SPECTRALISMS 2019

INTERNATIONAL CONFERENCE
2ND EDITION

Wednesday 12th - Friday 14th June, 2019

Paris, France

IRCAM: Salle Stravinsky, Studio 5

http://spectralisms2019.ircam.fr

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"Vous avez dit spectral?" In March 2017, the Faculty of Music at the University of Oxford, in association with IRCAM, organised Spectralisms, a conference devoted entirely to the discussion of issues in spectral music (http://www.music.ox.ac.uk/spectralisms/). The wide range of ideas engaged over the two days of the conference reflected the plural nature of spectral music. While this music emerged in France in the early 1970s centred on the composers from the collective L'Itinéraire (Murail, Tessier, Grisey, Dufourt, Levinas), its roots can be traced back to key figures of the twentieth century such as Debussy, Varèse, Cowell, Messiaen, Dutilleux, Stockhausen, Ligeti, Xenakis, Partch, Scelsi, or even La Monte Young. Moreover, if by 'spectralism' is meant any music that takes into account the acoustic structure of sounds and the mechanisms of auditory perception in order to produce forms, timbres, temporalities, and new modes of expression, then many aesthetics (from Rădulescu to Harvey by way of Mayuzumi, Amacher, Radigue, Haas…) can be understood to be a part of 'spectral thinking' without necessarily having any direct connection to the creative and performance tradition that developed in France around L'Itinéraire.

The conference's second edition offers the opportunity, once again, to explore the many facets of spectralism, to question its origins and historiography, and to evaluate the specific theoretical tools designed to analyse its compositional techniques. We received 89 proposals as a result of the call for papers and 49 were selected by the scientific committee. Compared with the first edition of Spectralisms—which featured several papers centered on Grisey, Murail, and Haas— this installment will highlight an increasing diversity of approaches to spectral music, including the following: the spectralism/electronica nexus; the impact and continuation of spectralism beyond the 'second spectral generation' (Saariaho, Romitelli, Hirs, Fineberg, Lanza…); new tools and methodologies for analysing spectral works; music instruments; psychoacoustics; current trends in post-spectral composition. This aggiornamento will be completed by a special focus on the role and expertise of performers, through a series of 'workshops' featuring instrumentalists/musicologists duets, dealing with the specifics of significant musical works that emphasise both the organological and analytical properties of spectralism in a broad sense (from Scelsi to Criton by way of Rădulescu and Grisey).

Over the two years of preparation, we have been lucky enough to gain support from a variety of colleagues and institutions, and were able to have the opportunity of including this conference in the ManiFeste festival with two major concerts directly linked to this project: L'Itinéraire plays Fallahzadeh, Romitelli, Tenney and Saariaho on Wednesday, June 12 at the Centre Pompidou; and Frances-Marie Uitti plays Scelsi's amazing *Trilogia* on Thursday, June 13 at the Saint-Merry church.

We would like to thank our colleagues from the organising committee as well as the scientific committee and sponsors. We would also like to express our gratitude to Brigitte d'Andréa-Novel, Cyril Béros, Suzanne Berthy, Mary Delacour, Joseph Dubrule, Jean-Louis Giavitto, Alexandra Guzik, Deborah Lopatin, Frank Madlener, Claire Marquet, Marine Nicodeau, Florent Simon, Olivier Umecker, and Émilie Zawadzki for their work and help. We extend our warmest thanks to those esteemed musicians and musicologists who welcomed our 'performance workshops' project with great enthusiasm and dedication.

Last but not least: we are very happy to welcome you in Paris for 3 days of music, talk, and hopefully French food and drinks. Please note that all scientific events will be held at IRCAM, Salle Stravinsky (level 0) and Studio 5 (level -2). Coffee breaks and lunch will take place in IRCAM's gallery (level -2). Concert venues on Wedsneday and Thursday, June 12 & 13, are within a 100-meter walk from IRCAM.

Have a nice conference!

Nicolas Donin, François-Xavier Féron

WEDNESDAY 12 JUNE

13h00–14h00
(Entrance hall):
Welcome desk and registration

14h00–14h30
(Salle Stravinsky)
OPENING ADDRESS
Nicolas Donin, François-Xavier Féron

14h30–16h00
(Salle Stravinsky)
SESSION 1A: POETICS (21ST CENTURY)
Chair: **Nicolas Donin**
■ **Ingrid Pustijanac**
The Grammar of Inharmonicity
■ **Bert Van Herck**
The Music of Rozalie Hirs
■ **Amy Bauer**
Automata in extremis: Mauro Lanza and Andrea Valle's sublime spectral machines

16h00–16h30
(Entrance hall): Break

16h30–18h00
(Salle Stravinsky)
SESSION 2A: CULTURAL HISTORIES
Chair: **Caroline Rae**
■ **Laura Zattra**
Behind the official literature. A history of first encounters between Spectralists and Sound Researchers
■ **Marilyn Nonken**
Spectralisms in America, 1995-2005
■ **Joseph R. Jakubowski**
Revealing Community: Analyzing Tributes and Memorials to Grisey, 1998 – Present

14h30–16h00
(Studio 5)
SESSION 1B: INSTRUMENTS
Chair: **Nathalie Hérold**
● **Jack Adler-McKean**
The spectral tuba
● **Iván Adriano Zetina**
La fonction de la guitare électrique dans les œuvres spectrales en France
● **Tobias Tschiedl**
An analysis of Hugues Dufourt's writing for electric guitar and sound transformation in *La cité des saules* (1997)

16h30–17h30
(Studio 5)
SESSION 2B: ELECTRONICA!
Chair: **Robert Hasegawa**
● **Luca Befera**
Layering the Spectrum: Waving Processes between Meter and Frequencies in Riccardo Nova's Works
● **Riccardo Wanke**
Ecstatic-Materialist Perspective. A Shared Cross-Genre Perspective Found in Today's Experimental Music Practices

18h30–20h00
COCKTAIL RECEPTION

(Galerie)
With kind support of the Joseph Cartron company
(http://www.cartron.fr/) and the
Demory Paris beer factory
(http://demoryparis.com/)

20h30
CONCERT: SPECTRAL 1
by L'Itinéraire
Centre Pompidou (Grande salle)

THURSDAY 13 JUNE

09h00
(Entrance hall):
Welcome desk and registration

09h30-11h30
(Salle Stravinsky)
SESSION 3A: SAARIAHO
Chair: **Grégoire Lorieux**

■ **Landon Morrison**
Encoding Post-Spectral Thought: Kaija Saariaho's
Early Electronic Works at IRCAM, 1982-87

■ **Wataru Miyakawa**
Le processus compositionnel de *Lichtbogen*
de Kaija Saariaho

■ **Clara Foglia**
Verblendungen, Io, Solar: restructuration 'spectrale'
des harmonies 'fonctionnelles' dans
le développement de la forme téléologique

■ **Morgan Rich**
Looking into the heart of light: Metaphors of Light in
Kaija Saariaho's *Notes on Light*

09h30-11h30
(Studio 5)
SESSION 3B: POETICS (20TH CENTURY)
Chair: **Jonathan Cross**

● **Dimitris Exarchos**
The sense of music in Scelsi's compositional thinking

● **Samuel Ekkehardt Dunscombe**
Fountains of My Sky: Understanding Horațiu
Rădulescu's 'Sound Plasma' Through Archival
Research

● **Liam Cagney**
'Et le nuage est spectre, et le spectre est nuage':
Murail, Poetics, Symbolism

● **Damien Bonnec**
Ambiguïté, trompe-l'oreille et subjectivité:
Michaël Levinas contre une tendance du premier
spectralisme

11h30-12h00
(Galerie): Break

12h00-13h00
(Salle Stravinsky)
PERFORMANCE WORKSHOP 1
**Giacinto Scelsi, *Trilogia - The three Ages of Man*
(1956-65) for cello**
**Frances-Marie Uitti (cello) in conversation with
Sharon Kanach**

13h00-14h30
(Galerie): Lunch

14h30-17h30
(Salle Stravinsky)
SESSION 4A: GRISEY
Chair: **Ingrid Pustijanac**

■ **Joshua Banks Mailman**
Process philosophy overcoming itself: Modeling Grisey's *Vortex Temporum* (1994-96)

■ **Katherine Balch & Mike Ford**
Crossing the Threshold: Textual and Musical Interactions in Gérard Grisey's *Quatre Chants pour franchir le seuil*

■ **Stephen Noh**
L'influence de Xenakis dans la musique spectrale de Grisey

16:00-16h30
(Galerie): Break

■ **Lukas Haselböck**
Structure and Perception in the Music of Gérard Grisey

■ **Dylan J. Principi**
Grisey's Time and its Conceptual Implications

18h30-19h30
(Salle Stravinsky)
PERFORMANCE WORKSHOP 2
**Pascale Criton, *Wander Steps* (2017-18)
for two microtonal accordions
Fanny Vicens, Jean-Etienne Sotty (Duo XAMP)
and Pascale Criton in conversation
with Robert Hasegawa**

20h30
CONCERT: SPECTRAL 2
by Frances-Marie Uitti,
Saint-Merry church

14h30-18h00
(Studio 5)
SESSION 4B: ANALYTICAL PROSPECTS
Chair: **Nathalie Hérold**

● **Daniel Fox**
Shifting the Plane of Audition to Analyze the Role of Acoustic Resonance in the Works of Morton Feldman and Alvin Lucier

● **Martin Ritter, Jeffrey E. Boyd & Friedemann Sallis**
A Spatio-Timbral Analysis of Keith Hamel's *Touch* for piano and interactive electronics (2012): A Contribution to Sound Field Studies in Musicology

● **Robert Adlington**
Metaphors for changing sound in spectral music: the potential of the IRiMaS project
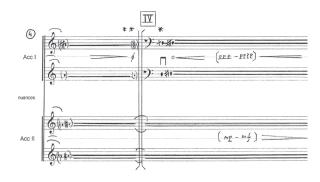
● **Yiğit Kolat**
Entropy and the Anatomy of Time: Composing with Spectral Entropy

● **Timothy Bausch**
Spectral Atoms: An Expanded Approach to the Analysis of Spectral Music

● **James Donaldson**
'...et une réinvention mélodique': Melody and Liminality in Spectral Music

FRIDAY 14 JUNE

09h00
(Entrance hall): Welcome desk and registration

09h30-11h30
(Salle Stravinsky)
SESSION 5A: COMPOSERS' PERSPECTIVES
Chair: **Robert Hasegawa**
■ **Lasse Thoresen**
Spectral Mergers
■ **Clara Maïda**
Pour une approche 'nano-spectrale' de la composition musicale
■ **Julian Anderson**
Spectral centrality: proposals for the introduction of new formal harmonic structures based on discoveries in spectral composition and psycho-acoustics
■ **Silvia Rosani**
The roots and reasons of some composers' spectra

09h30-11h00
(Studio 5)
SESSION 5B: REFERENTIALITY
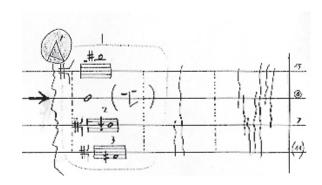Chair: **Jonathan Cross**
● **Luca Guidarini**
Transtextuality techniques and spectral manipulation in Fausto Romitelli's late compositions
● **Mike Ford**
Processes of Spectralization: From Josquin's Missa 'L'homme armé' Super Voces Musicales to Haas's *Tria ex Uno*
● **Benjamin Lassauzet**
La conquête spatiale du spectre harmonique comme métaphore musicale de l'avènement du surhomme nietzschéen

11h30-12h00
(Galerie): Break

12h00-13h00
(Salle Stravinsky)
PERFORMANCE WORKSHOP 3
Horaţiu Rădulescu, *Das Andere* **(1983) for viola**
Garth Knox (viola) in conversation
with Martin Suckling

13h00-14h30
(Galerie): Lunch

14h30–16h30
(Salle Stravinsky)

SESSION 6A: KEY WORKS
Chair: **Laura Zattra**

■ **Julie Delisle**

Timbre et orchestration dans *Jour, contre-jour* (1979) de Gérard Grisey

■ **Candida Felici**

The roots and the clouds: aller-retour from axial harmonic fields to spectra, and from rhythm to timbre in Jonathan Harvey's *One Evening*

■ **Laurent Pottier & Alessandro Olto**

Comment Fausto Romitelli intègre-t-il les techniques et les démarches spectrales dans l'écriture de ses œuvres? Le cas d'*EnTrance* (1996)

■ **David Kopp**

Reimaging the familiar: Fineberg's *Veils*

16h30–17h00
(Galerie): Break

17h00–18h00
(Salle Stravinsky)

PERFORMANCE WORKSHOP 4
Gérard Grisey, *Anubis-Nout* (1983/90)
for bass saxophone
Claude Delangle and Antonin Pommel (bass
saxophone) in conversation with
François-Xavier Féron

20h30
CONCERT: CRÉATION(S) MANIFESTE(S)
by L'Ensemble intercontemporain,
Cité de la musique / Philharmonie de Paris
(salle des concerts)
This concert is not included in the registration fee.

14h30–16h30
(Studio 5)

SESSION 6B: REVERBERATIONS
Chair: **Amy Bauer**

● **Nicolas Lira**

Analyzing Conventional and Novel Features of Spectral Music in Jean-Claude Risset's *Voilements* and *Saxatile*, for Saxophone and Fixed Media
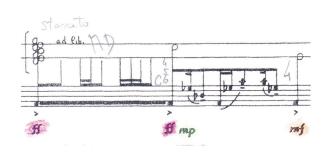
● **Elizabeth Hoffman**

What Sort of Virtual Spaces are Spectral Spaces?

● **Robert Sholl**

Spectral Music in Nordic Noir

● **Michael Francis Duch**

The Virtuoso Listener: On Spectral Music and Listening

ABSTRACTS

(by alphabetical order)

THE SPECTRAL TUBA

Jack Adler-McKean

Royal Northern College of Music, Manchester (England)

The tuba may be relatively young musical instrument, but in comparison to those which have emerged as solo voices in recent decades such as the saxophone, electric guitar, accordion and percussion, it represents a still largely untapped world of sonic resources and manipulations. By its physical properties alone, the tuba can reproduce a harmonic spectrum with more clarity and breadth than most other acoustic instruments, and so is of potentially significant interest to spectral composers. Two notable spectralists had tangential relationships with the tuba: Gérard Grisey's writing developed from rudimentary sounds in *Megalithes* to some of the most complex chamber ensemble scoring for the instrument in Quatre chant pour franchir le seuil [1], whilst Georg Freidrich Haas's exploration evolved from little more than quarter tone scales in *...aus freier Lust, verbunden...* [2] to detailed spectral manipulation in das kleine *ICH BIN ICH* and other works. These composers exemplify how, despite limited extant engagement with the tuba or tubists, the instrument can be used idiomatically to create both solo and background spectral textures.

As an instrument so fundamentally intertwined with the concept of a harmonic spectrum and its subsequent exploitation, the tuba can form an effective conduit between the world of spectral music and composers who don't necessarily refer to themselves as spectralists. For example, a technique currently undergoing much research by composers for brass instruments involves transfiguration of overtone spectra through manipulation of the oral cavity (analogous to techniques involved in overtone singing), an effect particularly well suited to the wide bore and large mouthpiece used by the tuba. First popularised as a 'digeridoo' effect by the tubist Øystein Baadsvik, it has been explored in more detail in recent years by a diverse range of composers including Georges Aperghis, Mark Andre, Patrick Friel, Edo Frenkle and Haukur þór Harðarson, many of which will be exemplified in this lecture recital.

Spectralism by its nature poses performance practice questions for all instrumentalists, particularly wind players whose modern instruments were designed produce tones that approximate an equally-tempered chromatic scale. A solution developed in recent years for the tuba is a microtonal valve system (the 'Hayward System' [3]) which can accurately reproduce microtonal deviations of any pitch across the five octave range of the instrument. A question that inevitably arises from this, particularly for spectralists, is one of authenticity; must a 31-cent flat seventh harmonic or a 41-cent sharp thirteenth harmonic be produced as overtones of a fundamental, or can they be "recreated" as effectively through technical innovation? Brass instruments are, of course, also not pure sine-wave generators, and neither are brass instrumentalists; higher harmonics are not only less predictable in terms of absolute pitch, but also, depending on the harmonic series selected, less reliable in live reproduction [4]. Through looking at the tuba writing of Just Intonation composers including Catherine Lamb, Marc Sabat, Klaus Lang, Wolfgang von Schweinitz and Stefan Pohlit, as well as referring to more tempered approximations from Grisey and Haas, these and other questions will be explored.

Sources
[1] Grisey, G. (1998). *Quatre chant pour franchir le seuil* (1996-98) for soprano and fifteen instruments. Ricordi, R2862.
[2] Haas, G. F (1996). *... aus freier Lust, verbunden...* (1994/95/96) for bass tuba, performance by Jack Adler-McKean on microtonal tuba on 17-02-2015 [https://www.youtube.com/watch?v=LyVSt5N5tqU].
[3] Hayward, R (2011). "The Microtonal Tuba". *The Galpin Society Journal*, 64, pp.125-177.
[4] Sabat, M. & Hayward, R. (2006). *Towards an Expanded Definition of Consonance: Tuneable Intervals on Horn, Tuba and Trombone*. Plainsound Music Edition [http://www.marcsabat.com/pdfs/tuneable-brass.pdf].

Bio
Jack is a doctoral performer-researcher at the RNCM (Manchester), supported by the Arts and Humanities Research Council. He is investigating how to establish new tuba-composer relationships, as well as developing an informed performance practice of nineteenth-century orchestral tuba parts. Planned outputs include orchestral repertoire recordings, performances of new pieces, and preparation of the tuba edition of the Bärenreiter Spieltechnik series.
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METAPHORS FOR CHANGING SOUND IN SPECTRAL MUSIC: THE POTENTIAL OF THE IRIMAS PROJECT

Robert Adlington

University of Huddersfield (England)

In an earlier publication [1] I proposed Kaija Saariaho's orchestral work *Du cristal* as exemplary of a music in which change is heard via a kaleidoscope of different conceptual metaphors, not all of which can be reduced to a form of motion. Contrary to the assumption of some theorists that 'in music, change is motion', I made use of metaphor theory (e.g. [2]) to propose that motion is only one of a number of possible embodied 'image schemas' by which the abstract experience of changing sound may be grasped. For instance, I proposed that the changing textures at the start of *Du cristal* are heard predominantly in terms of light and colour, rather than movement. My argument has relevance to other spectral repertoire that prioritises timbral transformation over musical elements such as melodic counterpoint or harmonic syntax that encourage linear or path-like conceptualisations.

The purpose of this paper is to ask what analytical tools can be imagined for enabling the articulation and further investigation of such 'non-motional' experiences of spectral music's temporality. Notation is frequently unhelpful in this regard, as its inscriptions literally trace spatial journeys across a page, reinforcing a motional impression that may not be foremost when listening. There is the additional problem of conventional notation's inadequacy as a representation of timbre.

This challenge is one on which I have recently started to work as a senior researcher on the ERC-funded project Interactive Research in Music as Sound (IRiMaS, 2017-2022). The IRiMaS project brings together musicologists, analysts and software developers to explore new technological means for interacting analytically with music, with the intention of overcoming the limitations of written texts. Earlier work by members of the team deployed software to investigate, amongst other techniques, spectral manipulation in Jonathan Harvey's *Fourth String Quartet* and Cort Lippe's *Music for Tuba and Computer* [3]. The new project investigates the potential of software techniques including signal separation, display according to audio descriptors, and self-similarity matrices for modes of knowledge of spectral music's sonic and temporal characteristics.

The development of the project software is at an early stage, so my focus will be primarily methodological. I highlight three key questions we are exploring. First, can computer software help us to identify the reasons for mapping certain kinds of aural musical experience onto certain embodied image schemas in spectral music? Debates over the universality or otherwise of certain cognitive metaphors for temporal experience (e.g. [4]) are relevant here. Second, how might a dynamic on-screen representation of changing sound avoid re-inscribing the trope of temporality as path-like motion? Answering this requires careful reflection on the relation between analytical tools and implied heard experience. Third, what role in this investigation should be accorded to spectralist composers' own reflections upon time and temporality (e.g. [5])? In considering this last question, the aspiration of the IRiMaS project to provide tools that allow exploration of varying experiences of music as sound, rather than prescribing a single 'ideal' experience, is relevant.

Sources

[1] Adlington, R. (2003). "Moving beyond motion: metaphors for changing sound". *Journal of the Royal Musical Association*, 128 (2), pp.297-318.
[2] Lakoff, G. & Johnson, M. (1980). *Metaphors We Live By*. Chicago: University of Chicago Press.
[3] Clarke, M., Dufeu, F., & Manning, P. (2017). "The Analysis of Music for Performers and Real-Time Electronics: An Interactive Aural Approach from the TaCEM Project". Paper delivered at *European Music Analysis Conference (EuroMAC 2017)*, June 28 – July 1, Strasbourg (France).
[4] Moore, K. E. (2014). *The Spatial Language of Time: Metaphor, Metonymy and Frames of Reference*. Amsterdam: John Benjamins Publishing.
[5] Pustijanac, I. (2016). "Time's arrow in spectral music". *Nuove Musiche*, 1, pp.145-160.

Bio

Robert Adlington holds the Queen's Anniversary Prize Chair of Contemporary Music at the University of Huddersfield. He is the author of books on Harrison Birtwistle, Louis Andriessen and avant-garde music in 1960s Amsterdam, and the editor of volumes on 1960s avant-garde music and music and communism. He has published articles on Nono, Berio, new music theatre, modernism and musical temporality.
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SPECTRAL CENTRALITY: PROPOSALS FOR THE INTRODUCTION OF NEW FORMAL HARMONIC STRUCTURES BASED ON DISCOVERIES IN SPECTRAL COMPOSITION AND PSYCHO-ACOUSTICS

Julian Anderson

Guildhall School of Music and Drama, London (England)

First generation spectral composers Grisey, Murail, Rădulescu and others, introduced acoustically consonant formations (as well as periodic rhythmical structures), thus reacting against the suppression of consonance and repetition in much atonal, twelve-tone and serial music of the previous 70 years. Such exclusion often resulted in a problematic temporal flatness in so-called 'atonal' music, and a consequent dulling of listener expectation in short or longer terms. Unlike minimalism, the first spectral works explored the full range of sound and rhythmic articulation, rather than excluding acoustically dissonant formations and aperiodicity. Grisey's *Partiels* (1975) and Murail's *Gondwana* (1980) impressively embodied varying direction, change and flux between ordered and disordered musical states.

Since then, despite the continuing research into the above concerns in many works of Murail [1], the later Grisey and younger composers such as Fineberg or Levy, the focus of much spectrally-tinged music has been on sound for sound's sake, often using the newer technologies to transform or enhance the music's exotic surfaces [2]. This paper concentrates instead upon fresh proposals for further developing the directionality inherent in early spectral music, specifically as manifest in two recent string quartets by Julian Anderson.

In his early spectral String Quartet No.1 (*Light Music*, 1984-5) and his violin duo *RING DANCE* (1987-8), Anderson explored harmonic directionality and microtonal spectrality, fusing these with a wide sound palette incorporating acoustic noise. In his *String Quartet No.2* ('*Dreihundert Weihnachtslieder*', 2014, for the Arditti Quartet) [3], Anderson furthered these concerns using a modal pitch system based upon the intervallic proportions 8:7, 12:11 and 13:12. Ambiguous multi-layered modes evolved to produce varying formal waves of harmonic simplicity or complexity. In his more recent *String Quartet No.3* ('*hana no hanataba*', 2018, for the JACK Quartet) [4], Anderson has developed these ideas further by introducing the notion of spectral centrality. Pitch centres are defined contextually in a variety of ways, including fusion with noise, probabilistic uses of spectral consonance, and a harmonic syntax which modulates both between the various pitch centres and between several basic types of pitch centrality. Significantly a new type of 'spectral minor triad' (in the ratios 9:7:6) has been devised, fusing natural resonance with inharmonicity.

Anderson's concept of spectral centrality, although not neo-tonal, nevertheless overlaps with some insights from Schenkerian tonal theory [5], in scrutinising the changing relations between a consonant background and musical foreground decoration upon it. The inclusion of non-tempered intervals and acoustical noise further enriches the aural palette, creating

productive tensions in the musical syntax. The resultant harmonic ambiguities enable the composer to work with sharply contrasting areas of spectral formation, and produce, it will be argued, a newly audible sense of focus and goal-directedness in contemporary musical syntax, with the added bonus of flexibility, rather than proscribing composer choice. The paper will elucidate these features with numerous audio-visual examples, encouraging listeners to engage in a practical dialogue in the Q&A section as to the perceptibility the proposed structuring devices in practice.

Sources
[1] Murail, T. (2004). "Questions de Cible" (pp.44-73). In Michel, P. (Ed.), *Tristan Murail: modèles et artifices*. Strasbourg: Presses Universitaires de Strasbourg.
[2] Cendo, R. (2008). "Les paramètres de la saturation". In *Franck Bedrossian – De l'excès du son*. Champigny sur Marne: 2e2m [http://brahms.IRCAM.fr/documents/document/21512/].
[3] Anderson, J. (2014). *String Quartet No.2*. London: Faber Music, Audio [https://m.youtube.com/watch?v=56ObXQKdzHc**]** and score [http://scorelibrary.fabermusic.com/String-Quartet-No-2-300-Weihnachtslieder-23032.aspx].
[4] Anderson, J. (2018). *String Quartet No.3*. Mainz: Schott Music.
[5] Schenker, H. (1996 [1926]). "Further Consideration of the Urlinie: II" (pp.1-19). In Drabkin, W. (Ed.), *The Masterwork in Music vol. 2*. Cambridge: Cambridge University Press.

Bio
Born London 1967. Head of Composition, Royal College of Music (2000-4). Fanny P. Mason Professor of Music, Harvard University (2004-7). Professor of Composition and Composer in Residence, Guildhall School, London (2007-). Performed and/or commissioned by Berlin Philharmonic, Cleveland Orchestra, London Symphony Orchestra, Asko-Schönberg Ensemble, Ensemble InterContemporain, English National Opera, Oper Bonn, Ensemble Modern, Arditti and JACK Quartets.
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CROSSING THE THRESHOLD: TEXTUAL AND MUSICAL INTERACTIONS IN GÉRARD GRISEY'S *QUATRE CHANTS POUR FRANCHIR LE SEUIL*

Katherine Balch & Mike Ford

Columbia University, New York (USA)

Following his declaration that composers "are musicians, and [their] model is sound not literature, sound not mathematics, sound not theatre, visual arts, quantum physics, geology, astrology or acupuncture" [1], the majority of Gérard Grisey's output is instrumental music. In avoiding vocal music, the composer bypassed models associated with text, such as literature or theatre. Even when he does employ vocalists–such as in *Les chants de l'amour* (1982-84) or *L'icône paradoxale* (1992-94)–the focus is on the sonic properties of speech, rather than on semantics. In a diary entry of July 1996, Grisey ponders whether or not "it is possible to dissociate melody or vocal gesture from the text."

However, in the years before his untimely death (November 11, 1998), Grisey composed a vocal work that does rely on the semantic and prosodic properties of the text, rather than the sound alone: *Quatre Chants pour franchir le seuil* (1996-98), for soprano and fifteen instruments. In this work, the musical and textual materials interact in ways unprecedented in his oeuvre. While the interactions between music and text in the first song–"D'après 'Les heures à la nuit' de Guez Ricord"–has received thorough scholarly treatment, in part as a result of the sketches that the composer left behind [2,4], the other three songs have largely been unstudied.

In this paper, we demonstrate the interactions between the music and text in the two central songs–"D'après les sarcophages Egyptiens du Moyen Empire" and "D'après Erinna–which forms a type of recitative-aria pair. In the former, much of the text is delivered in declamations on a repeated pitch, within a tessitura restricted to the natural speech range. The voice is accompanied by strings plucking chordal arpeggios, reminiscent of basso continuo support. In the latter, the full ensemble participates in lush orchestral textures while the soprano's vocal line is considerably more florid. We argue that Grisey extracts materials that are either semantically or prosodically salient, using the two hierarchical systems (which we represent using tree diagrams inspired by those used by Fred Lerdahl and Ray Jackendoff in their *A Generative Theory of Tonal Music* [3]) concurrently. In addition to mirroring the textual phrasing musically, which informs his global-level formal choices, he also uses poetic rhythm as a proportional guide at the local level. In the aria-like song under discussion, Grisey uses four terms from the poem as germs for text painting, using both conventional and spectral techniques, as well as larger formal processes. Our analyses show that Grisey's *Quatre Chants* treats language both as sound and as a narrative that influences the semantic hierarchy and flow of the music, casting doubt on the composer's claimed insistence on the purity of his music. This study aims to further the scholarly discussion surrounding Grisey's *Quatre Chants* and offers an extended portrait of Grisey's spectral thinking, animated by his rare engagement with language and a willingness to depart from the dogma of working exclusively with sound.

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Bio
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AUTOMATA IN EXTREMIS: MAURO LANZA AND ANDREA VALLE'S SUBLIME SPECTRAL MACHINES

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Over four years, Mauro Lanza and composer-technologist Andrea Valle composed the cycle *Systema Naturae* (2013-17), which combines acoustic instruments with computer-controlled mechanical sound objects. The composer's manifesto is clear: "to create and explore a middle ground where mechanized objects can be controlled in a standard – even if basic – musical way (by creating events, exploring their spectra, organizing their dynamics) while music instruments are treated in an 'object-like' fashion by means of a wide usage of extended techniques" [5]. Lanza re-wrote five movements of the first work in *Systema*, *Regnum animale,* as the basis for *Anatra digeritrice (Piccola Wunderkammer di automi oziosi*) for orchestra (2014), inspired by the Eighteenth-century inventor Jacques de Vaucanson's duck automaton Le Canard Digérateur (1739). This paper will analyze those five movements and their orchestral recomposition, arguing that in both *Regnum* and

Anatra spectral harmonies reflect the ambivalence of this mechanical-acoustic hybrid, and take pleasure in its failure to replicate the polished sheen of a conventional digitally-composed or notated composition.

The four works that comprise *Systema* are inspired by Medieval catalogues – bestiary, herbaria and lapidaria – and the later systematic description of the natural world found in Carl Linnaeus' original *Systema Naturae*. *Regnum animale* surrounds a string trio with a circle of computer-driven, electro-mechanical devices, whimsical creations that offer a second life to discarded consumer electronics such as electric knives, radio clocks, hair dryers and turntables. Audio files generated by the sound bodies and instruments (performing extended techniques) serve as basic compositional materials: they are analysed for spectral data, which feeds a variety of algorithms. *Anatra digeritrice* further "spectralizes" its source material: a very specific collection of (mostly) semi-and quarter-tone pitches – as in *Regnum animale* – present as higher overtones of central pitches. But *Anatra* also makes use of inverted spectrums and quasi-symmetrical arrangements around a central pitch.

Le Canard Digérateur's failure – the defecating duck did not really process its feed – paradoxically crystallized its fascination for both contemporary and later audiences. But that fault highlighted the central identity of automaton, as defined by Minsoo Kang: a contradiction in the delicate balance between nature and artifice that flaunts its own "insoluble paradox" [1]. Similarly, many of *Regnum's* movements begin with a promised periodicity that never materializes into a dance, while *Anatra digeritrice* appears as "a little collection of musical automatons, of precision-made mechanisms that move about pointlessly". Lanza's and Valle's combination of spectral harmonies with computer sound-processing techniques thus replicate the automaton's central contradiction, displaying the nuance and allure of technology's flawed analogues of the real.

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Bio
Amy Bauer is Associate Professor at the University of California, Irvine. She has published widely on modernist music, opera, and music theory. Her monographs include *Ligeti's Laments* (Ashgate, 2011), *György Ligeti's Cultural Identities* (Routledge: 2017), co-edited with Márton Kerékfy, and *The Oxford Handbook of Spectral and Post-Spectral Music*, co-edited with Liam Cagney and Will Mason (Oxford, forthcoming).
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SPECTRAL ATOMS: AN EXPANDED APPROACH TO THE ANALYSIS OF SPECTRAL MUSIC

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Spectral music is generally understood as a style or attitude of composition that focuses on modeling and evolving the physical properties of sounds over time [1–3]. One prominent method of analyzing spectral music involves identifying processes and phenomena that generate individual sections of music [4]. However, this localized analysis needs additional analytical tools. I have developed the concept of the *spectral atom* to provide a more in-depth, less generalized approach. The spectral atom takes the overall compositional process within a section of music and separates it into a combination of four distinct spectral particles: *organization*, *vibration*, *spatiality*, and *perception*.

The concept of the spectral atom emerged from a performance of Alvin Lucier's *Silver Streetcar for the Orchestra*. Typically identified as a piece within the realm of experimental music, the sounds emanating from the triangle in this piece resonated less with experimental music and more with spectral ideologies. By recognizing the spectral parallels in this work, I would argue that the spectral nature of this piece occurs on a microscopic level in comparison to works recognized within the spectral canon. Though music cannot physically exist at a microscopic level, in a metaphorical sense, I argue that intentions and processes can exist at this atomic level—specifically as the proposed spectral atom. I argue that the music of Alvin Lucier is a particularly valuable key to understanding them as such.

Akin to spectral composition, the spectral atom focuses purely on sound. The organization particle accounts for how pitch collections are horizontally and vertically organized. When possible, this particle analyzes the envelope of a sound as reflected in the score. The vibration particle addresses the generation of the sound itself, analyzing the physical bodies and sonic characteristics producing it. The spatiality particle looks at the environment in which the sounds are propagating and examines if the physical space has any effect on the produced sounds. Finally, the perception particle explains the phenomena that occur in a listener's ear in response to the music [5].

As the spectral particles emerge through analysis, they can be coagulated to identify a spectral atom in each section of music. Therefore, tracing the sequence of spectral atoms across the entirety of a work will reveal spectral forms unique to this style of music. In this paper, I will apply the concept of spectral atoms to the works of Alvin Lucier, Gérard Grisey, and Kaija Saariaho. The succession of spectral atoms realized through these analyses will generate a visual representation of the transitional and permutational strategies used by these composers. In addition to its theoretical relevance, the spectral atom also helps the listener to understand the works of these, as well as other, spectral composers. The spectral particles associated with the spectral atom point to specific musical events and characteristics that are important to the listener, thus suggesting that spectral atoms have the potential to make spectral music more accessible to a broader audience.

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Bio

As both an active percussionist and scholar, Tim Bausch is working towards his Ph.D. in music theory with an emphasis in cognitive sciences at the University of California, Santa Barbara. Tim focuses on the perception of sound, and how it is used by composers both analytically and creatively.

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LAYERING THE SPECTRUM: WAVING PROCESSES BETWEEN METER AND FREQUENCIES IN RICCARDO NOVA'S WORKS

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In Spectralism history, choosing the harmonic distribution as a pre-compositive mean has mainly signified to privilege the vertical dimension as a way to go deeper and deeper into new conceptions of the timbre aspects. Focusing on frequencies implies that duration is just one of the aspects that converge in the structure of a complex sound, within overall speculations about rhythm and perception. I propose a revaluation of rhythmical and metrical parameters taking as example the work of the Sincronie group – founded in Milan in 2003 by composers like Fausto Romitelli, Giovanni Verrando, Riccardo Nova – whose time conception is influenced both by the spectral thought and the Electronic Dance Music (EDM) models: starting from temporal dimensions explained by Grisey in *Tempus ex Machina* [2], they apply clear and repetitive modules derived from techno procedures.

To show rhythmical and metrical evidences connected to spectral processes, I will analyze specifically Nova's works of the most recent period like *Eleven (420:11@Destruction Generating Deity)* (2003), for 12 instrument and electronics, *Drones 1.2* (2003-2011), for 8 instruments and electronics, *Thirteen/13X8@terror generating deity* (2005), for 4 instruments and electronics and *Nibodhata* (2016), for voice, percussions and electronics, where durations (rhythm and meter proportions) and frequencies (spectrum and melodic lines) are interlinked to generate an inner tension aimed to the formal equilibrium: this kind of process recalls the concept of *Zeitspektrum* expressed by Stockhausen [4] or Cowell's

studies about rhythmical proportions, whom Nova cites explicitly. Waving and interconnection of these parameters generate a dialectic relationship perceivable as an *oscillations counterpoint* mediated by natural numerical proportions: metrically, the Fibonacci series – similarly to Grisey's macro-formal management (e.g. in *Vortex Temporum*) – or the Indian cyclic meters; harmonically, by spectrum ratios or microtones derived by Just Intonations Theory.

Link between spectral and EDM languages involves the usage of drones, frequently enriched with roughness in the low frequencies, which resembles the low- or sub-spectrum properties used by spectral composers (e.g. in *Anubis et Nout*) or the subharmonic synthesizers used in the EDM and Noise environment, which valorize the basses and generate perceptible roughness using those specific frequencies. Processes of rhythmical contraction that proceed in line with the ascending frequencies used in Nova's pieces are also typical of Grisey's compositional style (e.g. in *Prologue*) and also resembles the tension generated by the Risset Rhythm as frequently used in EDM pieces. Considering all these aspects, the *Zeitspektrum* concept allows to treat durations and frequencies as oscillating processes, structuring a timbral/rhythmical layering connected to the electronical means and the spectral processes, and generating a macro-formal unity based on phasing of different metrical layers.

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Bio
I graduated in 2015 in Classical Piano, studying in the meanwhile composition and music analysis. Since 2015, I'm a musicology student in the Department of Cremona, University of Pavia, where I'm finishing my master's degree.
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AMBIGUÏTÉ, TROMPE-L'OREILLE ET SUBJECTIVITÉ : MICHAËL LEVINAS CONTRE UNE TENDANCE DU PREMIER SPECTRALISME

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Michaël Levinas s'est très tôt intéressé aux phénomènes musicaux illusoires tels que le glissando infini de Risset ou les polyphonies paradoxales de Ligeti. La complexité mise en jeu par ceux-ci le fascine en tant qu'un même son puisse faire entendre une chose et une autre. Il est vrai que, du fait de son ambiguïté, chaque son complexe se distingue par sa nature plurielle, s'opposant à une certaine univocité musicale – que celle-ci s'envisage sous le prisme de sa nature ou de sa perception. Tout comme la recherche permanente d'un certain vertige, l'hybridation des transitoires d'attaque et autres 'leurres acoustiques' sont autant de manières de produire une musique qui s'affranchit du 'son pour le son', ou plutôt, qui s'oppose à une forme de transparence du son envers lui-même. En défendant cette ambiguïté fondatrice, Michaël Levinas rend donc possible un au-delà du son dans le son. Mieux, il apparaît que les sons complexes sont un moyen de figurer la présence d'une subjectivité. Cette subjectivité, en effet, naît à la fois de l'interpénétration de sons et de leur possible discrimination; c'est au creux de ce rapport ambivalent – entre désir de fusion et respect des différences – que la subjectivité Levinassienne s'éveille, jusqu'à supposer le principe d'un accueil réciproque des substances. Il s'avère qu'au travers leur intrication phénoménale, les sons complexes apparaissent être une manière de penser musicalement l'altérité, le trompe-l'oreille rendant possible l'avènement de l'autre. Ces notions de subjectivité et d'altérité permettront d'envisager les rapports de cette esthétique avec la philosophie de son père, Emmanuel Levinas, en tant qu'elle est l'une des sources probables de sa pensée musicale.

Afin de mieux saisir l'originalité de sa pensée esthétique, et pour mieux en préciser les contours, devra être fait mention des formes musicales auxquelles Levinas s'oppose. En négatif de cette intervention, seront donc mises en perspective certaines préoccupations spectrales, dans lesquelles Levinas voyait déjà, au tournant des années 1980, une certaine tendance formaliste et dogmatique. À ce titre, nous nous demanderons dans quelle mesure les premières œuvres spectrales cherchent à faire état d'une certaine 'objectivité', en lien avec l'univocité tantôt décriée. À supposer avec Levinas qu'une telle objectivité existe, il s'agira d'en définir les cas musicaux et leurs occurrences, voire de circonscrire leur(s) fonction(s). Nous tâcherons alors de comprendre si cette objectivation affecte la manière d'appréhender le matériau musical ou la logique qui les agence. Il nous sera peut-être permis de saisir en quoi les irisations orchestrales de Gérard Grisey (*Les Espace acoustiques* – 1974-1985) sont si différentes de la conception Levinassienne touchant à une telle vie intérieure du son.

Bio

Damien Bonnec est compositeur et chercheur. Spécialiste de Boulez et de Mallarmé, il s'attache aux relations entre musiques et littératures, ainsi qu'à l'étude des modernités musicales françaises (Levinas, Roche). Ses études de philosophies, effectuées en parallèle de sa formation musicale (CNSMDP) et musicologique, autorisent une approche esthétique enrichie par les pensées contemporaines (Deleuze, Foucault, Lyotard).

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'ET LE NUAGE EST SPECTRE, ET LE SPECTRE EST NUAGE': MURAIL, POETICS, SYMBOLISM

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This paper examines Tristan Murail's œuvre through the notion of poetics. Poetics in this context isn't simply a loose term for the 'poetic' content of a work (that is, a work's programmatic imagery or aesthetic impression). Rather, poetics addresses the relationship between the composer's motivating artistic vision and his subsequent development of a technical framework facilitating the adequate expression of that vision. An effective poetics, Paul Valéry writes, enables the precise control over one's material that allows the invention (paradoxically) of the unforeseen: 'formal rules' that 'sometimes excite [the artist] to discoveries to which complete freedom could never have led him' [1]. Murail's initial progression as a composer, seen in this light, involved the absorption and abandonment of serialism as a framework inappropriate to his artistic vision, and the subsequent development of what came to be known as spectralism as a technical framework congenial to Murail's artistic vision. My aim is better to elucidate what in the œuvre is specific to the composer beyond simply generalising using the term 'spectralism'.

