Title

Organizing an Aural Space Taxonomy for Electroacoustic Music: Analysis via Causality and Classification

Author

Elwell, Kramer

Publication Date

2023

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

Organizing an Aural Space Taxonomy for Electroacoustic Music: Analysis via Causality and Classification

A dissertation submitted in partial satisfaction
of the requirements for the degree:

Doctor of Philosophy in Music

By

Kramer Elwell

Committee:

Professor João Pedro Oliveira, Chair

Professor JoAnn Kuchera-Morin

Professor Curtis Roads

September 2023

The Dissertation of Kramer Elwell is approved.

Curtis Roads

JoAnn Kuchera-Morin

João Pedro Oliveira, Committee Chair

September 2023

Organizing an Aural Space Taxonomy for Electroacoustic Music: Analysis via Causality and Classification

By

Kramer Elwell

ACKNOWLEDGMENTS

The contents of this document represent the pinnacle achievement of my academic career, and its completion would not have been possible without the guidance and support of several individuals.

First and foremost, I must extend my endless gratitude to my dissertation committee. The guidance offered by João Pedro Oliveira, JoAnn Kuchera-Morin, and Curtis Roads has been indispensable. Thank you so much for sharing your wisdom and your artistry with me and thank you for indulging me with your patience when my curiosity was, at times, borderline compulsive.

Additionally, there are several friends and former mentors who I owe so much to. I'd like to give special thanks to Karl Yerkes for expanding my technological competency tenfold. Thank you to Andrew Tholl for bringing the composers together for decidedly fruitful conversations. And thank you to past mentors Bruce Hamilton, Roger Briggs, Russel Pinkston, and Bruce Pennycook for contributing to my journey.

I must also offer a special, most heartfelt thank you to the late Clarence Barlow. Our conversations and libations at the pool bar were a serious motivator when considering UCSB. Your kindness and joy were infectious, and the community you created was deeply inspiring and thoughtful. Our conversations about *Musiquantics* and your *Autobusk* software were the turning point which gave this document its shape [3][4]. We expressed a love for numbers in different ways, but you validated and supported my artistic expression in a way that few ever have. I am forever grateful.

I'd like to thank my UCSB graduate cohorts, as well as every artist cohort that came before, for fostering a welcoming and inspiring environment. Long conversations and nights of socialization have led to a deeper appreciation for my craft and the power of art as a vehicle for human empathy and communication. My deepest thanks to Tanner Cassidy, