow examples of integrating music examples in musicological texts, combining text and music in sheet music volumes, and the creation of various types of music sheets (teaching/exams, song books) are presented.

Language: English.

MusicXML in practice (Jacques Menu) The aim of this workshop is to bring an arbitrary hardware and software setup, and to compare how export and import is done with various tools. Participants will only need a network connection if they bring a laptop, or can use the MediaLab infrastructure otherwise. The term "software" means score scanners such as *PhotoScore Ultimate*, GUI score editors, *LilyPond*, and translators such as *musicxml2ly* and *xml2ly*.

A set of small illustrative MusicXML examples will be supplied, which are handled in interesting (and varying) ways depending on the application.

Language: English.

Perfect Layout*, ein Plug-in für* Finale (Jan Angermüller) The workshop will show what you can do with Elbsound.studio's *Perfect Layout* plug-in in *Finale* and how to use it. *Perfect Layout* automates more than 100 typical layout tasks in *Finale* – including collision removal and automatic system spacing. If used efficiently, the plug-in will not only save you about 80% of your layout time in *Finale*. It will also generate much better results than what you would have achieved manually in that time. During the workshop you can also experiment with *Perfect Layout* on the computers in the MediaLab. The workshop is held by *Perfect Layout* creator Jan Angermüller.

Languages: German and English.

Verovio (Laurent Pugin) In this workshop you will learn how to use the *Verovio* engraving library in various environments. This includes web-based applications in which *Verovio* can be used as a JavaScript client engraving toolkit that makes it possible to develop dynamic and responsive music notation applications. No particular software installation is required for the participation to the workshop except for the need to have Internet access.

Language: English.

Wetherfield pitch spelling algorithm (Ben Wetherfield, James Bean, David Forrest) My algorithm is a pitch spelling system designed with post-tonal contexts in mind but also suitable for spelling tonal music. A more style-agnostic spelling tool could be useful for a number of music engraving systems.

In some more complex situations spelling comes down more to an author or reader's preferences than one correct answer. In the workshop, we will demonstrate how preferences can be collected and fed into the algorithm, and show how we can obtain different spelling results when running the algorithm on separate examples.

Language: English.

Firmenstände

Several creators of notation software will be available at booths in the university's entrance to present functionality of their software and to answer questions. Actual times of presence will be advertised at the booths.

capella software (capella)
Elbsound.studio (Perfect Layout)
Klemm Music Technology (Finale)
Steinberg (Dorico)

Poster

LilyPond (Jan-Peter Voigt, *LilyPond* community)

The LilyPond *Snippet Repository (LSR)* (Sebastiano Vigna)

LilyPond *support in* OpenOffice *and* MediaWiki (Klaus Blum, Joram Berger)

Freitag, 17. Januar 2020

Hörsaal	MediaLab

10:30-12:00
(Kleines Studio)
Eröffnung

12:00-13:30
Mittagspause

13:30-15:45
Meta-Aspekte

14:30-16:00
Frescobaldi
Workshop

16:15-18:30
Produktspezifisches

17:00-18:30
Mixing Text and Music
Workshop

19:00-20:00
Round-Table
Komponistengespräch

Samstag, 18. Januar 2020

Hörsaal	Bösendorfersaal	MediaLab
09:00-11:45 Grundlagen	09:00-11:45 Musiktheorie und Notensatz	
		10:00-11:30 »Perfect Layout« Workshop
12:15-13:15 Editions-Beispiele	12:00-13:00 Wetherfield Pitch Spelling Algorithm Workshop	
		12:30-14:00 MusicXML in Practice Workshop
13:15-14:45 Mittagspause		
14:45-17:00 Editions-Probleme		15:00-16:30 Dorico Workshop
17:30-19:00 Verschiedenes		17:30-19:00 Verovio Workshop
19:00 Verabschiedung		
20:00 Abendessen		