

Understanding The Noise-Pitch Continuum in Timbral Music

Introduction

According to the general doctrine of music theory prevalent today there is a basic rule which reads as follows: “The musical note has four elementary properties; pitch, volume, timbre and duration.” Traditional music theory holds that these properties are valid as independent dimensions of sound perception; they are held to be quantities each, of which can be altered at will while keeping the others constant.

In the thesis *The Noise-Pitch Continuum in Timbral Music* Juhani Vesikkala presents an analytical method that enables an understanding of the recent decades’ noise-based compositions. Vesikkala focuses on a repertoire of acoustic music for which an analytical method is yet to be found and in which pitches and harmony even play a negligible role. He also argues that it provides interpretations for composed sonic situations where sounds of noisy quality in different degrees combine with other timbres and observes some of the auditory-cognitive principles at play. In the study a spectrally reductive analytical and compositional tool is proposed to facilitate composing, particularly with the sounds that lie perceptually between noise and pitch, called *Froise*. The concept of *Froise* is indicated to be unsurpassable and central for the functioning and voice-leading of noise-based music.

Noisiness itself is a sensation

Noise-pitch sound poses a perplexing problem for the analyst – not only does it lack a standard notation in a notated score, it also utilises a seemingly infinite sound palette made possible through the use of modern technology. Consequently, analysts must employ new tools capable of tackling musical issues that resist traditional theoretical approaches. Vesikkala’s approach is comprehensive and is a contribution in the field of music theory as well as an attempt to expand the refined compositional palette on an urgent topic for composers. Because of the varieties of the sounds, the composer can choose and design the noise-pitch sound or timbre for the certain passage or overall structure of certain composition after the feature of the sound itself from the basic sound materials.

Based on the analysis and comprehension to the independent sound elements, we can clarify the relationship between noise-sound in this aspect, and at the same time describe the structure of the work and the overall structural characters more logically. The role model for this direction is the impressive work since the 1970’s carried out in Paris by Groupe de Recherches Musicales (GRM) and at Institut de recherche et coordination acoustique/musique (Ircam). GRM and Ircam seeks to enable the composer to really come to grips with the essence of natural sounds, and to ascertain and codify the pertinent criteria in the sound that relate to our recognition of sound sources and to spatial manipulations. That these observations can be retranslated into traditional instrumental terms is clearly

demonstrated in the music by Tristan Murail, Gérard Grisey, Denis Smalley, Lasse Thoresen and others mentioned - the two last names referred to by Vesikkala.

M as in Methodology and Materials

Electronics have enabled us to register the precise nature of sonic manipulations and distortions and the precision of sonic observation. By means of real time synthesis, we can continually allow our musical perceptions to act as the controlling filter, which must ultimately decide the pertinent criteria that results in the building of class-related repertoires of sound. In his research Vesikkala refers, among others, to the Norwegian composer and researcher Lasse Thoresen's work *Emergent Musical Forms: Aural Explorations* who is regarded by many music theorists, composers and researchers as an important work and a basis for guiding studies in Sonology. In the wake of its publication, an interesting research advocacy gradually emerged. Today, from the perspective of scientific research, Thoresen's theories have been diminishing, have little Scientific value and have thus been questioned. Vesikkal's research takes place in a controlled manner where I sometimes lack an objective and critical approach on his own topic making claims such as on p. 4 "Although timbral aspects have also been present in the best composers of the common practice period" or on p. 6 "Froise entails, by maintaining the perceptual balance, those sounds for which listeners face a genuine choice between a pitched or noise-based listening strategy." or on p. 8 "also a long learning curve."

The collection of reprinted scores referred to in the thesis consists of:

- Antti Auvinen
- Beat Furrer
- Agata Zobel
- Mark Andre
- Carola Bauckholt
- Helmut Lachenmann
- Gérard Pesson
- Horațiu Rădulescu
- Fausto Romitelli
- Kaija Saariaho
- Chaya Czernowin
- Salvatore Sciarrino (no reprint of the score in the appendix)

The procedure of the method used is described by three modules in the Appendix 5 on p. 278.

- Module 1

- Local and absolute approach

- a) Identify and collect all timbres in a passage
 - b) Requires possibly segmentation and evaluation of blending context
 - c) Requires reduction (timbral features, rough pitch region, duration, articulation remain)
 - d) Select which descriptors (of 15+2) to use and at which weighting (our default is 15 descriptors, equal weighting)
 - e) Numerise timbres into descriptors of noisiness (or use existing listed taxonomy values in the appendix)

- Module 2

- Timbral space, contextual approach

- a) Calculate descriptor total, timbral internal variance (TIV), and subtotals

- Module 3

- Dramaturgical approach

- a) Constellation of timbres on a timbral canvas
 - b) Identify a particular timbral constellation mark the timbral chronology and simultaneities (trajectories)
 - c) Select of analysis approach (sequences and/or aggregation)
 - d) Identify trajectories and their musical context
 - e) Identify timbral trajectory strategy, main dialectics, and Froise principles
 - f) Select the most apt and representative canvas version to represent voice-leading
 - g) Can be combined with pitch-based analysis tools, analysis of spectral interference structures, psychoacoustics models, etc.

Parts of or in a whole

The scientific discoveries in Vesikkalas research are to identify and catalogue sounds that in one way or another simultaneously contain frequency and noise within the field of art music. Here I use the definition *art music* because in western music it is considered primarily a written musical tradition, Vesikkala also declares “Score-based analysis is the main approach to the repertoire, complemented by analytical listening.”

When studying isolated elements in music like Vesikkala suggests, you can of course still learn about these particular elements. Looking at pitch space only for instance, you can also clearly observe harmony or timbre. But as soon as you want to make a valid statement of the nature of this element in the context of music you have to place it back within the whole, You have to link the element back to the construction of music and look at how it combines with all other parts of a musical work. Vesikkala proposes to put spotlight on parts of particular personal interest and discuss the effects on the totality.

The background to Vesikkalas’ issues is well discussed and addresses the defined research problem. The objectives are clearly stated and met by the research methodology design used and findings. The thesis could have received a higher value if Vesikkala had developed his method with a reference group, e.g. students on a basic level at HAMU. This would serve to ensure the quality of the chosen method and to follow the results of the reference group in a longitudinal study. The thesis is also limited to acoustic music and here the link and discussion between composers and musicians is missing. Here, valuable information about the musician's interpretation to shape the composer's information could have come to light.

Vesikkala has developed a certain theory and method for analysing Froise. Based on this theory and method, hypotheses are proposed. The study is comprehensive and corresponds to the expectations of a doctoral thesis. It is important to note in this context that artistic research is a relatively new field within artistic education and that the language used must therefore be shaped by those who represent the artistic field. Pure natural science and social science have different ideas about scope, and my opinion is that if higher education is to have artistic research together with these research areas, the scope must also be defined and verbalised by practising artists.

Presentation and Design

It is an extensive work and the literature review is well summarised and consistent with the sequence of the research issues addressed in the study. The thesis contains excerpts from scores, pictures and other forms of summarised information. The charts on pp. 153-160 are not numbered and may confuse the reader. The summarised information is otherwise placed in the appropriate sequence and section of the thesis.

Anyone with a modest familiarity with academic writing conventions knows that they are not totally standardised - especially where musical matters are concerned. Despite the fact that so many different styles and conventions co-exist, my recommendation if the thesis is written in

English is to follow the guideline *Music in Words - A guide to Researching and Writing about Music* by Trevor Herbert.

An example of what the bibliography could then look like would look like this:

Thoresen, Lasse (2015). Emergent Musical Forms: Aural Explorations. In *Studies in music from the University of Western Ontario, Volume 24*, ed. James Grier. London, Ontario: Department of Music Research and Composition, Don Wright Faculty of Music, University of Western Ontario.

The theoretical knowledge acquired by Vesikkala has been translated into the compositions that accompany the thesis. The compositions are well executed in the aesthetic direction that Vesikkala wants to identify himself in. Perhaps a sounding study that solely focused on different types of material with Froise in different shadings, as a pedagogical input, would have helped the listener to greater understanding and with asked questions such as, how can I create form from heterogeneous Froise material? How can I legitimise that one Froise sound follows another? How can I perceive Froise in a developed flow?

Summary

In summary, after a careful reading, a variety of capabilities and mechanisms are involved in perceiving and producing music. Each of these may have a different evolutionary history. Determining whether something makes *noise-pitch continuum* and is deemed “musical” by its creators – is no small feat. Vesikkala makes a thorough and systematic inventory of the area and supports his findings in the literature read. There are areas that Vesikkala does not touch such as where the sound phenomenon Froise exists f.ex. in popular music, but this does not have the same aesthetic direction as Vesikkala himself. There could be a chorus of the same sound information wrapped within different musical context f.ex. music by Tom Cora, Mikael Åkerfeldt, or Michel Chion.

Vesikkala has clearly identified and discussed the contributions of the findings to the knowledge in the area, and the applicability of the findings in addressing the research problems in the study. Through learning together and in conversation with others, we come to understand our own practices much more deeply, as well as opening our minds to new ideas.

Discussion

There are occasions when the result of the analysis must be conveyed in purely practical situations and then in spoken form, as in practical study. Then a pedagogical language that also can function in a direct dialogue is required. This can be trying for the teacher of music theory. A language that works perfectly in the theory of form or in analysis, does not correspond to the concepts and methods that stimulate the music in an interactional situation. There are naturally considerable differences between an analytical lecture or a written analysis and the practising musician’s situation. How to form a language for the practitioner?

What practical actions or scientific studies should follow after your thesis?

Literature

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Karkoschka, E. (1966). *Das Schriftbild der Neuen Musik*, Celle: Hermann Moeck Verlag.

Smalley, D. (1997). *Spectromorphology: explaining sound-shapes*. In *Organised sound*, Volume 2, Issue 2, pp. 107-126. Cambridge University Press.

Terhardt, E. (1982). Impact of computers on music – an outline. In *Music, Mind, and Brain – The Neuropsychology of Music*. (ed.) Manfred Clynes, pp. 353-369. New York: Plenum Press.

Thoresen, L. (2007). *Form-building transformations – an approach to the aural analysis of emergent musical forms*. *The Journal of Music and Meaning*. JMM 4, 2007, section 3.

With the knowledge I have gained from the material I have read and taken part in, I suggest that Juhani Vesikkala is approved for his PhD degree.

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