My research combines historical, critical and analytic perspectives and drawing on archival work as well as interviews with the composer [2]. The first part of the paper introduces the theoretical framework. The second part of the paper focuses on Murail's music since 1995, a phase I identity (following Alla [3]) as Murail's third period. General characteristics of Murail's third period music are autobiographical allusions; melodic elements; a reengagement with traditional forms; allusions to previous classical works, to literature and to art; and the favouring of a psychological over a structural image of form. What these characteristics indicate, I argue, is the gradual convergence of Murail's poetics with a neo-Symbolist aesthetic, moving from an early formalist use of models to a later autobiographical use of symbols. In his account of Symbolism, Edmund Wilson writes: 'it is the poet's task to find, to invent, the special language which will alone be capable of expressing his personality and feelings. Such a language must make use of symbols' [4]. Similarly, Murail has remarked

of his music, 'It is not the colours that count but their coming together, and especially the aesthetic and psychological impact' [5]. Works that will be discussed include *Winter Fragments* (2000), *Portulan* (1998-2011) and *Réflets* (2013 – present).

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Bio

Dr Liam Cagney's most recent articles are on Grisey's transition from post-serialism to spectralism, Ensemble l'Itinéraire's relation to spectralism (forthcoming), and Murail's musical poetics. He is co-editor of *The Oxford Handbook of Spectral Music*. His PhD is an historiographical study of the origins of the *courant spectral*. Based between Berlin and Dublin, he is currently academic studies tutor at BIMM Dublin.
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TIMBRE ET ORCHESTRATION DANS *JOUR, CONTRE-JOUR* (1979) DE GÉRARD GRISEY

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Cette proposition de communication portera sur *Jour, contre-jour*, œuvre mixte de Gérard Grisey pour quatorze instruments et bande. Composée en 1979, durant la même période que *Modulations* (1976-77), *Tempus ex Machina* (1979) et *Transitoires* (1980-81), *Jour, contre-jour* reflète plusieurs aspects déterminants de la pensée compositionnelle de Gérard Grisey et consiste en l'adaptation d'une œuvre antérieure, *Sortie vers la lumière du jour* (1978), dont le compositeur disait qu'elle était "à la fois une parenthèse dans [son] travail et une synthèse de [ses] recherches" [1]. Cette œuvre est donc un excellent point de départ pour l'exploration des liens existant entre la pensée spectrale de Grisey et les techniques d'instrumentation et d'orchestration qu'il utilise dans ses œuvres composées dans la lignée du cycle des *Espaces Acoustiques* (1974-1985).

Une analyse formelle de *Jour, contre-jour* a été proposée par Jérôme Baillet dans son ouvrage consacré à Gérard Grisey [2], et les procédés compositionnels exploités par Grisey et le rôle du spectre dans ses œuvres de la même époque ont été investigués par François-Xavier Féron [3]. Ces travaux constitueront un point de départ à cette recherche, qui sera

complétée par l'analyse des écrits de Gérard Grisey sur ses œuvres et ses procédés compositionnels (dont les textes 'Structuration des timbres dans la musique instrumentale' et 'Le devenir des sons'), ainsi que par l'examen des esquisses de *Sortie vers la lumière du jour* et de *Jour, contre-jour*. Le but sera ici de dégager et d'expliciter les principes qui s'inscrivent à la base de la conception de l'orchestration de Grisey et des techniques d'écriture du timbre instrumental que le compositeur privilégie.

Dans le contexte particulier de *Jour, contre-jour*, on verra entre autres comment l'interaction entre les parties instrumentale et électronique (orgue et bande) relève de la pensée liminale de Gérard Grisey, notamment dans l'émulation de procédés électroniques comme la modulation en anneaux et le *phase shifting* à travers l'utilisation de groupes instrumentaux et de l'orgue électrique. On verra aussi comment l'exploitation par le compositeur d'aspects particuliers du spectre sonore (degré d'harmonicité et de périodicité, zones formantiques, sons additionnels et différentiels, particularités perceptives dues au registre) ainsi que de leurs transformations déterminent l'utilisation de certains sons instrumentaux en fonction de leur propre spectre sonore. Enfin, on montrera de quelle manière les modes de jeu alternatifs (sons fendus aux clarinettes, archet pressé sur les cordes) sont utilisées dans la pièce pour les modifications spectrales qu'elles entraînent.

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Bio

Julie Delisle est chercheure multidisciplinaire et artiste sonore. Elle travaille actuellement au projet ACTOR (Analyse, création et enseignement de l'orchestration) en tant que stagiaire postdoctorale à l'Université McGill (Canada). Après quelques années de carrière comme flûtiste, elle a étudié les technologies de la musique et l'informatique, puis complété son doctorat (Ph.D.) en musicologie à l'Université de Montréal.
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'…ET UNE RÉINVENTION MÉLODIQUE': MELODY AND LIMINALITY IN SPECTRAL MUSIC

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In his reflective 1998 article 'Did you say Spectral?'[3], Grisey lists 'a melodic reinvention' as one of the 'notable consequences' of a spectral attitude. The evocation of melody, with its concomitant notions of expressivity and lyricism, seems anathema to the rhetoric of not only the writings of spectralism's early practitioners but many broadly scientising motivations in post-war post-tonal music. Yet Grisey's assertion appears accurate: melodic lines are undoubtedly present in many spectral and "post-spectral" works. Unlike returns to melody which appear to reference previous stylistic features, such as those related to the so-called 'neue Einfachheit', the appearances of melody within spectrally-influenced aesthetics are less marked. Rather, treatment of melody is in keeping with the early practitioners' focus on 'liminal' and transitionary thinking as fundamental to their new compositional approach [3]; that is, playing with the ambiguity across a pitch-melody threshold further embodies the goal to abolish the clear distinctions between musical phenomena, in contrast to the stark divisions of parametrical compositional approaches.

This paper proposes a noise-pitch-melody axis through which to analyse these works. Applications of this expanded framework can reveal important structural features. To situate spectral-melodic thinking more broadly with perceptual concerns, I revisit Bergson's conception of *durée* [1], a major influence on Grisey, with aspects overlapping with his 'flesh of time' [3]. And for Bergson, it is *melody* which ideally exemplifies *durée,* due to its perception as a single entity and play with subjective evocations. Following this lead, I explore how guiding spectral principles can be viably expanded to melody.

I introduce the application of this axis through an examination of Grisey's *Prologue,* followed by two analyses. First, the gradual materialisation of a melody in Vivier's *Zipangu* (1980). Out of the opening allusion to the technique of spectrographic imitation a single melodic line emerges. Over the piece's variation form, this incipient melodic material crosses the threshold to become increasingly autonomous, embodied by an elaborate virtuoso violin appearing above a chorale of overtone series-related chords derived from the opening melody. Second, Haas' dialectical approach to material in his solo violin work *de terrae fine* (2001) is manifest in the deconstruction of melody itself. Through setting up an opening dialectic between the *Sprachmelodien*, or pure vocality, and single pitches, Haas separates melody's constituent parts. These cross their respective thresholds to fuse into an unambiguous melodic line at the climax, thus tracing the genesis of melody.

These analyses show how hearing through a pitch-melody axis changes both the perception of these works and their situating within broader aesthetic contexts. There lies a tension, however: whilst remaining faithful to foundational tenets of the early writings, the resultant melodies are relative familiar expressive gestures. That is, despite their contrasting

aesthetic roots to the instances of marked melody, the characteristics of the resultant melodic lines are not notably dissimilar. Ultimately, therefore, I conclude that it is perhaps less a 'reinvention of melody' as Grisey hoped, but rather a reinvention of its relationship to structure, achieved through threshold thinking.

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Bio
James Donaldson is a PhD student in Music Theory at McGill University. His work focuses on semiotics and topic theory applied to post-tonal music, theories of Surrealism in music, and Spectralism. He holds a Bachelor's from Christ Church, Oxford and a Master's from King's College, London and has presented work at conferences in Europe and North America.
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THE VIRTUOSO LISTENER: ON SPECTRAL MUSIC AND LISTENING

Michael Francis Duch

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It's easy to be charmed and fascinated by child protégés playing perfect renditions of classical masterpieces. Or record-breaking sportsmen and women seemingly defying the laws of nature. Listening skills however, are seldom regarded in the same way. I would suggest that perhaps the art of listening can be viewed in the same way as an accomplished wine-taster; as someone who can identify micro-details by using his or her senses, and often combining them to achieve this goal. The virtuoso listener is someone who can identify elements in sound that most people can't or don't pay any attention to. In Magnus Mills' recent novel, *The Forensic Records Society,* two men form a listening society to elevate their listening experiences built on their assumption that most people really don't pay attention when listening to records. The whole ordeal becomes a ritual akin to a Japanese tea-ceremony.

So how does one become a virtuoso listener then? I believe that we could look to how we experience by using our senses in other situations, such as in Wine- or Whisky-tasting. The way you approach whisky tasting is firstly by the glass it is presented in, and its shape will affect the way you experience it. In the same way, the room sound is presented in is an important factor on how you experience it. Visually, you would determine what kind of whisky it is you are dealing with by looking at its colour and texture by swirling the glass and noticing how the whisky reacts: is it oily and thick, dark or light? In the same way as in whisky tasting, we use words as colour and texture to describe sound and its density. When listening to a record or live music, we often notice the sound and if it is clear muddy or distorted.

Inspired by this approach and having worked with Pauline Oliveros and her music, I developed an exercise called Sound Tasting, in lack of a better name. In short, this is a real-time spectral analysis combining listening and creative performance. An ensemble of musicians will listen to one person playing a sound and imitate this sound. The ensemble will then have to collectively solve this and balance the sound within the ensemble. If the main source is a low E on a double bass, the ensemble is supposed to eventually sound like this open E-string when the bass player fades out. As no musician are allowed to play the same note or sound, the ensemble has to negotiate who plays what and balance this sound within the ensemble; someone will play the fundamental and others overtones, the sound of the bow strokes etc. When successful the ensemble has created a real-time spectral analysis of a given sound by listening and creatively as well as collectively recreating this sound. In this presentation I will discuss my experiences with this exercise with various student ensembles as part of my teaching, as well as with professional experimental music ensembles such as the Glasgow Improvisors Orchestra and others.

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Bio
Michael Francis Duch (1978) is a double bass-player and Associate Professor at the Department of Music, Norwegian University of Science and Technology (NTNU) in Trondheim, where he currently holds the position as Head of Department. He has been involved in more than 60 recordings and regularly performs improvised and composed music both solo and with various ensembles.
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FOUNTAINS OF MY SKY: UNDERSTANDING HORAȚIU RĂDULESCU'S 'SOUND PLASMA' THROUGH ARCHIVAL RESEARCH

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This presentation aims to provide a comprehensive overview of Horațiu Rădulescu's theory of plasmatic sound. This overview will be drawn firstly from the analysis of primary documents from the composer's personal archive, his 1974 composition treatise *Sound Plasma–Music of the Future Sign* [4], and various third party theoretical texts; and secondly from an analysis of his 1973 gesamtkunstwerk *Fountains of my Sky*.

As the official archivist for Lucero Print and the Horațiu Rădulescu Archives in Daillens (Switzerland), I have had an unprecedented level of access to the composer's original documents, sound recordings, photos, sketches, and other materials. By making reference to these, coupled with a close reading of Rădulescu's nebulous composition booklet Sound Plasma, my presentation will provide an examination of the underlying themes present in his early works of 'plasmatic music' (composed within the period 1969 to 1984). We will see Rădulescu's music as situated within a broader continuum of compositional practice that includes the work of artists such as Dane Rudhyar, Giacinto Scelsi, Karlheinz Stockhausen, and perhaps even Harry Partch and La Monte Young. Of note will be Rădulescu's fascination with the philosophy of religions (particularly the writings of Mircea Eliade). Through this we will understand that the motivation for his folding timbre, tuning, form, and rhythm into a single entity (the 'sound plasma'), was an attempt to achieve an expression of the mystical, the ritualistic, and the occult.

The work *Fountains of My Sky* (for 7 clarinets, pipe organ, and 42 children speaking 42 languages of the world) will function as an example par excellence of these compositional processes in action–we will see all the various ways in which the time cycles and spectral functions of the work mirror each other, in a space where there is no sensible linear progression of time, pitch, or timbre. Through a reading of this work, Rădulescu's spectralism will be revealed to be of a fundamentally different nature than that of the founders of the French école spectrale: responding to a fundamentally different set of problems and employing a fundamentally different set of compositional methodologies.

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Bio
Samuel Dunscombe is a performer-composer specialising in the use of clarinets, computers, and microphones. Samuel is interested in work that explores the multi-dimensional perception of time, which has drawn him to areas including improvisation, the performance of complex-notated repertoire, field recording, audio engineering, and live electronic performance. Samuel is the official archivist for the Horațiu Rădulescu Archives and Lucero Print in Daillens (CH). He has a doctorate from UCSD, with a dissertation focussing on the works of Rădulescu and the creation of new plasmatic music for massed clarinet.
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THE SENSE OF MUSIC IN SCELSI'S COMPOSITIONAL THINKING

Dimitris Exarchos

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Giacinto Scelsi's first writing on music aesthetics, 'Sens de la musique' (1942/44) [5] elaborates on the sense of music as a complex equilibrium between the fundamental elements of music (rhythm, melody, harmony, construction) and the human elements (rhythm, affect, psyche, intellect). The complexity of that equilibrium indexes a highly intricate mode of relating to musical sound. According to Tristan Murail, Scelsi did not 'com-pose' with sounds; rather, he seemed to 'pose' (*poser*) sound in its physicality [2]. Rhythm and materiality are fundamental in this; the former is conceived as the *puslion vitale,* common to both human and music, and the latter as *klang,* the 'sonorous matter' on which listening projects 'images' created by the fundamental elements. These ideas can be traced back to the philosophy of Henri Bergson, and were further developed by Scelsi in his writings of the 50s (e.g. 'Son et musique' [5]). Another important influence is that by Rudolph Steiner, who suggested that the experience of sonic differentiations on a single note would be the highest point music's long evolution [4]. Scelsi's landmark *Quattro Pezzi per orchestra (ciascuno su una nota)* [Four pieces for orchestra (each on a single note)] (1960) is a first musical response to these ideas.

On the philosophical domain, a link between Scelsi's musical and human elements can be found as a that between musical materiality and listening, in the recent work of Jean-Luc Nancy. In Nancy's thinking thinking the notion of *sense is central:* listening (sensing) is in search of meaning, while at the same time touching on the materiality of sound. Sense is taken by Nancy in its multiple meanings: sensibility, sensation, intelligibility, orientation; and is always in excess of meaning. Western art music frequently draws on rhetoric, in a certain kind of mimesis; and musicology often resorts to linguistic analogues (e.g. gesture). However, Scelsi's musical material, in its heavy reliance on fluid continuous sounds, eschews analogy with language (which consists in discrete words) or traditional analysis,

for that matter; *Quattro Pezzi* is a perfect example of music conceived in its materiality and its mode of existence as sonorous, acoustic time and space. As Gérard Grisey pointed out, some composers 'have a way of saying things with sounds'; others, like Scelsi, engage in exploring the world of sound [1].

This talk will attempt a re-conceptualization of Scelsi's musical thinking according to Nancy's conception of musical listening; of *resonance* as the space and time of sounding, but also the space of the self; and of timbre as the materiality of sound itself. In Nancy's words, 'resonance is at once listening to timbre and the timbre of listening [...]; at once [resonance] of a body that is sonorous for itself and resonance of sonority in a listening body that, itself, resounds as it listens' [3]. Such mode of thinking is useful in exploring Scelsi's equilibrium between the musical and human elements, and the phenomenological space of resonance that opens up between listening and sounding bodies.

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Bio

Dimitris Exarchos is a theorist and musicologist. He has published in books and journals on 20th-century composition, theory, and analysis; organised symposia (Xenakis International Symposium; Notation in Contemporary Music; Compositional Aesthetics and the Political); and curated concerts and events (Southbank Centre; Goldsmiths; Migrant Sound). He is currently Visiting Research Fellow at the Contemporary Music Research Unit, Goldsmiths, University of London.
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THE ROOTS AND THE CLOUDS: ALLER-RETOUR FROM AXIAL HARMONIC FIELDS TO SPECTRA, AND FROM RHYTHM TO TIMBRE IN JONATHAN HARVEY'S *ONE EVENING*

Candida Felici

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Jonathan Harvey cannot be considered as belonging to one specific stylistic movement of modernist music. His style is often defined as operating a synthesis of serial and spectral thinking. The present paper aims at highlighting the growing importance of the spectral component in Harvey's style since the Seventies. In Harvey's music spectral thinking is associated with the constant use of new technologies and with a strong spiritual interest: indeed, in his later years Harvey became more and more involved with Buddhism, which influenced deeply his musical output.

This paper will propose a close examination of *One Evening* (1993-94) for soprano, mezzo-soprano, ensemble and electronics, which was commissioned by the Electronic Music Studio of WDR in Köln. The texts, by Han Shan, Rabindranath Tagore and from the Heart Sutra, develop the Buddhist concept of Emptiness. *One Evening* shows the continuous shifting from one sonic dimension to another, or from one perception of the musical material to another, which is typical of Harvey's late works: rhythm becoming timbre, chords becoming spectra, and vice-versa.

In particular, two apparently contrasting compositional techniques are adopted: symmetrical harmonic fields and harmonic spectra, both being in fact the same thing seen from two different perspectives. Indeed, in the first movement, the chords built symmetrically around the axis A-B flat, sung by the two voices, are then repeated but considered as partials of a virtual fundamental added in the electronics. The integration of these procedures and the shifting from one state to the other in the course of the piece with the aid of the electronics correspond to spiritual motivations and to the opposition-integration of the symbolic (intervallic) and the semiotic (spectral) worlds, as described in Julia Kristeva's writings.

Also the boundaries between rhythm and timbre are broken, because rhythmic acceleration brings to its transformation in 'shimmering colour' (Jonathan Harvey, *Programme Note*), while the opposite phenomenon of timbre becoming rhythm represents a sort of embodiment (rhythm as dance). Inspired by French spectralism but also by Stockhausen, Harvey plays with the perception of time, superposing accelerando and rallentando rhythms. Even if they seem to go the opposite direction, in reality both get to a state of stillness, of stasis.

The perceptive ambiguity, and the acoustic illusion it generates, is an image of the continually changing appearance of things, of the illusionary nature of reality, of the ultimate Emptiness. Ambiguity is not only attained through the continuously shifting parameters,

but also through the interaction of two tablas, one real the other electronic, and through the treatment of the two voices as 'not-one', in a sort of de-subjectivisation.

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Bio

Candida Felici earned a PhD in Musicology at Fribourg University (CH) and was awarded a post-doctorate fellowship from Bologna University. Her research focuses on post-World War II music and in particular on issues of intertextuality and multi-culturalism; she also specializes in Baroque music, with special attention to issues of migration of both music and musicians. Since 1999 she is the pianist of the Dynamis Ensemble, devoted to contemporary music. She is Professor of Musicology at Como Conservatory, Italy.
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VERBLENDUNGEN, IO, SOLAR: RESTRUCTURATION 'SPECTRALE' DES HARMONIES 'FONCTIONNELLES' DANS LE DÉVELOPPEMENT DE LA FORME TÉLÉOLOGIQUE
Clara Foglia

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"En règle générale, c'est l'harmonie qui me vient le plus rapidement à l'esprit lorsque je commence une nouvelle pièce. Si les méthodes que j'ai exploitées ces dernières années sont restées plus ou moins les mêmes – et si les résultats se ressemblent, c'est sans aucun doute parce qu'ils sont passés par le filtre de mes oreilles –, j'éprouve toujours le besoin de redécouvrir des harmonies adéquates pour chaque pièce en cours de composition. Autour de ces structures verticales, je commence dès lors à développer les autres paramètres, dans le temps, la profondeur et les couleurs." [5]

Dans la plupart des écrits sur les techniques de composition de Kaija Saariaho, le concept 'd'harmonie' est souvent utilisé en relation avec celui de 'forme' et en référence aux modèles de structuration hiérarchique de la musique tonale, qui sont les seuls capables,

selon le compositeur, de créer des formes dynamiques et développer des structures 'natu-relles' audibles. Même si le point de départ est l'analyse spectrale d'un son complexe, la musique électroacoustique ou mixte, malgré l'apparente nouveauté de son matériau, a sou-vent recours à des méthodes plus traditionnelles de structuration qui permettent aux com-positeurs d'établir des équilibres formels et de placer leurs principes de composition dans un plus large contexte historique [1], comme dans le cas des trois œuvres pour lesquelles je propose une analyse comparative appuyée par l'examen des esquisses préparatoires [Paul Sacher Stiftung].

Verblendungen (1984), *IO* (1986-87) et *Solar* (1993) – appartenant au groupe des formes définies téléologiques – sont fondées sur le même principe harmonique : à partir d'un 'accord de base » – construit sur l'analyse d'un son complexe – à partir duquel le composi-teur extrait une sélection de partiels liés au plan perceptuel (à l'aide de programmes basés sur les algorithmes d'Ernst Terhardt) – l'harmonie se déplace dans différentes directions dans des nouvelles structures verticales, une fois parvenue au degré maximum de différen-ciation par rapport à l'accord de base (par augmentation de l'inharmonicité ou par la tech-nique du 'fold-over') l'harmonie se défait à nouveau pour retrouver l'accord de base [3, 5].

Puisque le principe qui régit la structuration des formes téléologiques est celui de la varia-tion continue d'un ou plusieurs éléments de base et puisque le développement tensionnel de la forme dépend du degré de ces variations [1, 4], les agrégats sonores dérivés de l'ac-cord de base seront analysés et catalogués en fonction du contenu de leurs intervalles et de la position que les différents intervalles occupent au sein des agrégats eux-mêmes pour définir les différents niveaux de 'consonance' ou de 'dissonance' qui articulent la totalité de la forme dans son dynamisme. Nous analyserons également le degré de dérivation 'linéaire' des harmonies, puisque - dans la perspective d'une sorte de restructuration 'spectrale' de l'harmonie 'fonctionnelle' –le degré de tension qui structure la pièce dépend du rôle joué par l'accord dans un contexte donné, c'est-à-dire que sa 'fonction' dépend des événements qui le précèdent ou le suivent.

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Bio
Clara Foglia, née à Agropoli (Italie) en 1987, étudie le violon et obtient son diplôme avec mention en 2016-2017. Elle est étudiante au sein du département de Musicologie et du Patrimoine Culturel de l'université de Pavia. Son mémoire de maîtrise sous la direction de Ingrid Pustijanac et Gianmario Borio porte sur la musique orchestrale de Kaija Saariaho. E-mail: clara.foglia01@universitadipavia.it

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PROCESSES OF SPECTRALIZATION: FROM JOSQUIN'S MISSA *"L'HOMME ARMÉ"* SUPER VOCES MUSICALES TO HAAS'S *TRIA EX UNO*

Mike Ford

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What some scholars have called the school of spectral music emerged early in the 1970's, with composers making sound itself their object of study and their primary source of material. Whereas many earlier composers have ignored or neglected the expressive capabilities of timbre, composers of spectral music have made it the primary element in their works, using the overtone series as a point of reference. Robert Hasegawa maintains that "the essential characteristic of spectralism is the dissection of sounds into collections of partials or overtones as a major compositional and conceptual device. Spectral composers use the acoustical fingerprints of sounds–their spectra–as basic musical material." My research points out an aspect of spectral music that has not been fully explored yet: the use of musical borrowing–the application of spectral techniques to existing material. This forces us to reconsider sound, which serves as the basis on which composers of spectral music construct their pieces, to also include precomposed sound that is abstracted through notation.

In this paper, I discuss the spectral treatment of existing music in Georg Friedrich Haas's *Tria ex Uno*, demonstrating the distinctive spectral paradigms and techniques that Haas has used to transform the second 'Agnus Dei' from Josquin Desprez's *Missa "L'homme armé"* Super Voces Musicales (which employs borrowing techniques itself) into *Tria ex Uno*. These techniques include the emphasis on timbre; a nonlinear view of musical time; the use of the harmonic spectrum, stretched and compressed versions of that spectrum, and polyspectrality, i.e. the simultaneous use of more two or more spectra; and organizing the music through processes instead of progressions. The borrowing techniques and treatment of existing music used in Tria ex Uno are found in many other quotational works by composers of spectral music. I demonstrate the transformation from the 'Agnus Dei II' to *Tria ex Uno* by revealing Haas's specific spectral paradigms and techniques within a framework of Peter Burkholder's and Richard Beaudoin's work on musical borrowing. My aim is thus to provide a means to understand the spectral treatment of existing music within the discourse on musical borrowing; but also to expand the discourse on musical borrowing to include spectralization.

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Bio
Mike Ford is a PhD student at Columbia University. He has worked extensively on spectral music and is currently doing a project on improvisation in non-musical settings. He is a regular conference presenter and his work has been published on three continents. Mike's research on musical and non-musical improvisation is also put to practical use in his cybersecurity startup.
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SHIFTING THE PLANE OF AUDITION TO ANALYZE THE ROLE OF ACOUSTIC RESONANCE IN THE WORKS OF MORTON FELDMAN AND ALVIN LUCIER

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Essays about the music of Morton Feldman and Alvin Lucier typically emphasize how the materiality and perception of the music elude conventional analytical approaches. As with music in the spectral tradition, composers and scholars of American experimental music invoke "the sounds themselves" and the "intimate perception of natural sonic phenomena" [1, 2] through a discourse influenced by the scientific understanding of nature. However, the literature on the music of Lucier and Feldman has positioned the issues of materiality and perception as boundaries to the analyses, rather than as a domain for analysis.

This paper analyzes two closely related approaches to aestheticizing acoustic resonance in Lucier's *Ricochet Lady* (2016, glockenspiel) and Feldman's *Triadic Memories* (1981, piano). In both works the scores prescribe disciplined actions for the performers that require of the performers a mode of listening that interferes with the perception of the complex acoustic resonances that result. In contrast, the audience is implicitly tasked with listening past the repetitive sequences of pitches played by the performer through to an independent auditory stream that coalesces from the acoustic resonances. In *Triadic Memories* these are resonances in the piano; in *Ricochet Lady* they are resonances of the room in which the piece is performed. In both cases the performer is alienated from their labor.

Scholars frequently characterize the works of Lucier and Feldman in terms of non-intervention, that is, in terms of the composers stepping out of the way to let sound be. Recent scholarship on American experimental music has criticized such depictions for falling into the "modest witness" trap [3, 4]. Building on this critique, I theorize an aesthetic framework in terms of sensitivity to the relations between 1) the modes and scales of "intervention" [5] of the composer and performer and 2) the scales at which forms are perceived by the

listener. I argue that the temporal discrepancy between the interventions and the perceived forms is a defining characteristic for the repertoire considered here and is crucial to how the literature positions the music in relation to nature.

My methodology relies on three approaches: 1) I generate new recordings that foreground the acoustic resonance and allow the comparison of immediate vs. cumulative resonances. 2) I use drastic audio filtering of recordings to isolate key textures and rhythms in the acoustic resonances that are not described in the score. 3) I use additive synthesis to model interference patterns tied to specific overtones. This reconciles salient features of the listening experience with the stark emptiness of the score, a discrepancy that is frequently commented upon in the literature.

Although the literature on the music of Feldman and Lucier acknowledges the importance of acoustic resonance, analysis of the salient features that slip through the score has been neglected. This paper maps out this neglected territory using a methodology that could be applied to other repertoire in which instruments and rooms are "forced by impediments" [5] into unusual states in which acoustic resonance takes on a life of its own.

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Bio

Daniel Fox is a doctoral candidate at the Graduate Center, CUNY. His music has been performed by the Jack Quartet (upcoming) and Talea Ensemble and his writing has appeared in *Perspectives of New Music*, *Hyperallergic*, and *Van Magazine*. He has published mathematics research in the *Transactions of the American Mathematical Society*. His dissertation investigates acoustic resonance in American experimental music.
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TRANSTEXTUALITY TECHNIQUES AND SPECTRAL MANIPULATION IN FAUSTO ROMITELLI'S LATE COMPOSITIONS

Luca Guidarini

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My presentation focuses on the relationship between transtextuality and spectral manipulation in the cases of *Audiodrome* (2002) and *An Index of Metals, Hellucination I – Drowningirl* (2003) by Fausto Romitelli. References to pre-existent musical materials in the musical language of the Italian composer, assume a various degree of integration in his compositional techniques and define them simply as "quotations" deprive them of their semantic value. Refusing the integration of the stereotypes and hybridization of the musical languages those surround him, Romitelli works in order to metabolize the techno-morphic qualities of the external musical stimuli. For him, the "true nature" is the sound that is reproduced, filtered, transformed, synthesized, not the acoustic one, which belongs to history. He needs to integrate the "power of electric and electronic sounds" [1] and to transform every sonic material in an electronic flow, in order to return to a natural comprehensibility of the musical language.

The five transtextuality categories [4] help to contextualize the use of quotations and their transformations in Romitelli's compositional techniques. The case study of *Audiodrome* and *An Index of Metals, Hellucination I – Drowningirl* (based on the study of the sketches, preserved by Giorgio Cini Foundation, Venice) evidence different approaches with the models: *intertextuality, hypertextuality and architextuality*.

The first twenty-nine bars of *Audiodrome* represent a case of transformation of a pre-existent model: the *Nacht-motive* from Johann Strauss' *Eine Alpensinfonie*. The spectral manipulation within the repetition of the *Nacht-motive* highlights the metabolization of the sonic quality of the model by the composer in his musical language, presenting it first as an *intertextual* quotation and then becoming *hypertextual allusion*.

An Index of Metals, Hellucination I – Drowningirl exemplifies a case of *architextuality*. The model evoked by the title is a homonymous song by Brian Eno and Robert Fripp: a twenty-eight-minute-long piece composed by the manipulation of guitar-drone models. The idea of manipulation of a single tone is the formal principle of both Romitelli and Eno/Fripp pieces. The study and the analysis of the sketches permitted me to clarify the musical and synthesis techniques whose evoke the sensation of drowning -explicit by the text by Kenka Lekovich- and connects the compositional process of this section with the composer's interest for the frequency modulation synthesis, that enables him to create a complex word of sounds.

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Bio
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STRUCTURE AND PERCEPTION IN THE MUSIC OF GÉRARD GRISEY

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By discussing the term 'structure' in regard to spectral music, it might be helpful to reconsider serial ideas of structure against which Grisey loved to polemize. In this context, the following questions could be debated controversially: How can serial and spectral notions of "structure" be defined? How are they related to perception? Is it justified to describe Grisey's approach as "poststructuralist"? On the one hand, in the heydays of integral serialism, musical order was defined as a result of the execution of structural rules which interpenetrate one another. The composer does not "compose", but he experiences the becoming of music. On the other hand, Grisey was critical towards this approach (although he admired Stockhausen). His aim was to work through structuralist aspects under the directive of perception. This can be exemplified by analysis.

In *Prologue* for viola solo (1975), Grisey uses the technique of symmetrical permutation which was also frequently used by serial composers. However, his aim is to interlink structure and perception. In *Prologue*, melodic figures are consistently dissolved and re-established as a result of wavelike processes of permutation. Furthermore, the figure is projected on macroform. Thus, the structural complexity becomes audible, and Grisey is enabled to implement his aesthetic credo: "La *structure,* quelle que soit sa complexité, *doit s'arrêter à la perceptibilité du message*" [3].

In some passages of his works – like in part D of *Modulations* (1976/77) – Grisey transfers this approach on dense instrumental textures. Thus, however, he seriously challenges the outmost limits of perception. Obviously, it is hard to perceive the relation between figural micro- and macro-elements and the spectral coherency of timbre and form within dense orchestral settings. Therefore, we could ask: Is it possible to balance the complexity of structures according to the perceptibility of message? Did Grisey neglect his aesthetic credo?

There might be a way to overcome this dilemma: Grisey's approach towards structure is based on the simultaneity of different modes of listening. The question which aspects of micro- or macrostructure we perceive, depends on our perceptual distance, our attentiveness, the primacy of presence or absence and other factors. Resulting questions are exemplified by reflecting on selected passages of Deleuze's *Francis Bacon: Logique de la sensation.* As a consequence, this discussion of structural, perceptional and philosophical questions could lead towards potentials of musical analysis which shall be outlined in this lecture.

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Bio
Lukas Haselboeck studied musicology, composing and singing in Vienna. Since 2001 he teaches Music Analysis at the University of Music and Performing Arts in Vienna. Main field of research is the music of the 20th century: Debussy, Ravel, Viennese School, Ligeti, Spectral Music and timbre research. As a composer, he wrote vocal, chamber and orchestral music and three operas.
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WHAT SORT OF VIRTUAL SPACES ARE SPECTRAL SPACES?

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Spectral Music, as it evolved from *L'Itinéraire,* was never systematically adopted into computer music composition with the same aesthetic and technical priorities of the movement's founders. In other words, no Spectral electroacoustic music movement evolved. Some might argue that it arose implicitly, in individual's practices or in pieces that embrace Spectral thought; but that differs from a shared methodical effort. This observation is noteworthy, if only because the tools of computer music are ideal for the sculpted control or generation of timbral minutiae. This paper assesses one aspect of contemporary computer music in which a spectral attitude, and techniques that flow from it, can be powerfully applied. That aspect is spectrally driven electroacoustic multi-channel audio design which can enable unique types of virtual spatializations.

Even if the Spectral movement's principles are applied to acoustic sound's physical embodiment, e.g., via instrumental seating placement, the impact of such spatial specificity is limited by the reverberant mixing of sounds in the hall. In contrast, spatial construction or reconstruction of timbre using loudspeakers is capable of virtually limitless control. What is the result? With multi-channel audio playback, computer reconstructions of sound spectra can create artificial sculptural forms, that can, in a sense, pick up where Spectral acoustic music has left off. Spatialization technologies, in other words, offer another 'medium' for spectral compositional approaches. One implicitly spectral approach is to promote the perception of unified forms in three-dimensional space. My paper thus discusses binaurally fused forms that transcend stereo images, concerned not so much with sound in space, but rather with spatial form that appears incipient in timbre. Much like Spectral music, the perceptual impact of such results is intervention in traditional concepts of form. Spatially constructed sound is, after all, form itself.

The foundational approach that this paper will discuss is the extrapolation of the spectrum from a recorded or synthesized sound, and the locational separation of the components. It is the distribution of a spectrum in space that affects perceptual time and loudness differences; these determine what might be called a sound's 'cohesion,''intensity,''fullness' and internal life, as well as its location. As the spectrum is distributed artistically it may suggest literality or a metaphoric realization of it [1]; or, conversely, it may suggest a distorted reality.

This paper will make these points through the analysis of recent artistic research of mine that uses an 8-channel level horizontal ring. I will present the results in the form of a binaural representation in stereo. Second, I will present an example of stereo computer music, *Motion-Émotion* (1985-1988) by François Bayle [2], that, I will suggest, is an early example of
a spectral approach to sound spatialization in the stereo realm. Computer music has a unique incentive, through its inherent capacities, to reclaim some spectral principles for its own uses. Furthermore, high density multi-channel speaker spatial design has challenges

that Spectral Music's legacy could help to address. Spectral Music traditionally expanded objects in time; Computer Music has a profound potential to expand them spectrally in space.

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Bio
Elizabeth Hoffman composes electroacoustic music using computer and acousmatic approaches; she also writes acoustic music. She teaches at New York University, where she co-directs the Waverly labs, in the School of Arts and Science. Recognition has come from Bourges, Prix Ars, Jerome Foundation, Pierre Schaeffer Competition, MacDowell, and an International Computer Music Association Commission Award.
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REVEALING COMMUNITY: ANALYZING TRIBUTES AND MEMORIALS TO GRISEY, 1998–PRESENT

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The sudden death of Gérard Grisey twenty years ago put a sudden, tragic punctuation mark on the career of that innovative spectral composer. In the months and years that followed, tributes flowed from colleagues, students, and scholars. Colleagues memorialized Grisey in obituaries in Le Monde, The New York Times, and The Independent. Composers dedicated new musical works to Grisey's memory, often drawing on elements of Grisey's style in their musical choices. In new journal issues, monographs, and compiled volumes, scholars delved further into writings and sketches that were archived at the Sacher Stiftung in Basel. Finally, Grisey's works reached a broader audience through commercial recordings and prominent concerts. Perhaps the most notable of these concerts was the posthumous premiere of his last work, *Quatre chants pour franchir le seuil*, less than three months after the composer's death.

This multi-media corpus of tributes and memorials offers a rare opportunity to consider the construction of communities, including the interaction and influence of composers on one another, in spectralism specifically and new music generally. How do spectral composers construe their choices and activities within a community of like-minded individuals? What influences did Grisey have on his colleagues and students, and how do their remembrances

of him –textual and musical– reveal these influences? Do these tributes and memorials constitute an effort to shape the discourse around Grisey's contributions –to historicize his career and importance? How do these memorializing narratives thus reflect one's personal interpretations and stakes in Grisey's legacy?

This talk comprises an analysis of a corpus of tributes and memorials to Grisey, published from November 1998 to the present. I treat major obituaries, concert programs, CD liner notes, and scholarly volumes as attempts by authors to establish Grisey's importance for modern music and to (often covertly) explain his influence on their own thinking and careers. My focus will be on an intriguing subset of this corpus: musical works dedicated to Grisey. These works display various intertextual connections with Grisey's oeuvre [1], ranging from the reinterpretation of entire pieces [2] to sung texts addressed to the deceased [3] and even the quotation and reinterpretation of Grisey's musical materials [4].

Building on work on nineteenth-century musical dedications [5]; I argue that the reference to Grisey's pieces, style, and ideas in works dedicated to his memory is an act of remembrance, historicizing, and community building. What emerges is a perspective that views spectral composers as a group of like-minded, communicating musicians. This view is refracted through a central, historical event –Grisey's death– which spurred historical, musical, and scholarly activities with ramifications down to the present day. My analysis examines how this community's public responses to this event revealed their implicitly shared musical intuitions, theories, and sense of music history. Finally, my analysis traces how discussions of Grisey's music, style, and aesthetics continue to be shaped by responses to his passing.

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Bio
Joseph Jakubowski recently received his PhD in Music Theory from Washington University in St. Louis. His dissertation, "Between Concept and Perception: Cognition, Experience, and Form in Spectral Music" draws on cognitive theories of communication and perception to interrogate music from composer, performer, and listener perspectives.
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ENTROPY AND THE ANATOMY OF TIME: COMPOSING WITH SPECTRAL ENTROPY

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One of the fundamental tenets of the "spectral attitude" is to devise methods to observe and utilize the development of sound in time. While a myriad of techniques that allow an evolving sound to inform the compositional aspects such as pitch organization and orchestration are readily available, it is curiously less established that the sonic phenomenon is equally informative to the rhythmic domain of composition [1]. This paper proposes the utilization of a rigorous method for detecting the changes in the spectral harmonicity to extract rhythmic information from a spectrum, and discusses the compositional and aesthetic implications of this method.

In the first section of the paper, the method of rhythmic extraction from spectra is introduced. Rényi entropy, the key element of this process, offers a considerable flexibility as a measure of spectral complexity [2]. The system's sensitivity to change is governed by the order of the Rényi entropy: the composer may select to observe only the considerable changes in the harmonicity of the spectrum, or may focus on the weaker components, adopting the more elusive deviations in the spectrum as compositional material. Entropy values between the analysis frames are compared and a flag is created when there is a change in entropy that surpasses a threshold value. The flags constitute the rhythmic onsets.

The resultant onsets can be quantized and used within a conventional rhythmic/metric context, however, the compositional/aesthetic implications of this method become more apparent when the onsets are notated with a custom notation where the extracted temporal distances are faithfully represented as distances between notational signs. The notational system, in tandem with the analysis method, aims to contribute the continuing efforts towards a non-discrete, non-striated mode of musico-temporal expression, where the information loss is considerably minimized both at the analytical and the compositional phases.

While this mode of expression predominantly relates to the composer-performer interaction, spectral entropy can also be used for guiding the listener's reception. The last section of the study exemplifies an approach in which a graph of 'formal entropy' that unfolds within the space between pure repetition (minimum entropy) and pure difference (maximum entropy) is used to shape the formal relations among the musical elements.

A potential to interact with Griseyan "skin of time" [3] emerges when this map of formal nexus is subjected to an analogy of entropic sensitivity: a higher order would reflect the most salient formal functions which presumably can be received even by a less-attentive audience, a low order would yield structural connections so elusive that they might only be captured by Grisey's "utopic" ideal listener [3]. Working with the multiplicities between these two extremities would allow the composer to explore a mode of structuring where the

actualization of the graph of formal entropy does not necessarily yield a pre-determined output, but a multi-faceted path that seeks to inform itself from the instance-specific experience of the listener [4].

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Bio

Yiğit Kolat's music explores the liminal frontiers of musical activity and potentialities in processing extra-musical data as musical information. His diverse output, described as "touching and convincing...a multi-sensory universe" (K. Saariaho), has been recognized by a prestigious array of international organizations, including the Tōru Takemitsu Composition Award, and Concours International de Composition Henri Dutilleux.
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REIMAGINING THE FAMILIAR: FINEBERG'S *VEILS*

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Joshua Fineberg's *Veils* for solo piano, written in 2001, mixes a fresh aesthetic and performative approach with recognizable formal procedures. Fineberg reimagines the relationship between the articulated surface of traditional piano music and the resonance that colors and enhances it. His aim in *Veils* is to shift focus to the resonance itself, the articulated surface serving to generate and act upon it. The damper pedal, depressed from beginning to end, allows the creation of a "canopy of sound", as the pianist Marilyn Nonken calls it, into which the performer introduces content in a complex and varied mix of textures, rhythms, and dynamic levels. [1] Since the score for *Veils* indicates only the articulated surface, absent the resonance that is the aesthetic focus, the relationship between the printed page and the realized sound is at a greater remove than usual. Hence the performer must commit to reimagining the relationship between score and music, and to hear and project the progress of music through time in a significantly novel way.

The relationship between score and music presents perhaps an even greater challenge to the analyst. Repeated sonorities, persistent pitches and pitch classes, and characteristic

intervals that occur on the articulated surface invite a familiar analytic strategy based on pitch-class associations and relationships. But the surface events do not, in Fineberg's conception, relate directly to each other in a conventional manner. In his words, "The interaction between the punctuated surface and the continuous undercurrent make up the form and movement of the piece." [2] Thus the heard relationship between the surface and the resonance becomes a locus of change and development; for example, at times of lesser surface activity, the resonance is more distinct, while at times of greater activity, the line between surface and resonance becomes blurred. Fineberg further differentiates between "small impacts", which merely "color (the) vibration", "larger impacts", which "are capable of completely eradicating the previous color", and "very delicate interactions" that "can… shift the evolution of the resonance without being truly perceptible…".

The recognizable formal procedures mentioned above include the piece's temporal structure, modeled on a Buddhist ritual, in which two types of framing music alternate with several contrasting episodes of highly individual nature. Fineberg further maintains that much of the piece transpires in unusually long phrases whose continuity may not immediately be apparent. Aspects of melody, gesture, cadences, consonance vs. dissonance, repetition and recurrence, are meant to figure naturally in *Veils*, despite its complex outward characteristics. [3] Adapting these familiar analytic notions will aid in parsing the musical surface within and with respect to the sectional divisions, while the concepts relating to resonance will provide a starting point for characterizing continuity and musical process, with an outcome relevant to performance considerations.

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Bio
David Kopp, music theorist and pianist, is on the faculty of the Boston University School of Music. He is the author of *Chromatic Transformations in Nineteenth-Century Music* (Cambridge University Press) along with articles and essays on theory, analysis, and performance of music of the 19th and 20th centuries. He has recorded for the CRI, New World, and ARTBSN labels.
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LA CONQUÊTE SPATIALE DU SPECTRE HARMONIQUE COMME MÉTAPHORE MUSICALE DE L'AVÈNEMENT DU SURHOMME NIETZSCHÉEN

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Le poème symphonique *Ainsi parlait Zarathoustra* de Richard Strauss (1896) prend place parmi les manifestations précoces de l'exploration musicale du spectre harmonique du son, bien avant l'avènement de la 'musique spectrale'. En effet, dès les premières mesures, sur une pédale de do grave (son fondamental) se déploient trois notes de trompette (do – sol – do) correspondant aux harmoniques 2 à 4 de ce même spectre. Le sens du recours à ce procédé est évident, puisqu'il est dicté par le titre de l'œuvre : il s'agit d'illustrer la théorie exposée dans l'ouvrage éponyme de Nietzsche, postulant l'avènement du surhomme grâce à la volonté de puissance. Cette 'évolution' est bornée par trois stades (l'animal, l'homme et le surhomme) auxquels répondent les trois harmoniques successifs joués par la trompette dans le prologue. Dans la suite du poème symphonique, il s'agira ainsi de développer un contenu philosophique déjà contenu en germes dans ces quatre premières notes.

En 1968, lorsque Stanley Kubrick s'attaque au genre de la science-fiction pour la première fois, il crée une grande épopée nietzschéenne basée elle aussi sur Ainsi parlait Zarathoustra – seulement, sans jamais rendre cette démarche explicite. Mais dans ce film particulièrement taiseux où les dialogues n'occupent que le quart de l'espace sonore, c'est à la musique que revient le rôle d'incarner les idées que le réalisateur cherche à véhiculer. Ainsi, le poème symphonique de Strauss résonnant dès le générique révèle, par son contenu conceptuel, les intentions philosophiques du film. Mais plus encore, Kubrick étire à l'échelle de l'intégralité de son film ce qui n'était qu'esquissé chez Strauss, c'est-à-dire l'exploration séquentielle des harmoniques du son. En effet, le choix des œuvres qui résonnent successivement au fur et à mesure des différents chapitres semble être dicté par la volonté de compléter le spectre entamé par l'œuvre de Strauss : *Le Beau Danube bleu* de Johann Strauss fils ferait entendre les harmoniques 4 à 6, et l'*Adagio de Gayaneh* de Khatchatourian les harmoniques 6 à 9 ; quant à la micropolyphonie du Kyrie et d'*Atmosphères* de Ligeti, elle pourrait prendre place parmi les harmoniques supérieurs de ce son unique. Reste alors à en comprendre la signification, en rapportant ce procédé au message nietzschéen de l'œuvre : si Kubrick projette la spatialité de l'infiniment petit (le spectre harmonique) dans l'infiniment grand de son odyssée spatiale, dans quelle mesure ce double voyage initiatique vient-il éclairer la portée philosophique du film ?

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Bio

Docteur en musicologie et professeur agrégé à l'Université Clermont-Auvergne, Benjamin Lassauzet a consacré sa thèse de doctorat à l'humour chez Debussy (en cours de publication). Il a également travaillé sur l'humour musical endogène, la fiabilité des enregistrements sur instruments reproducteurs, la notion d'extase chez Scriabine, les sources d'influences de l'album *OK Computer* de Radiohead, la théorie du deuil dans la 2e symphonie de Mahler...
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ANALYZING CONVENTIONAL AND NOVEL FEATURES OF SPECTRAL MUSIC IN JEAN-CLAUDE RISSET'S *VOILEMENTS* AND *SAXATILE*, FOR SAXOPHONE AND FIXED MEDIA

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Jean-Claude Risset's psychoacoustic research and electronic compositions in the 1960s foreshadowed the compositional trajectory of *Group l'Itineraire* due to his timbre-centered approach and understanding of sound. These objectives shaped his approach to composition throughout his career, although he focused on the timbral potential of digital synthesizers rather than acoustic instruments. Risset's electro-acoustic works including *Voilements* (1987) and *Saxatile* (1992), are an amalgamation of conventional traits heard in spectral works and novel features derived from his use of technology and his fixation on timbre.

A methodology for analyzing these two pieces for saxophone and fixed media reveals the ways in which his treatment of timbre, pitch, rhythm, and form connect to the acoustic spectral music of Grisey and Murail, as well as ways in which his use of electronics and the absence of distinct harmonic spectra disguise this link.

An analysis of *Voilements,* for tenor saxophone and fixed media, uncovers notable defining qualities of spectral music: a global form based on the juxtaposition of harmonic spectra, pitch and timbre conceived on a continuum, and the exploration of perception. The music features timbres ranging from noises to pure sounds in the saxophone and fixed media, while employing multiple harmonic series to create melody, harmony, and timbre.

In contrast, the direct implementation of harmonic spectra is absent in *Saxatile* and Risset camouflages other characteristic spectral qualities in this piece dedicated for the 71st birthday of Iannis Xenakis. Risset asserted that his use of the Unité Polygogique Informatique du CEMAMu (UPIC) was the only atypical element for him in the composition, yet it contains overt references to *Metastaseis* in timbre, texture, and the motivic use of glissandi. Nonetheless, further analysis connects *Saxatile* to the spectral tradition: stylistic allusions to the proto-spectralists Giacinto Scelsi and Xenakis, the use of psychoacoustics,

and a large-scale organization of structural decay in pitch, rhythm, and timbre. A comparison of these *Voilements* and *Saxatile* illustrates Jean-Claude Risset's incorporation of spectral qualities and fixed-media in contrasting works.

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Bio
Nicolas Lira is a saxophonist and music theorist based in Raleigh, North Carolina, USA. His research interests include spectral music, and the late compositions of Edvard Grieg. Nicolas completed his Doctorate of Musical Arts degree at the University of Missouri-Kansas City.
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POUR UNE APPROCHE 'NANO-SPECTRALE' DE LA COMPOSITION MUSICALE
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Apparu dans les années 1970, le courant spectral a remis au centre des préoccupations compositionnelles les propriétés acoustiques du son, proposant notamment grâce au développement de l'informatique de nouvelles conceptions de l'écriture musicale, des structures mélodiques, harmoniques et temporelles (notions de *processus* ou d'*interpolation*, par exemple) et questionnant des catégories qui opposaient jusque-là son musical et bruit, harmonie et timbre. Différents modes de représentation du son (oscillogrammes, sonagrammes) ont fourni de nombreuses informations concernant les propriétés sonores (enveloppe temporelle, amplitude, forme d'onde, évolution du spectre de fréquences, timbre, etc.), montrant que les micro-composantes spectrales sont toujours dynamiques.

Le spectralisme a donc initié une ouverture sur la richesse du phénomène sonore que l'oreille humaine ne pouvait saisir sans l'aide d'outils technologiques affinés. Le développement des nanosciences, dont la nanophononique apparue plus récemment, suscite des perspectives compositionnelles, des interrogations sur la possibilité de simuler les phénomènes nanoacoustiques qui fonctionnent à des fréquences de l'ordre du térahertz. Que le mode de vibration considéré soit un *infrason*, une onde sonore, un *ultrason*, ou

un *hyperson*, le phénomène est toujours oscillatoire et périodique. La nanophononique s'intéresse aux *phonons* acoustiques, petits quanta d'énergie de vibration à l'intérieur d'un atome de cristal, par exemple, dont la longueur d'onde est proche de dix nanomètres et dont la période est d'une fraction de nanoseconde. L'expansion de ce champ d'investigation entrouvre non seulement un monde acoustique inouï, puisqu'inaudible, mais aussi une spatio-temporalité insoupçonnée si l'on considère l'infime dimension des longueurs d'onde et des périodes.

À partir de l'analyse de spectres de sons complexes et instables, j'ai développé une écriture musicale qui fonctionne comme un système de coordonnées vibrationnelles, avec la superposition d'une multiplicité d'oscillateurs. Connectées par trois, les différences fréquences d'un spectre forment des micro-pendules. Modulaires, ceux-ci peuvent s'emboîter les uns aux autres, s'accrocher à n'importe quelle fréquence, migrer le long d'échelles micro-intervalliques issues de la juxtaposition des fréquences suraiguës du spectre. Leur énergie cinétique et la déformation permanente de leurs mécanismes de torsion élargissent le champ spectral. L'évolution harmonique de cette matrice sonore fluctuante, élastique et métamorphique se distancie de l'opposition *harmonicité/inharmonicité* introduite par le spectralisme, se situant plutôt dans une *anharmonicité* mutationnelle.

Je présenterai certains des processus de mes œuvres musicales à la lumière d'expériences en nanophononique et des graphiques qui s'y rapportent. Peut-on simuler la perception d'une échelle toujours plus réduite du monde sonore et convertir ses coordonnées dans des proportions audibles? Dans une temporalité hétérochronique, chaque onde de surface enveloppe des oscillations internes qui incluent des micro-oscillations englobant des nano-oscillations. Cette démultiplication ondulatoire peut se penser dans la superposition (l'épaisseur verticale d'un composé spectral dont toutes les composantes s'agglutinent en un agglomérat évolutif) et dans la continuité horizontale (une longueur d'onde animée d'une infinité de périodes toujours plus nanoscopiques et de mouvements sonores qui peuvent être rapprochés des coordonnées vibrationnelles des molécules décrites par la physique : élongation, déformation, balancement, agitation, torsion). Cela ouvre une dimension vers des territoires acoustiques sans bornes, vers une musique non plus spectrale mais 'nano-spectrale'.

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Bio
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PROCESS PHILOSOPHY OVERCOMING ITSELF: MODELING GRISEY'S *VORTEX TEMPORUM* (1994-96)

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Both Gerard Grisey [1] and his posthumous philosophical apologist Hugues Dufourt [2] emphasize Grisey's innovative approach to temporality. Surprisingly however, a processive model for analyzing Grisey's forms has not emerged. Theorists have shied away from modeling formal processes in Grisey's music perhaps because the appropriate modeling conflicts with Grisey's and Dufourt's ideological pronouncements grounded in the anti-quantitative polemics of French process philosopher Henri Bergson. Yet, resisting or overcoming Bergson's, Grisey's, and Dufourt's limitations, to instead offer a mathematical modeling of Grisey's music, we achieve a more ecological understanding of its distinctive processive temporality and holistic character.

Grisey stresses semi-predictable change and transition. Dufourt elaborates: "Grisey has always campaigned for...the creative and innovative role of time. [His] theory of art is deeply Bergsonian. ... interested only in quality, ... in variety, dissimilarity, heterogeneity. Following Bergson, Grisey asserts: what produces quality, what creates, what constitutes our power of diversification is due to change: change is irreducible to stable elements. Moreover, it is indivisible: change in music is not due to addition of phases, static points, or degrees" [2].

Dufourt preaches the brilliance of timbre (qualitative: known sensually) as rescuing us from the "darkness" of number (quantity: supposedly known through idealization), chastising "musicians of the 20th century who applied to time the ... conventional operations of measurement they have taken from space" declaring that "La musique n'est pas un assemblage." "Reality...is continual change and indivisive flux." It's the typical Bergson anti-quantitative polemic, claiming quantity is biased toward an aesthetics of assemblage rather than process.

Yet consider Grisey's *Vortex Temporum*. During its first section, a *fortissimo* arpeggiation from Ravel's *Daphnis and Chloe* is repeated, each time gradually dissipating into undulating quasi-repetitive waves [3]. The repetitions are strikingly and strategically inexact: clearly heard difference *and* repetition (as often experienced with natural phenomena). Its captivating quality seems to arise from this naturalistic taut interaction between *difference* and *repetition,* a conceptual pairing celebrated by Bergsonian philosopher Gilles Deleuze.

Correspondingly, I show three facets of *Vortex Temporum* being modeled (by "curve fitting") with basic mathematical equations also known for modeling such natural phenomena [4] as circadian rhythms, respiration, wind, climate cycles, sonic vibrations, and hydrodynamics, including the spiral motion of vortices. Specifically: 1) The oscillatory *Daphnis motif* is modeled as two "harmonically" related sine wave oscillators thus, corresponding to the experience of this ostinato as a particularly smooth, subtly complex, naturalistic wave, or in 2-dimensional plane as a twirling motion. 2) The series of interonsets between accented fortissimo *Daphnis motif* occurrence s is modeled as a sum of sinewave oscillation, linear trend, and random noise, corresponding to the experience of these repetitions as fluidly semi-predictable and teleological. 3) The pitch register of *Daphnis motif* transpositions is modeled as an exponentially amplifying oscillator, and this *amplifying oscillator form* is shown to be a feature it shares with Ligeti's Violin Concerto [5], composed only four years earlier. Both works exhibit a wavelike trend of increasing volatility, which can also be visualized as a spiral or vortex.

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Bio

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LE PROCESSUS COMPOSITIONNEL DE *LICHTBOGEN* DE KAIJA SAARIAHO

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Dans cette communication, notre objectif consiste à analyser le processus compositionnel de *Lichtbogen* (1985-1986), pour ensemble et dispositif électronique, de Kaija Saariaho (1952-), en nous appuyant notamment sur l'étude des esquisses qui sont conservées aujourd'hui à la Fondation Paul Sacher.

Lichtbogen illustre deux caractéristiques musicales importantes de ses œuvres des années 1980. La première caractéristique réside dans la volonté de Saariaho d'élaborer son propre langage musical en approfondissant la technique de la musique spectrale à l'aide des outils informatiques développés à l'IRCAM. En effet, pour élaborer son matériau harmonique, Saariaho analyse les différents types de sons joués par le violoncelle à l'aide du programme informatique IANA. En même temps, elle réalise des interpolations rythmiques avec l'environnement de programmation FORMES [3]. La seconde caractéristique est l'importance qu'attache la compositrice finlandaise à la dimension visuelle pour la mettre en relation avec sa pensée musicale. Dans le cas de *Lichtbogen*, elle s'est inspirée d'une vision d'aurore boréale en Laponie. Concrètement, elle fait des dessins de cette vision pour représenter la forme globale de l'œuvre [1].

Toutefois, si l'on examine les esquisses qui sont principalement composées des résultats obtenus à l'aide de l'informatique et imprimés, des dessins qui représentent la forme musicale et des manuscrits écrits avant la version finale, on constate quelques écarts importants entre les phases pré-compositionnelles mentionnées plus haut et la réalisation de l'œuvre. Par exemple, bien que Saariaho ait dessiné minutieusement la forme globale sur le papier millimétré pour contrôler les différents paramètres musicaux, ce dessin n'a pas été exactement reproduit dans la partition finale. C'est notamment le cas pour les trois premières minutes de l'œuvre. Le même constat est valable pour les résultats obtenus à l'aide de l'informatique; Saariaho n'hésite pas à transformer ces résultats pour les intégrer dans l'œuvre, ce qui explique, entre autres, que ceux-ci sont souvent peu reconnaissables à l'écoute de l'œuvre.

Selon Saariaho, *Lichtbogen* est une "musique qui respire" [2]. En effet, il semble que cette œuvre marque un tournant important dans la démarche compositionnelle de Saariaho qui prend désormais plus de liberté vis-à-vis des matériaux préconçus, contrairement aux œuvres qui précèdent *Lichtbogen*, telles que *Vers le blanc* (1982) ou *Verblendungen* (1982-1984), pour lesquelles elle adoptait une approche plus systématique. Ainsi, dans cette communication, notre étude se focalisera sur la façon dont Saariaho transforme aussi bien les idées initiales que les matériaux préconçus au cours du processus compositionnel, pour appréhender la raison et la nécessité de cette transformation.

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Bio

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ENCODING POST-SPECTRAL THOUGHT: KAIJA SAARIAHO'S EARLY ELECTRONIC WORKS AT IRCAM, 1982-87

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This paper examines the musical impact of computer programs developed at IRCAM during the early eighties, tracing their influence on post-spectral composition through an analysis of four works by Kaija Saariaho: *Vers le blanc* (1982, tape), *Jardin secret I* and *II* (1984-86, tape alone/ harpsichord and tape), and *IO* (1987, large ensemble with tape and live electronics). These works mark Saariaho's entry into computerbased composition, as well as her stylistic turn towards spectralism, and as such, they offer a unique perspective on a formative stage within the composer's career.

Already in – a piece created using an early version of the CHANT program for voice synthesis [1] – one finds Saariaho devising techniques that would become central to her work over the next decade. These include the development of interpolation systems to create continuous processes of transformation, the organization of individual musical parameters into multidimensional networks, and the construction of timbres based on the analysis of acoustic phenomena [2]. Looking ahead to *Jardin secret I* and *II*, one finds more complex interpolation systems and multi-layered temporal structures, both made possible by the higher-level scheduling controls introduced in the FORMES program [3]. And in *IO*, one finds an extension of these techniques into the orchestral domain, as well as an implementation of instrumental re-synthesis methods using IANA, a program for sound analysis that employed Terhardt's algorithm for determining the perceptual relevance of spectral components. Together, these pieces encapsulate a rich phase of artistic development for Saariaho, during which she harnessed IRCAMien technologies to progressively formalize

her musical thought within the crystalline confines of a customized program that was eventually dubbed "transkaija" [4].

To study the "transkaija" program, I spent three months researching Saariaho's archival collection at the Paul Sacher Stiftung, where I mined data from thick reams of printed code in order to reverse engineer musical processes that lie at the heart of works from this period. In addition, I examined the composer's handwritten sketches, lecture materials, and notebooks from contemporaneous seminars held at IRCAM. Through an analysis of these genetic artifacts, this paper aims to shed light on the role of technological mediation in Saariaho's creative process, demonstrating the kinds of theoretical insights that can be gleaned by merging music and media studies into a hybrid research program better equipped to address the problems posed by computer-based music.

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Bio
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L'INFLUENCE DE XENAKIS DANS LA MUSIQUE SPECTRALE DE GRISEY

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Gérard Grisey, l'un des premiers compositeurs français représentant de la musique spectrale, est devenu une des figures marquantes de la musique contemporaine. Sa musique et son esthétique se sont répandues assez rapidement dans toute l'Europe, donnant naissance à plusieurs générations de compositeurs prolongeant l'héritage du spectralisme, et donnant lieu à la publication de nombreux livres, articles, conférences et journées d'études dédiés au spectralisme.

La plupart des recherches musicologiques ont approfondi les œuvres phares, en particulier *Les Espaces Acoustiques*, *Tempus ex Machina*, *Les Chants de l'Amour* ou *Vortex Temporum*. Mais peu se sont intéressées sur le commencement du nouveau langage musical, à savoir comment cette musique est fondée, quel est le traitement du temps qui lui est au centre de cette musique ou quelles en sont les ressources. Et surtout, de dévoiler les ingrédients nécessaires que Grisey est allé chercher chez les sériels et les confectionner pour qu'ils soient appropriés dans sa propre musique.

Pour cette raison, il me semble important de faire une étude comparative entre la musique sérielle et la musique spectrale : quelles sont leurs différences sur le plan esthétique, le matériau, la note, l'harmonie, la forme ainsi le traitement temporel des deux musiques ? Pourquoi comparer ces deux approches compositionnelles ? Grisey a reçu une formation autour de la musique sérielle (voire le seul genre de la musique contemporaine) lors de son séjour au Conservatoire de Paris ou à Darmstadt. Dans ses sept articles, il parle de sa musique en faisant une comparaison systématique avec la musique sérielle : en effet, elle se sert de point de repère pour refléter l'essence de la musique spectrale chez Grisey. Si de nombreuses publications ont déjà cité les influences de Stockhausen ou de Ligeti sur *Les Espaces Acoustiques*, trop peu ont élaboré une recherche sur les influences de Xenakis. Ce dernier a non seulement été invité plusieurs fois dans la classe de Messiaen pour analyser ses œuvres mais était aussi l'un des invités principaux pendant les cours d'été de Darmstadt en 1972 auxquels Grisey a participé. En ce sens il est important d'établir une recherche historique sur les rencontres Grisey – Xenakis.

Et enfin anime l'intérêt principal de cette recherche : quels sont précisément les aspects dont Grisey a hérité de Xenakis ? Les œuvres de Xenakis des années 50, en particulier *Metastaseis* (1953) et de *Pithoprakta* (1956), se caractérisent non seulement par la composition des masses, de glissandi, mais aussi par le traitement du processus, du bruit, la composition des spectres, le passage de différents états sonores pour aboutir au son

harmonique, etc. Ces techniques compositionnelles se rapprochent de celles de Grisey dans *Périodes* (1974) et *Partiels* (1975). C'est pour cela une analyse approfondie semble inévitable pour savoir quels éléments chez Xenakis ont attiré l'attention de Grisey. De plus, je propose de remonter les analyses jusqu'à *Dérives* (1974) voire *Vagues, chemin, le souffle* (1972), ses œuvres de jeunesse qui comportent déjà les germes spectraux avant *Périodes*. Les analyses approfondies nous permettront de mieux comprendre la digestion xénakienne en une manière griséienne.

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Bio
Stephen Jae-Hyun NOH a fait ses études de composition musicale à l'Université nationale de Séoul, Corée du Sud (Licence et Master). Ensuite, il séjourne à Paris pour continuer ses études au conservatoire de Boulogne-Billancourt (H. Naji, P. Grouvel), École normale de musique de Paris (Y. Taïra) puis au CNSMD de Paris (A. Louvier, B. De Crépy, C. Besnainou). Après, il rédige son mémoire à l'Université Montpellier 3 avec M. Solomos et G. Carvalho (Master 2) et sa thèse à l'Université Paris 8 avec M. Solomos. Actuellement, il réside à Séoul et enseigne la musique dans plusieurs facultés.
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SPECTRALISMS IN AMERICA, 1995-2005

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Between 1995 and 2005, spectralism established itself as a shaping force in American musical life. The decade saw the appointment of European composers associated with spectral music to top posts at American institutions on both coasts, including Jonathan Harvey (Stanford University, 1995), Tristan Murail (Columbia, 1997), and Julian Anderson (Harvard, 2004). Additionally, in 1996, an American student of Gérard Grisey, Edmund Campion, was named to the composition faculty at the University of California at Berkeley, assuming the directorship of its Center for New Music and Audio Technologies. This period witnessed the English-language publication of seminal writings on spectral music, framed by issues of *Contemporary Music Review* edited by Murail's student Joshua Fineberg, "Spectral Music: Techniques, Aesthetics, Music" (1999) and "Models & Artifice: The Collected Writings of Tristan Murail" (2005). Landmark performances of spectral works included the premiere of Grisey's *L'icône paradoxale* (commissioned and premiered by the Los Angeles Philharmonic, 1998) and three festivals spotlighting composers associated with L'Itinéraire: "Rendezvous" (1998) and "Sounds French" (2003) – both co-organized by the Association Francaise d'Action Artistique – and "IRCAM@Columbia" (1999). By 2005, the French spectral attitude had achieved a critical mass in America, effecting changes which continue to resonate.

Proponents of *musique spectrale* discovered points of contact, and sometimes conflict, with aesthetics representing an indigenous strain of North American spectralism associated with James Tenney (1934-2006), Larry Polansky (b. 1954), Michael Byron (b. 1953), and John Luther Adams (b. 1953). However, the attitudes, techniques, and rhetoric of these composers differed from their European generational counterparts, as did their positioning in relation to the academy, the public, and the critical press. While the French spectral attitude emerged as a counter-cultural force in post-1968 Paris, in the United States it became emblematic of an institutionalized avant-garde. The spectralism of Tenney and his students, in contrast, was rooted in the experimentalism of Carl Ruggles, Edgard Varèse, and Harry Partch, and a vein of compositional innovation, historically, at odds with both imported European musical trends and American bastions of culture. [1, 2]

Despite their significant differences, these spectralisms were united by their inherently ecological perspectives. As such, they held particular appeal for American composers, performers, and listeners disillusioned by the dichotomies of 'uptown' and 'downtown', the commercialization and commodification associated with postmodernism, and the hermeticism of the ivory tower. In late-1990s America, spectral attitudes represented a way to transcend such oppositions, much as *musique spectrale* had offered an alternative to the camps of *écriture* and *concrète* in Paris ten years earlier. The American reception of spectralism will be related to the evolution of ecological psychology and aesthetics, and examined with an eye towards contemporaneous texts: Reed's *Encountering the World: Towards an Ecological Psychology* (1996); Clark's and Chalmers's "The Extended Mind" (1998); and Morton's *Ecology Without Nature: Rethinking Environmental Aesthetics* (2007). [3,4,5]

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Bio

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COMMENT FAUSTO ROMITELLI INTÈGRE-T-IL LES TECHNIQUES ET LES DÉMARCHES SPECTRALES DANS L'ÉCRITURE DE SES ŒUVRES? LE CAS D'*ENTRANCE* (1996)

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Fausto Romitelli (1963-2004) a été un compositeur à part de sa génération, qui a mis au point des techniques de composition sophistiquées, d'inspiration spectrale. Il a produit des musiques dans lesquelles il a incorporé le son et l'énergie des musiques populaires (rock, rock progressif), intégrant les possibilités expressives et timbrales des instruments électriques et des sons de synthèse à son langage musical.

Entre 1990 et 1996, il a travaillé à l'IRCAM et s'est passionné pour les possibilités offertes par le langage Lisp (et l'environnement PatchWork) pour la composition et par le programme Csound pour la synthèse sonore par ordinateur. Confronté au monde de la synthèse sonore numérique et à son contrôle informatique, Romitelli a développé une approche personnelle du timbre dans le cadre d'un débat qui faisait fureur dans ces années sur la scène musicale européenne [1]. Dans les œuvres qu'il a composées durant cette période (1990-1996), on observe une influence indéniable des théories spectrales, notamment celles de Tristan

Murail, qui semblent créer un pont entre le spectralisme processuel théorisé par Gérard Grisey et le spectralisme fonctionnel [2]. Grâce à de nouvelles formes d'écriture et de représentation du son ainsi qu'à l'opportunité offerte par l'informatique d'extraire par analyse les paramètres des phénomènes acoustiques, il est devenu possible aux compositeurs de traiter les spectres non seulement dans leur dimension qualitative, mais aussi selon une perspective paramétrique discrète et dynamique. Romitelli a donc assimilé des règles combinatoires, issues de ses études avec Franco Donatoni, et des techniques spectrales proposées par les compositeurs du groupe Itinéraire. *EnTrance* (1996), pour soprano, ensemble et électronique est sans doute le résultat le plus significatif de ses recherches à ce sujet.

L'étude de la musique mixte implique à la fois l'analyse de dispositifs de synthèse sonore, de techniques de production et de reproduction du son, de logiciels de composition assistée par ordinateur et d'une nouvelle organologie. Dans le cas d'*EnTrance*, les patchs informatiques, les bibliothèques et les logiciels utilisés, ainsi que les croquis et les esquisses de composition, jouent un rôle essentiel dans la compréhension des techniques compositionnelles employées. Notre travail a été réalisé à partir de sources hétérogènes, trouvées à la Fondazione Cini de Venise (le fond Romitelli), aux Archives Ricordi de Milan, à l'IRCAM et dans les archives conservées par Laurent Pottier, réalisateur en informatique musicale ayant travaillé avec Romitelli pour la composition d'*EnTrance*.

La communication présentera certaines des techniques de composition de dérivation spectrale utilisées par Romitelli pour écrire *EnTrance*, à la fois dans la partition et dans la partie électronique, en les situant dans le contexte théorique et technologique de l'époque.

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Bio

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GRISEY'S TIME AND ITS CONCEPTUAL IMPLICATIONS

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This paper illustrates how three of Gérard Grisey's essays–"*Réflexions sur le temps*," "*La Musique: le devenir des sons*," and "*Tempus ex machina*"–accord with Henri Bergson, Gilles Deleuze, and Jean-Jacques Nattiez on the structure of perception. Instead of purporting to prove direct influence, exploring their common ground clarifies and elaborates three central issues in Grisey's writings: (1) the differentiation of time and how it casts music as a process of becoming; (2) the identification of tone with pulse on a spectrum of contraction and dilation; and (3) how Grisey's later three-part theory of musical perception relates to his early distinction between measured and perceived time.

First, Grisey's definition of music as the becoming of sounds owes much to Bergson's principle of duration and its distinction between homogeneous and heterogeneous time. Bergson takes issue with Kant's acceptance of homogeneous space as a given, instead arguing that the "extensity" of objects is only known through lived intuition, which presents itself to consciousness as duration–a heterogeneous continuum of interpenetrating moments. For Deleuze, the subject experiences duration by actualizing past memories onto the psychological present, marking a distinction between the past as memory and the present as *becoming*. In this light, Grisey's notion that "the apprehension and measure of difference" is "the true material of musical composition" means that music is a process of making time heterogeneous by engaging with listeners' previously established expectations within the becoming of the present. The hierarchy that Grisey draws between periodic rhythms and statistical sounds constructs a musical bridge between this separation of homogeneous and heterogeneous time.

Second, by deconstructing the boundary between rhythm and sound object, Grisey grounds pulse and tone in a common ontology. His assertion that "the sound object is only a process which has been contracted" resonates with Deleuze's idea that perception emerges from the contraction of memory into the present. When Grisey describes sound as a pulse compressed into a single *Gestalt*, he colorfully illustrates Deleuze's conclusion that

Bergsonian duration cannot be experienced apart from space: "What is expanded if not the contracted—and what is contracted if not the extended, the expanded?" Like perception for Deleuze, musical sounds for Grisey are vectors of heterogeneous and homogeneous temporality, "force fields given direction in time."

Last, Nattiez's semiotic tripartition helps reconcile Grisey's early division of chronometric and perceptual time with his later theory of music as skin, flesh, and skeleton. Dimitris Exarchos attempts to join these two theories by problematically collapsing the skin into the flesh, while Yonatan Izhak Niv understands "flesh" to allude to a Merleau-Pontian chiasm. Really, skin accounts for what Nattiez calls music's esthesic dimension, skeleton for the poietic, and flesh for the residue of interaction between composition and interpretation. Only this construction preserves Grisey's distribution of agency over the binary between chronometric and perceived time: composers arrange the work's temporal skeleton and inscribe its flesh with emotion, whereas listeners give body to its acoustic presence and perceive its skin-like surface.

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> **Bio**
> Dylan Principi is a graduate student in music theory at Princeton University. His research engages Continental epistemology to address the relation of music analysis to interpretation and subjectivity. Dylan holds a Master of Music from Temple University and chairs the Psychoanalysis Interest Group of the Society for Music Theory.
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THE GRAMMAR OF INHARMONICITY

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The title, which refers to a work for amplified ensemble and electronics (2012) by Italian composer Giovanni Verrando, focuses on a challenge that composers beyond the 'second spectral generation' perceived as an urgent theoretical issue, as emerges from their compositions and writings. The roots, both in spectral music and scientific research in fields of music acoustics, psychoacoustics and informatics – encouraged by the foundation of the *Cursus de composition et d'informatique musicale* in 1990 at IRCAM, – are common to many composers born in the Sixties and after. Among them are some Italian composers, which were in various ways linked to the Milan musical scene, as Fausto Romitelli, Riccardo Nova, Giovanni Verrando, and others. A brief presentation (based on archival documentation) of the strong relationship Paris-Milan in the Eighties and Nineties will offer a historical background for the closer examination of some works by Romitelli and Verrando, with particular attention to the two fundamental aspects expressed by the title: 1) composers' seeking for a hierarchical/linguistic organisation (grammar) of timbre in 2) a context dominated by the emergence of inharmonic sounds as main musical material.

The second aspect emerges from composers' theoretical writings (Romitelli, *Pertinence du timbre*, unpublished; [5]) and compositions (such as Verrando's *Multiplicity* (2013) for 4 percussion players and orchestra; *Triptych* (2005-06) for orchestra; or Romitelli's *Amok Koma* (2001) for 9 instruments and electronics or *Professor Bad Trip* (1998-2000)), and is part of a larger discourse which mirrors the gradual shift from the spectral composition of (harmonic) sound to the sound synthesis (both as instrumental or electronic) based on timbral qualities expressed by psychoacoustic descriptors [3]. The major focus on the auditory organisation of musical discourse rather than on the acoustical one has produced different solutions in works of both composers, stimulating the exploration of complexity on multiple levels (timbral, formal, expressive) [2]. The study of the compositional processes (based on the preparatory material) of the mentioned works will allow identifying of aspects which are both in continuity with the spectral tradition on one side (process, repetition, gradualism, etc.), and, on the other, which represent elements of new morphological and formal organisation (level of identification/masking, timbral scaling, spectral flow, etc.). A critical exam of some emergent aspects from both the domains will be approached within conclusive reflections as a place where music imagination, compositional technique, scientific data, technology and listening encounter each other in a dynamic process of creating musical sense.

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Bio
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LOOKING INTO THE HEART OF LIGHT: METAPHORS OF LIGHT IN KAIJA SAARIAHO'S *NOTES ON LIGHT*

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Upon the 2016 Saariaho fête in New York, American music critic Alex Ross wrote of Kaija Saariaho's works: they "are visually suggestive, with titles alluding to light, water, gardens, and night." [1] Kaija Saariaho often speaks or writes of the importance, physically, of sunlight on the Finnish psyche: "its importance for me comes from the experience of living in the 'period of darkness' – there's a very specific term for this in Finnish: *kaamos*, retaining hope that the sunlight will start strengthening again until it is fully restored." [2] While light has physical, empirical, and quantifiable elements, it is often subjectively perceived and felt by an observer who notices the warmth of the sun or the brilliant light of the moon. It is always there, but not always perceived. It is from the physical, observable, and yet subjective perspectives that metaphors of light are imbued into the music. While the translation of worldly elements to music is not new, the musical metaphors of light in Saariaho's works provide more than mere programmatic associations, they are embedded into the structural layering of the work. It is the metaphors of the light that I wish to investigate; these metaphors of light are also links to her expanded spectral style.

Notes on Light (2006), a five-movement piece for orchestra and cello, is one among many of Saariaho's works exploring light. While the piece is episodic in nature, material presented in the cello, by means of short phrases or gestures, create structural motives that inform the large-scale structure of a movement, in turn governing the piece as a whole. My structural and melodic analysis focuses on movements one and five, analyzing the pseudo-spectral compositional methods and metaphors of light embedded into the musical form, showing how we can conceive of the work beyond mere spectral, programmatic, or quasi-synesthetic interpretations. I argue that the metaphor of the physicality of light is presented in the interaction between the smallest gestures in the solo cello and large-scale structure of the work. This paper relies upon both theoretical tools and hermeneutical tools to expand the framework of interpretation for other of Saariaho's works developing out of spectral techniques.

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Bio
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A SPATIO-TIMBRAL ANALYSIS OF KEITH HAMEL'S *TOUCH* FOR PIANO AND INTERACTIVE ELECTRONICS (2012): A CONTRIBUTION TO SOUND FIELD STUDIES IN MUSICOLOGY

Martin Ritter, Jeffrey E. Boyd & Friedemann Sallis

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The study of spectral music that utilizes space as a compositional parameter is hampered by the lack of adequate methodologies and technical tools. Over the past twenty years, numerous attempts have been and continue to be undertaken to analyse the presence of space in contemporary music. However, in many cases, this aspect of the music is simply ignored [1].

Traditional Western notation, even extended computer-aided notation, cannot sufficiently encode the information needed for a rigorous musicological analysis of the spatial manipulation of sound. Research into the notation of space [2], [3] also falls short, because this work has tended to focus on composition and performance rather than analytical issues. Given these problems, we have decided to augment our study of the score and the creative process with an analysis of the three-dimensional sound field created by a specific performance and captured using ambisonic technology. Thus, rather than examining the work per se, we will focus our attention on one instantiation of it. The visualisation and analysis of a spectrum in space is exceedingly difficult and has not yet been achieved. We will show that our approach can contribute to understanding and decoding spectral information in space.

Our object of study is a performance by Megumi Masaki of Keith Hamel's *Touch* for piano and interactive electronics (2012) recorded with a higher order ambisonic, em32 Eigenmike at the University of Calgary (Canada) in December 2017. Hamel used the spectral analyses of 8 different bell sounds to create the musical parameters (e.g. pitch and form) of the work, which firmly places *Touch* in the tradition of spectral composition. Building on the

work of Zattra et al. [4], our presentation will show how fourth order ambisonic technology can be used to capture and visualise the spatio-timbral aspects of this music.

First, we determine the diffuseness of the three-dimensional signal, which helps us to define locations that carry directional information. This limits the search space and reduces false directional positives later on. The directional signal can then be compared to specific template sounds that were identified during the analysis of the composer's sketch materials, the score, and a stereo recording of the piece. The coordinates (azimuth, elevation) of matches between template and directional signal locations are recorded for further processing. Discrete sounds can be mapped directly for further musicological analysis. The trajectories of continuous sounds are further refined using a Multiple Hypothesis Tracker [5].

We will present visualisations of Masaki's performance of *Touch*. Precise visualisation of three-dimensional data on two-dimensional surfaces is a difficult undertaking as the history of cartography shows. Many different approaches have been proposed such as Mercator projection, Mollweide projection, Lambert equal-area projection, etc. We are currently using the Lambertian equal-area projection since it preserves area and represents the projection on a disc rather than a rectangular plane, which helps readers visualize the original spherical object.

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Bio
Martin Ritter is a composer and PhD Candidate at the University of Calgary studying ways to integrate computational tools into the creation and analysis of computer music. Jeffrey E. Boyd is associate professor in Computer Science interested in computer vision, video, motion, interactive art, and music. Friedemann Sallis is professor emeritus, School of Creative and Performing Arts and his areas of expertise include the interaction of historical and theoretical perspectives in twentieth-century music, aesthetics, and issues concerning music and identity.
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THE ROOTS AND REASONS OF SOME COMPOSERS' SPECTRA

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For centuries human and non-human voices have been analysed manually or with the tools offered by Computer-aided-Composition (CAC) and re-contextualised through instrumental synthesis or electronic synthesis. Only recently, though, the focus seems to have moved towards the identity of the people whose voices are being analysed. In the present paper, I will describe how in my composition and other composers' recent practice these procedures are framed within an aesthetics which highlights the aura of the people whose voices are re-synthesised in the performance space along with their socio-political context [4], thus allowing for intersectional investigations and favouring the perception of imagined communities [3], as well as conceives of spectralism as a way to connect new works to pre-existing ones or the music from the past [5].

According to the level of enlargement used during the analysis of a voice, it is possible to stress speech impediments, accents, the semantic content of words or even extract descriptors connected to the mood of an individual. During a performance, these features can be re-synthesised and, along with the arrangement of the performers in the space, visual art and deconstructed technologies, suggest the aura of specific communities, thus those who can be regarded as *the others*, in which the audience 'need to recognise' [themselves] 'in order to be human' [1]. *White Masks* (2015-2019), a cycle for cello, live electronics and resonating masks, re-synthesises a conversation among women in post-colonial Africa and uses the vibration of metal panels activated through sonic exciters to reproduce the unique mixture between click languages and the rattle of the mbira. Isabel Mundry's *Mouhanad* (2018) strives to reproduce the energy and the regularity of prosody, when it is used by a refugee to recollect traumatic memories, as a means to mimic the discourse's emotional emphases and expression.

Malherbe's Locus (1997) uses material extracted from the analysis of a recording of *Sequenza III* (1965) by Luciano Berio [5]. This methodology stems from the availability of technology which allows composers to observe the microstructures of sound, but also aligns with compositional strategies such as the ones used by Salvatore Sciarrino in *Vanitas* (1981), where anamorphosis is applied to the song Stardust [2].

Spectralism allows music to develop intersections among layers such as cultural studies, different musical traditions, politics and language. A musical composition appears today more than ever as a Deleuzian multiplicity, an assemblage of plateaux which are interconnected and, if we peer through the perforations of different sizes our CAC tools allow us to produce, we can spot ourselves.

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Bio

Silvia Rosani studied composition at the conservatoire in Udine (Italy) and at Mozarteum Universität in Salzburg (Austria), while completing a degree in electronic engineering. She holds a PhD in Music from Goldsmiths, University of London, where she works as Associate Lecturer. Her music is performed internationally by ensembles such as the ÖENM, United Instruments of Lucilin and Neue Vocalsolisten.
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SPECTRAL MUSIC IN NORDIC NOIR
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This paper addresses spectral music in Nordic noir-style television. In particular it examines the way composers have sought to use spectral sounds as a reservoir to support televisual narrative, suture a sense of viewer embodiment and to help create a sense of situated emotional trauma and geographical placing. Study of this genre is in its infancy despite its popularity and general studies by Barry Forshaw (2013), and Kim Toft Hansen and Anne Marit Waade (2017). Gunhild Agger has examined climate, mentality and landscape as features of the genre (Agger 2016); Jakob Stougaard-Nielsen has begun to expose the cultural portability of the concept and its popularity in the UK (Stougaard-Nielsen, 2016). Anne Marit Waade briefly extends the notion of melancholy to music, but the discussion does not touch on any particular issues of spectral music (Waade, 2017), and Tobias Steiner has begun to look at the way in which the phenomenon can be relocated to different countries, in particular France. There is currently no work on spectralism in this television music.

This paper first addresses Nordic Noir as an idealist representation of the North, as alienation (concerned with industrialization, cold, and pain) that draws the listener towards a vicarious enjoyment and embodied experience of 'dark' human action (murder, torture, and abuse). The North is perceived as a common culture and as an accessible yet also alien 'other.' Through its 'dark' conceptual topoi, I argue that spectralism occupies a negative secular theological position and that this alterity becomes part of this lingua franca for this genre expressed through various emotional and physical states. Foremost amongst these is an incipient angst and trauma that lies at the heart of the criminal underworld, landscape, ethos and narrative effect of these dramas. I examine three excerpts from different television programmes, all from different countries: from the final series of the Swedish/Danish series *The Bridge* (*Bron/Broen*), from series 2 of the French series *Witnesses* (*Les Témoins*) (2017) and from series 1 of the Australian series *Mystery Road* (2017) to address

aspects of the impact and continuation of spectralism beyond Europe, and beyond the 'second spectral generation'. This paper also addresses themes central to the conference, in particular the role of spectral music in a sonic ecology with film, and spectralism in wider senses than addressed at the Oxford Spectralisms conference. The paper argues that through Nordic-noir television, spectralism has become a formant of a common musical culture, an essential aspect of this televisual genre, and a tool that is now used by composers and producers without reference or regard to the concept in art music, but that in fact draws out possibilities already present in this tradition.

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Bio
Robert Sholl is Professor of Music at the University of West London and teaches at The Royal Academy of Music. He edited *Messiaen Studies* (CUP, 2007) and *Contemporary Music and Spirituality* (2018), and has forthcoming books on Messiaen, MacMillan and The Feldenkrais Method. He has improvised to silent films (youtube) and given recitals at The Madeleine and Notre-Dame de Paris.
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'SPECTRAL MERGERS'

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When spectral music came to Norway in the 1980s it quickly merged with other composition techniques and concepts. The presentation discusses some of these developments. Since I took an active role in incorporating concepts from spectral music into my own music, as well as of introducing these to the composition students at the Norwegian Academy of Music, the focus of this paper will evidently be on my own approach to spectral composition, as well as the approach to spectral music that influenced one generation of Norwegian composers. Accordingly, the presentation will not give an objective account of all aspects of Norwegian music history relevant for the introduction of spectral music to Norway.

The emphasis of this presentation will be on one specific approach that consists in the synthesis of spectromorphology with spectral chord construction. Spectromorphology is concerned with the description of the sound-object, i.e. spectral and energetic nature of the sound as it evolves is time as observed by the human listener. The first published study of Spectromorphology was Pierre Schaeffer's *Traité des objets musicaux* [1], which was codified by Michel Chion [2]. The concepts used in French were 'Typologie' and 'Morphologie'. These pioneering works have been further developed by, amongst others, Denis Smalley [3] and myself [4]. Another merger took place between spectral music and ethnic, non-tempered modes. Some of these fusions were driven by the lack of access to adequate technology at the time in which spectral music was introduced to Norway.

I will present various analyses of the first piece of spectral music that was created in Norway during 1986-87, namely my composition *Les Enluminures (Illuminations)*. The procedures for developing spectral chords will be shown. A basic strategy for developing spectral textures will be demonstrated: A collection of spectrally generated notes is defined as the sonic substance of an expanded sound-object (or more appropriately: texture-object). This collection is given a temporal evolution through designing its energetic features (dynamic profile of the full collection as well as of individual notes), attack and decay qualities, dynamic and spectral pacing (or 'gait', corresponding to the Schaefferian concept 'allure'), as well as criteria of chord progression. The design of transformation processes on the level of form-building transformations will be discussed; examples of these being liquidation, crystallisation, and fragmentation. Eventually a strategy of integrating non-tempered ethnic modes into the spectral web will be shown. These modes follow the unwritten modal laws of archaic, Norwegian folk music, whose most general characteristic is being heptatonic and anhemitonic.

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Bio
Lasse Thoresen (b. 1949) is a senior professor of composition at the Norwegian Academy of Music. His music has absorbed influences from archaic Norwegian folk music, from French spectral music and 'Musique Concrete'. He has developed methods for aural analysis of sound objects (spectromorphology) and of emergent musical forms. He also started the Concrescence Project, which aims at renewing vocal practise through the contact with ethnic singing styles.
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AN ANALYSIS OF HUGUES DUFOURT'S WRITING FOR ELECTRIC GUITAR AND SOUND TRANSFORMATION IN *LA CITÉ DES SAULES* (1997)

Tobias Tschiedl

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Hugues Dufourt's *La cité des saules* for electric guitar and sound transformation (1997) occupies a singular position within the composer's output in its explicit foregrounding of electronic sounds. But the 'sound transformation' employed in that piece is not of IRCAM ilk: Rather, the score suggests the use of a rack-mount multi-effect unit geared towards the needs of pop/rock musicians. Especially the persistent regularity of the phaser's LFO in the piece's middle section appears unusual within the context of Dufourt's aesthetic, since beyond these technological devices, his guitar writing hardly engages with rock idioms at all (as, for instance, Murail's *Vampyr!* had done).

Simultaneously, *La cité des saules* was, until recently, Dufourt's only published solo piece for any instrument other than the piano. Thus, I speculate whether the emphatic use of electronics in this piece may have been intended to emulate the timbral and textural techniques possible within larger ensembles: Departing from and refining Castanet's [1] catalogue of Dufourtian techniques of timbral 'fusion', and drawing on analytical terminology in the Schaefferian tradition [4], I compare the composer's electric guitar writing to his writing for conventional orchestral instruments, and hypothesize about the specific musical functions of the different layers of 'effects' deployed in *La cité des saules*; this will be informed by a reconstruction of the "sound transformation" that permits isolation of its individual parameters and thus an analytical reconstruction of the thinking that may have motivated a particular choice of "transformation".

Dufourt's use of electronic devices is confined almost exclusively to pieces for ensembles including the electric guitar: In *La Tempesta d'après Giorgione* (1977, 8 instruments) and *Saturne* (1979, 22 instruments), the guitar is part of a group of electric instruments (organ, ondes; synthesizers in *Saturne*), while in *Hommage à Charles Nègre* (1986, 6 instruments) and *L'île sonnante* (1991, guitar and percussion) it is the only electric instrument. (Only the

early *Mura della Città di Dite* [1969] makes use of electric organ without electric guitar.) In these ensemble pieces, the presence of electronics is relatively subdued (compared with other contemporary works), as the electric instruments' timbral and textural integration with winds and percussion is central; the successive decrease in ensemble size may reflect a mounting confidence in the possibilities of that integration. In this respect, the use of a volume pedal (present in all five pieces) is crucial, permitting a continuous cresc. of the note *dal niente*, which makes the guitar more amenable to timbral 'fusion' [1] with other instruments. But in the context of the solo *La cité des saules,* this same technique may be meant rather to defamiliarize the instrument by depriving it of its characteristic attack, which in turn seems at odds with Dufourt's [3] explicit concern with transients in his theoretical essays as well as his percussion writing. Thus, *La cité des saules* is an exemplary site of the many conflicting constraints composers face in writing for the electric guitar.

Sources

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Bio

Tobias Tschiedl is a PhD student in music theory at McGill University (supervisors: R. Hasegawa, C. Neidhöfer); previously studied musicology (BA 2012) and composition/ music theory (Mag. Art. 2017) in Vienna. Research interests: theory and analysis of music after 1945 (both "classical" and "popular"), epistemology of music theory and analysis, history of music theory.

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THE MUSIC OF ROZALIE HIRS

Bert Van Herck

New England Conservatory, Boston (USA)

Rozalie Hirs is well known for her publication on Murail's music. However, her own music also merits detailed listening and study. In this paper two compositions of her will be examined to clarify the extent of Hirs' spectral inclinations.

The first work is *Book of Mirrors*, a composition from 2001 that Hirs wrote while studying with Murail; the second work is Platonic ID written in 2005-6 when she had moved back to Amsterdam when working on her dissertation. While these compositions certainly have spectral components, it is undeniable that Hirs' work is also influenced by Louis Andriessen – her previous composition teacher. Musical objects that are repeated in a manner recalling Feldman characterize both works. The term "musical objects" is a clear reference to Murail and as can be expected, these objects change gradually during their repetitions. It is inte-

resting to compare the two compositions mentioned above: in Book of Mirrors, Hirs creates a sense of musical form by manipulating the changes of the musical objects over time. This results in a very organic flow. In the later composition, Platonic ID, there are clearly articulated sections that are not merely the result of gradually changing objects. It creates a stronger hierarchy in the formal design, which can be traced back to formal procedures from the minimalist tradition she is familiar with.

These and other aspects of how Hirs' music relates to the larger context of spectralism will be discussed in the first part of this paper. In the second part, the construction of *Book of Mirrors* and *Platonic ID* will be discussed with examples of Open Music patches showing how Hirs composed her work. The frequency-based procedures of Murail that she has documented in her publication, play also an important role in her own music. In particular the principle of adding and subtracting frequencies, a principle that is at the core of for example frequency modulation (often used by Murail in his earlier works), is the generating principle of chords in *Book of Mirrors*.

For the work on this presentation I am grateful to have the support of Rozalie Hirs, who is providing her perspective on how she composed these works and the patches she used while working with Open Music. Therefore in this paper, the goal is to first present Hirs' work in the general context of spectralism; and secondly to give insight in how Hirs used frequency based procedures in the construction of her compositions.

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Bio
Bert Van Herck is full time faculty member at New England Conservatory. He holds a PhD from Harvard University where he studied with Magnus Lindberg, Julian Anderson, Chaya Czernowin, Brian Ferneyhough, and Helmut Lachenmann; and with Tristan Murail at Columbia University. Besides his compositional activities, his interest in music theory has lead to presentations at several international conferences.
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ECSTATIC-MATERIALIST PERSPECTIVE. A SHARED CROSS-GENRE PERSPECTIVE FOUND IN TODAY'S EXPERIMENTAL MUSIC PRACTICES

Riccardo Wanke

Centre for the Study of the Sociology and Aesthetics of Music,
NOVA University, Lisbon (Portugal)

What have in common *in Vain* by Georg Friedrich Haas with a series of tracks from *Kesto* by Pan Sonic? This paper examines a cross-genre set of practices within current experimental music scene. Starting from the observation that there are convergences and similarities between pieces by contemporary composers and those by independent electronic performers, and proposing that these commonalities are due to the presence of a shared understanding of sound as being a complex and material entity, this essay develops a multifaceted approach to explore and give shape to these correspondences.

The centrality of sound in the music of the 20th century is the starting point for this research [1] and the presence of this radical reappraisal during last century in several different genres and contexts is reflected in the cross-cultural aspects of this study [2]. The research elaborates on the conception of sound as a complex entity –postulated by Giacinto Scelsi [3] and the spectralists– in order to define a series of key characteristics (including exploration of the sonic spectrum, an extended conception of harmony and temporality, and a particular use of repetition) which can be found in the pieces of composers working in very different contexts. These figures approach sound as a physical material, avoiding certain tone-based structures and abstract construction techniques in favour of focusing on creating a sonic material rich in timbral exploration. Selected pieces (*i.e.* compositions by Georg Friedrich Haas, Bernhard Lang, Giovanni Verrando, Riccardo Nova, Pan Sonic, Ryoji Ikeda, and Raime) coming from different genres (*i.e.* post-spectralism, minimalism, electroacoustic, glitch electronica, and dubstep) serve as the main body of research for both an object- and a subject-oriented investigation.

The collected results coming from an analysis of these pieces (*i.e.* based on aural, spectral, and score examinations) and two empirical surveys, one targeting listeners (*i.e.* the listening questionnaires) and the other composers and interpreters (*i.e.* the interviews and other correspondence) delineate a proposed cross-genre perspective on sound that I define as the *ecstatic-materialist* perspective. This shared vision is grounded in a similar conception of sound, it involves a specific understanding of time and space in musical creation and perception, and –far from being a self-reflexive concept– it implicates components from the cultural and practical experience of composers, performers, and listeners equally. Sound in the ecstatic-materialist perspective is a complex nexus of ideas: it is considered as something posed and left to develop; it incorporates both material (consistency, acoustic pressure, density) and ecstatic (transitory and ephemeral) elements; it involves intentions and dramaturgical impulses that issue from the experience of participants. Sound is the common territory between composer, performer, and listener.

The proposed ecstatic-materialist model is examined in relation to the current world of experimental contemporary music, including the more problematic aspects such as its elitist and auto-referential nature, in order to explore the practical applications of the outlook.

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Bio

Riccardo Wanke is PhD researcher in Musicology at the Centre for the Study of Sociology and Aesthetics of Music (CESEM) at NOVA University of Lisbon (PT). His current domains of specialisation are 20th and 21st century music; sound perception and cognition; electronic and electroacoustic sound manipulation. As a composer and performer, he has performed live worldwide and published music for international labels.
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BEHIND THE OFFICIAL LITERATURE. A HISTORY OF FIRST ENCOUNTERS BETWEEN SPECTRALISTS AND SOUND RESEARCHERS
Laura Zattra

STMS (IRCAM–CNRS-Sorbonne Université), Paris (France)

It is a recognized fact that studies such the ones developed by Jean-Claude Risset [2], John Chowning [2] and Joseph Fourier [3] on psychoacoustic, synthesis and sound representation, have opened the door to the development of French Spectralist music. Throughout the pages of literature, now historical, may be found the presence of writings of composers and researchers side by side which, read in the light of subsequent developments, shows the deep importance of this bond (one example is the collection of writings in [4] and [5]).

In Hugues Dufourt's *La musique spectrale. Une révolution épistémologique* (2014), to take just one notable example in the recent literature, the index of names emphasises the importance of Chowning (46 entries) Risset (77 entries), as well as Fourier, Hermann von Helmholtz, Max Mathews, Stephen McAdams, John Pierce, James A. Moorer and David Wessel. As Dufourt said during a radio interview in 2016: thanks to the use of computer,

"by changing scale, music has changed its language. Timbral objects, found for example by Risset, are essentially models of knowledge of certain acoustic phenomena", and again: "to me, spectral music would not have been possible without the transformation introduced by sound synthesis" (ivi, 461).

What is less known though are the historical facts of the many connections between those researchers and spectral composers. In August 1975, a team from the future IRCAM attended a ten-day intensive seminar at CCRMA (founded by Chowning); the team included Pierre Boulez, Luciano Berio and Risset, who would each become the head of one of IRCAM departments in 1976 (Chowning, unpublished digital letter, 20 June 1977). *Désintégrations* (1982-83) by Tristan Murail is heavily influenced by his experience in 1980 at IRCAM, during his (and others composers from the ensemble Itinéraire) participation in a computer music workshop. Gérard Grisey studied acoustics with Emile Leipp at the University of Jussieu in the early 1970s on the instrumental spectra.

In this presentation I will focus on the historical reconstruction of the exchanges and influences between sound researchers and the first Spectral composers. I will follow the early steps, meetings and interactions between them. I will try to answer to questions as such in which way these connections took place, when and how these meeting took place, and possibly to find and follow relevant in/visible actors. My research is based on oral history, and published and unpublished literature dedicated to Spectral Music. Oral history and STS (Science and Technology Studies) methodologies will be necessary means to trace this history, to outline the contours of the social impact this culture of science and technology had on Spectralism, and vice-versa to find the reciprocal influence the compositional writing had on the development of technology.

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Bio
Laura Zattra is a scholar of 20th-21th centuries music, with an emphasis on electroacoustic music, avant-garde, collaborative music, and women studies. Author of *Studiare la computer music* (2011); co-editor of *Live-Electronic Music. Composition, Performance and Study* (2018), *Presenza storica di Luigi Nono* (2011), among others. Invited Research Fellow at APM team (IRCAM Paris) and Lecturer at Bologna, Vicenza and Rovigo Music conservatories. Co-editor-in-chief of *Music/Technology* (Firenze University Press).
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LA FONCTION DE LA GUITARE ÉLECTRIQUE DANS LES ŒUVRES SPECTRALES EN FRANCE

Iván Adriano Zetina

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Depuis *Gruppen* (1955-1957) de Karlheinz Stockhausen, la guitare électrique a été toujours présente dans le répertoire de la musique savante. Elle apparaît dans toutes les configurations instrumentales possibles : instrument solo, instrument avec environnement électronique, musique de chambre, musique orchestrale et l'opéra. C'est un instrument qui n'est pas passé inaperçu pour les compositeurs de la musique spectrale en France. L'ensemble *L'Itinéraire,* fondé dans les années 1970 par les principaux acteurs de cette courante, a été fondamental pour la création des œuvres spectrales et son guitariste électrique, Claude Pavy, est une figure centrale.

Sur le plan historique, trois caractéristiques donnent à cet instrument une singularité : premièrement, c'est un instrument nouveau inventé au xxe siècle par les exigences de la technique d'enregistrement dans la musique populaire ; deuxièmement, il est le résultat d'une recherche à la fois organologique et technologique, ce qui lui donne un caractère hybride intéressant dans la recherche des nouveaux horizons sonores ; finalement, il est porteur d'une tradition profondément imprégnée par les pratiques de la musique populaire, ce qui ouvre la palette expressive de l'instrument et change les pratiques des compositeurs. D'autre part, deux fonctions lui sont attribuées en ce qui concerne la musique post-spectrale : comme timbre intégré et comme 'accroche' au sens des théoriciens de musiques populaires. D'où nos questions de départ : Quelle fonction peut s'attribuer à la guitare électrique dans les œuvres spectrales ? Quelles formes d'appropriation a pris la pratique musicale contemporaine vis-à-vis de la tradition populaire de cet instrument ?

Pour répondre à ces questions, nous proposons une analyse comparative des six œuvres de compositeurs dites spectraux où la guitare électrique est présente parmi les effectifs. Le corpus est constitué d'œuvres du répertoire dans les différentes configurations instrumentales. Musique pour instrument solo : *Vampyr!* (1984) de Tristan Murail, et *Scène VI : "au rivage, comme au navire"* (1994) de Robert Tessier. Musique pour orchestre : *Transitoires (*1980-1981) de Gérard Grisey et *Saturne* (1979) d'Hugues Dufourt. Musique pour ensemble : *Les Aragon* (1997) de Michaël Levinas. Pour instrument et environnement technologique : *La cité des saules (*1997) d'Hugues Dufourt. Nous partirons de trois critères principaux pour l'analyse des œuvres : les techniques du jeu instrumental, les effets périphériques employés pour le traitement du son et les particularités de l'écriture musicale.

Afin de pouvoir déterminer la fonction dont a joué la guitare électrique dans ce répertoire, nous proposons d'aborder une bibliographie spécifique concernant le projet spectral [2, 3] en privilégiant les témoignages des acteurs [4, 5] aussi bien que des textes théoriques sur les musiques populaires ; nous allons essayer de mettre en place une enquête auprès des compositeurs et de Claude Pavy sur ce sujet spécifique ; finalement, en partant du modèle sémiotique de la musicologie générale, nous proposons l'application de l'examen des partitions en suivant le modèle de l'analyse cognitive[1].

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Bio

Iván Adriano (Mexico City, 1985), is a guitar performer, composer and PhD student in music and musicology at the Sorbonne University. As researcher, he has worked and written for *Interpretatio* Hermeneutics Review from National University of Mexico and the Paris Philharmonic. Nowadays, he is working about electric guitar in contemporary music with Jean-Marc Chouvel as thesis director, and he is also studying composition at Jean-Luc Hervé's and Yan Maresz's classes at CRR Boulogne-Bilancourt.
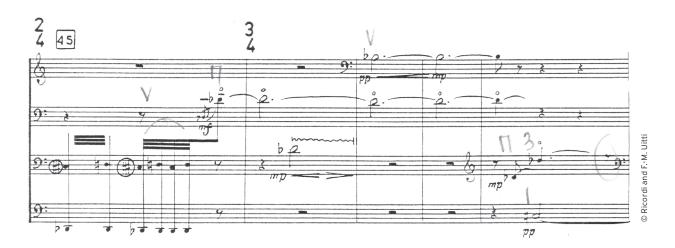E-mail: ivan.zetina_rios@paris-sorbonne.fr

PERFORMANCE WORKSHOPS

PERFORMANCE WORKSHOP 1

Giacinto Scelsi, *Trilogia – The three Ages of Man* (1956-65) for cello

Two of Scelsi's closest collaborators join in this workshop to present what can be consi-dered the composer's autobiography in sound: *Trilogia: The three Ages of Man* (1957-61) for solo cello, later dedicated to Frances-Marie Uitti. This 40-minute monument is divided into three movements (the first and third themselves each being divided into three movements): *Triphon*, *Dithome*, and *Ygghur*. The genesis of this work and Scelsi's collaborative processes will be explored and discussed as well as specific instrumental and notational techniques that characterize the revolutionary sound world of this forefather of spectralism: Uitti's custom-designed resonators, multi-staff notation, specific *scodaturas,* etc. Scelsi's inspira-tions, stemming from various Eastern traditions and cultures, will also be presented.

Frances-Marie Uitti worked extensively with Scelsi for over ten years, collaborating on and editing all of his cello music as well as improvising, transcribing new pieces for cello, and recording with him during her tenure in Rome. Sharon Kanach accompanied Scelsi for the last ten years of his life, as his liaison with Editions Salabert as his "entitled signatory". After his death, she supervised the three volumes of his writings for Actes Sud: *Les anges sont ailleurs* (writings on art and music); *L'Homme du Son* (poetry); *Il sogno 101* (autobiography).

SPECTRALISMS 2019

Frances-Marie Uitti

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Frances-Marie Uitti, composer/cellist, is known worldwide for her performances of contemporary classical music. She is the dedicatee of close to 100 composers including Jonathan Harvey, Louis Andriessen, Giacinto Scelsi, György Kurtág, Per Norgaard etc. She has invented a radically extended technique using two bows simultaneously in one hand–transforming the cello into a 4 part chordal instrument. Kurtag, Nono, Harvey, Scelsi, Kanach, and 50 others have written for her highlighting this technique. She has invented various acoustic resonators, and designed electric instruments, including her sensor 12 stringless double-bridged cello at CNMAT, University of California, Berkeley.

"The spectacularly gifted cellist Frances-Marie Uitti has made a career out of demolishing musical boundaries. She has developed new techniques (most famously, playing with two bows simultaneously), collaborated with a who's who of contemporary composers, and pushed the cello into realms of unexpected beauty and expression...." (Washington Post)

Site: http://www.uitti.org/

Sharon Kanach

The American musician Sharon Kanach has lived in France most of her adult life. She first went to Paris to study with Nadia Boulanger while an undergraduate at Bennington College (Vermont), and quickly crossed paths with Iannis Xenakis (1922-2001), with whom she collaborated very closely over many years, especially on his writings. She is vice-president

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of the Centre Iannis Xenakis (CIX), housed at the Université de Rouen. Her life changed when she encountered the music of Giacinto Scelsi (1905-1988) in the late 1970s which led to her become the Italian count's musical assistant during the last ten years of his life. To celebrate his centenary (2005) and the 20th anniversary (2008) of the composer's death, she compiled and commented a trilogy of the composer's texts, in French, for Actes Sud.
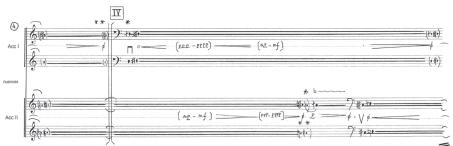
PERFORMANCE WORKSHOP 2

Pascale Criton, *Wander Steps* (2017-18) for two microtonal accordions

The recent music of Pascale Criton (b. 1954) explores the "acoustic multiplicity" of musical sound, plunging into the complexity of the sonic world in a unique continuation of the spectral legacy. Through an intimate engagement with sound, she seeks "a subjectivation of listening, a composite transitivity, attentive to acoustical and perceptual phenomena."

In Criton's *Wander Steps*, written in 2018 for the Duo XAMP (Fanny Vicens and Jean-Étienne Sotty) and their microtonal accordions, a minimally notated score gives rise to a rich and detailed sonic result. Criton's score favours the emergence of complex acoustical phenomena such as combination tones, near-unison beating, and phasing effects. The performers are encouraged to adopt an "eco-sensitive" interpretation, reacting sensitively to these delicate emergent effects and the response of the concert hall. From a musicological perspective, the analysis of *Wander Steps* demands an interdisciplinary approach incorporating tools from music cognition, psychoacoustics, and acoustics.

This workshop will feature an overview of the work, examining its links to the spectral tradition and other twentieth-century currents, as well as discussions with Duo XAMP and the composer on their collaboration and the unique interpretive challenges of the work.

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Duo Xamp

XAMP unites Fanny Vicens and Jean-Étienne Sotty in a project of musical creation. Musically unclassifiable, artistically unflinching, they share in the discovery of new sonorities with the composers of our time, revisit the music of the past, and astound and enchant their audiences. In 2015, they revolutionized the musical landscape with the creation of two microtonal accordions, instruments generating new scales and vibrations. In the course of their artistic journey, they've

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enlisted two Arnold bandoneons, a sheng, and a stockpile of electronic equipment: their instrumentarium evolves ceaselessly, multiplying sonic possibilities. These *enfants terribles* of the accordion accept no boundaries. Equally at ease in the studios of IRCAM or Radio France as when performing with orchestras or in theatrical productions, XAMP takes every opportunity to draw their audiences into their musical universe. Their ebullient energy makes each of their concerts an unexpected and unforgettable experience.
Site: http://duoxamp.com

Pascale Criton

Pascale Criton was born in Paris in 1954. She studied composition with Ivan Wyschnegradsky, Gérard Grisey, and Jean-Étienne Marie, as well as electroacoustic music at the *Centre International de Recherches Musicales* (1980–82) and computer music at IRCAM (1986). Holder of a doctorate in musicology (1999), she is particularly interested in ethnomusicology and philosophy. Since 1980, Criton has explored the variability of sound through instrumental techniques, varied tunings, and spatialized hearing. She uses specific tunings in quarter-, twelfth-, and sixteenth-tones, adapted to instruments of the orchestra and sometimes associated with electronics. Her catalogue includes numerous works of solo, chamber, and ensemble music, as well as mixed acoustic/electroacoustic compositions. In 2013, she published *Ivan Wyschnegradsky: Libération du son, Écrits 1916–1979* (Lyon, Symétrie), recipient of the 2014 Prix des Muses. The monographic CD *Pascale Criton: Infra* (Potlatch, 2017) was named a *coup de cœur* by the *Académie Charles Cros* in 2018.
Site: http://pascalecriton.com/

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Robert Hasegawa

Music theorist and composer Robert Hasegawa joined the faculty of the Schulich School of Music of McGill University in 2012. His research interests include spectral and timbre-based music, microtonality, psychoacoustics, and the history of music theory. Recent projects include studies of music by Gérard Grisey and Tristan Murail, chapters for *Oxford Handbook of th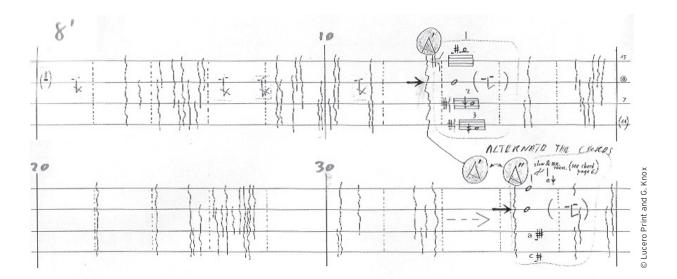e Creative Process in Music* and the *Oxford Handbook of Timbre*, an essay on extended just intonation for the volume *Théories de la composition musicale au xxᵉ siècle,* and applications of transformational theory to the analysis of microtonal music by Hans Zender and Georg Friedrich Haas. He is Associate Project Director of ACTOR (Analysis, Creation, and Teaching of Orchestration), an international research partnership exploring new approaches to timbre and orchestration.

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PERFORMANCE WORKSHOP 3

Horaţiu Rădulescu, *Das Andere* (1983) for viola

Through his music and writing, the Romanian composer Horaţiu Rădulescu offers a compelling and highly distinctive perspective on Spectralism. Described by the late Bob Gilmore as "one of the most fascinating and individual creative figures of his generation", Rădulescu has nevertheless received relatively little critical attention. A tendency towards opaque, quasi-mystical formulations in his written texts and a highly personal notational practice in his music may present barriers to an appreciation of his output.

In this workshop we hope to remove some of these barriers and demonstrate how Rădulescu's background as a violinist may have contributed to his unique approach to the core concerns of the spectral attitude. In particular we will investigate the concept of 'sound plasma' and explore how Rădulescu's writing for strings involves a radical rethinking of the performer's relationship with their instrument, creating new norms for sound production that are nevertheless entirely 'natural': a new idiomaticity.

Garth Knox

Garth Knox is at the forefront of the new music scene in many fields. Drawing on his vast experience as viola player of the *Arditti Quartet* and the *Ensemble intercontemporain* and his close collaboration with most of the leading composers of today, he has become a unique performer of music of many different styles, ranging from minimalist understatement to the cutting edge of new techniques and new technologies. More recently thanks to his interest in the viola d'amore and the medieval fiddle, his repertoire has opened up to the music of the past (medieval, baroque) which he persuasively brings into the present, and his Irish/ Scottish roots enable him to dialogue with traditional celtic music without complexes. He has always felt at home as an improviser, and now more and more so as a composer also, deploying his musical ideas as innovative instrumental theatre.
Site: http://www.garthknox.org/

D.R.

Martin Suckling

Martin Suckling, a composer and violinist, is Senior Lecturer in the Music Department at the University of York. He holds doctorates from the Royal Academy of Music and Yale University where he was a Paul Mellon Fellow from 2003-5. He has been commissioned by many leading orchestras and ensembles including the London Sympho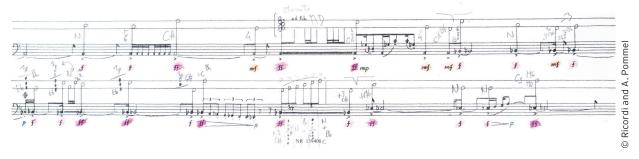ny Orchestra, BBC Scottish Symphony Orchestra, BBC Philharmonic Orchestra, Royal Scottish National Orchestra, Deutsches Symphonie-Orchester Berlin, Toronto Symphony Orchestra and London Sinfonietta. Notable conductors of his works include Oliver Knussen, Ilan Volkov, François-Xavier Roth, Robin Ticciati, Pierre-André Valade, Thierry Fischer and George Benjamin. Deploying a personal approach to microtonality, his music is performed internationally to considerable critical acclaim and has won numerous awards including the 2008 Royal Philharmonic Society Composition Prize and, most recently, a highly sought-after Philip Leverhulme Prize. Martin is published by Faber Music and was Associate Composer with the Scottish Chamber Orchestra from 2013-2018.
Site: http://www.martinsuckling.com/

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PERFORMANCE WORKSHOP 4

Gérard Grisey, *Anubis-Nout* (1983/90) for bass saxophone

Anubis-Nout was composed by Gérard Grisey in 1983 in memoriam Claude Vivier, murdered in Paris that year. Commissioned by the Dutch clarinettist Harry Spaarnay, this diptych was originally written for contrabass clarinet. In 1990, Grisey arranged it for bass or baritone saxophone in close collabora tion with French saxophonist Claude Delangle. The composer takes his inspiration from Egyptian divinities who symbolize - in *Anubis* – the violent death of his friend and – in *Nout* – the ascent of his soul into the firmament. During this workshop we will decipher spectral models and techniques used by Grisey to structure the piece and question their impact on the performance process. More specifically we will focus, in *Anubis*, on the insertion of three "microphonic" elements and five "macrophonic" elements intended to create a polyphony "whose phasing causes the different paroxysms of the piece". In this context, we will analyse a number of extended techniques (harsh sounds, slaps, breathing, *bisbigliando*, *flatterzunge*...) and explain how they are guided by Grisey's spectral thought.

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Claude Delangle

Soloist, researcher and pedagogue, Claude Delangle, stands out as one of the greatest contemporary saxophonists. A privileged per-former of classic works, he enriches the reper-toire and encourages creation by collaborating with the most renowned composers, including L. Berio, P. Boulez, T. Takemitsu, A. Piazzolla, G. Grisey and promoting the youngest. After obtai-ning several Premiers Prix at the Conservatoire National Supérieur de Musique of Paris, Claude Delangle was appointed professor there in 1988.

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Pupils of all nationalities long to receive this education, which combines concerts with the possibility of studying with important composers and offers a large range of interdisciplinary activities. He was named *Chevalier des Arts et des Lettres* by the French government in 2017.

Site: http://www.sax-delangle.com/

Antonin Pommel

Antonin studied at the Paris Conservatoire with Claude Delangle and at the University of Michigan (USA) with Timothy MacAllister. In 2017, he graduated from the Paris Conservatoire with the highest distinction having performed Marc-André Dalbavie's flute concerto on the soprano saxophone. A passionate chamber musician, Antonin co-founded Yendo Saxophone Quartet and Saxback Ensemble (a sextet formed of 2 clarinets, 3 saxophones and a euphonium). In 2017, Yendo released their first album, *Utópico*, featuring Baptiste Herbin and including works by Enrique Granados and Luis Naón. In 2018 Saxback Ensemble won 2nd prize at the M-Prize International Chamber Music Competition in Ann Arbor, Michigan (USA) and performed multiple concerts in France. Antonin regularly collaborates with *Les Siècles* orchestra, the *Orchestre Philharmonique de Nice*, the *Orchestre Symphonique Tunisien* and the *Sinfonia Pop Orchestra*.

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François-Xavier Féron

François-Xavier Féron has a Master's degree in musical acoustics and a PhD in musicology (Sorbonne University). After teaching at the university of Nantes (2006-2007), he was a postdoctoral researcher at the *Centre for Interdisciplinary Research in Music Media and Technology* (McGill University, Montreal, 2008-2009) and at l'*Institut de Recherche et Coordination Acoustique/Musique* (STMS-IRCAM, Paris, 2009-2013). Since 2013, he has been a tenured researcher at the French National Centre for Scientific Research (CNRS). He worked at the *Laboratoire Bordelais de Recherche en Informatique* and the *Studio de Création et de Recherche en Informatique et Musiques Expérimentales* (LaBRI-SCRIME, Bordeaux University) before returning to IRCAM in 2018 as part of the team *Analyse des Pratiques Musicales*. His research – on the boundary between musical acoustics and musicology – focuses on contemporary musical practices, from creative and performance processes through to the analysis of musical works and auditory phenomena.

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PRACTICAL INFORMATION

IRCAM
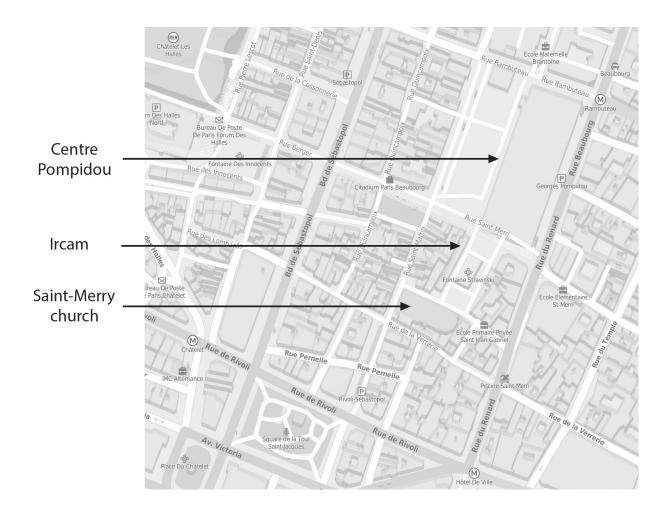1 place Igor Stravinsky
75004 Paris

Saint-Merry church
76 rue de la Verrerie
75004 Paris

Centre Pompidou
Place Georges Pompidou
75004 Paris

**Métro: Hôtel de Ville,
Châtelet, Les Halles, Rambuteau**

STMS - Science and Technology of Music and Sound

STMS is the research department at the heart of IRCAM. A joint research lab bringing together IRCAM, the Centre National de la Recherche Scientifique, Sorbonne Université, and the French Ministry of Culture, STMS encourages productive interaction among scientific research, technological developments, and contemporary music production. One of the major issues is the importance of contributing to the renewal of musical expression through science and technology. Conversely, specific problems related to contemporary composition have led to innovative, theoretical, methodological, and applied advances in the sciences with ramifications far beyond the world of music.

Focused on artistic production, in all its particularity and sensitivity, this highly original research dynamic addresses modes of representation and of extended manipulation of sound and music, thus eliciting scientific and technological applications that touch an increasingly wide-ranging public including sound and music professionals, industrial concerns, academics, music devotees, etc. Central to the interaction between research and musical production is the development of software tools for musicians, composers, performers, and musicologists using the models and prototypes created by the research teams in various music-related domains including information technology (e.g. languages, human-computer interaction, realtime, and databases), signal processing, acoustics, auditory perception and cognitive psychology, and musicology.

www.stms-lab.fr/

SFAM – Société Française d'Analyse Musicale

Created in 1985, the French Society for Music Analysis (*Société Française d'Analyse Musicale*, SFAM) brings together musicians, artists, teachers, performers, composers, and musicologists-analysts, stemming from universities as well as conservatoires, whose aim is to encourage the development of music analysis and theory.

In 1989, the SFAM initiated the first European Music Analysis Conference, which took place in Colmar. This conference, considered a reference, thereafter became the model of a series of EuroMAC conferences organised at European level with the goal of bringing together researchers and practitioners of the discipline as well as promoting methodological innovation. The SFAM was also entrusted with the organisation of the third conference that took place in Montpellier in 1995 and actively supported the ninth European Music Analysis Conference in Strasbourg in 2017, in close collaboration with the GRÉAM-lab of the University of Strasbourg.

The SFAM has played a major role in the creation of several sister-societies in different European countries. The society is now strongly involved in the long-term institutionalisation of a European network of societies for music analysis and theory involving Austria, Belgium, Croatia, France, Germany, Italy, the Netherlands, Poland, the United Kingdom and, more recently, Portugal, Russia, and Spain.

Since 2013, the SFAM has organised annual French Music Analysis Conferences (*Journées d'Analyse Musicale*, JAM), which aim at developing and extending both fundamental research and analytical practices in different institutions, conservatoires in particular, ensuring a national network and thus alternating its localisation between Paris and other regions in France.

A newsletter regularly sent to SFAM members provides an exchange of information about the life of the society. After having been at the origin of the *Analyse musicale* journal, the SFAM now actively supports the online journal *Musimédiane* (www.musimediane.com) and the *Musurgia* journal (musurgia.free.fr), disseminated in paper format.

Site: www.sfam.org
Facebook page: https://fr-fr.facebook.com/sfam.org/

Collegium Musicæ of Sorbonne University

The Collegium Musicæ is an institute of Sorbonne University that brings together musicians and researchers to study creation, innovation, conservation and musical practice. Thanks to its broad range of expertise and federated institutions, the Collegium has a transverse approach to classical, popular and traditional music. This unique institute aims to carry out projects in touch with society issues. The multidisciplinary community of the Collegium Musicæ shares skills in musicology, musical acoustics, sound technologies and computer science. The projects it leads are organized in three main themes.
- *The instruments of yesterday, today and tomorrow.* The relation between the instrument maker and musical interpretation, the inventiveness in the creation of hybrid instruments…
- *The musician's body.* Musical gesture, musical memory, physical and mental pathologies related to the practice of music, the history of playing and practicing music…
- *Sound and musical environments.* Development of methods to reconstruct past, current and future sound environments, analysing the influence of soundscape on composition, interpretation and reception of musical works…

Site: http://www.collegium.musicae.sorbonne-universite.fr/

L'Ircam est associé au Centre Pompidou sous la tutelle du ministère de la Culture. L'Unité mixte de recherche STMS (Sciences et technologies de la musique et du son), hébergée par l'Ircam, bénéficie de plus des tutelles du CNRS et de Sorbonne Université.

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Cité de la musique – Philharmonie de Paris
Conservatoire national supérieur de musique et de danse de Paris
Ensemble intercontemporain
La Scala Paris
Le CENTQUATRE-PARIS
Maison de la musique de Nanterre
MC93, Maison de la Culture de Seine-Saint-Denis
Musée de l'Orangerie
Pôle supérieur d'enseignement artistique Aubervilliers - La Courneuve - Seine-Saint-Denis Ile-de-France dit « Pôle Sup'93 »
ProQuartet-Centre européen de musique de chambre
Radio France
Rendez-vous Contemporains de l'Église Saint-Merry
T2G – Théâtre de Gennevilliers Centre dramatique national

SOUTIENS
Réseau Interfaces, subventionné par le programme Europe créative de l'Union européenne
Réseau ULYSSES, subventionné par le programme Europe créative de l'Union européenne
Sacem – Société des auteurs, compositeurs et éditeurs de musique

PARTENAIRES MÉDIAS
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PRODUCTION
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Luca Bagnoli, Raphaël Bourdier, Jérémie Bourgogne, Sylvain Cadars, Clément Cerles, Cyril Claverie, Joseph Dubrule, Agnès Fin, Audrey Gaspar, Éric de Gélis, Anne Guyonnet, Jérémie Henrot, Clément Marie, Aline Morel, Aurèlia Ongena, Damien Ripoll, Maxime Robert, Florent Simon, Clotilde Turpin et l'ensemble des équipes techniques intermittentes.

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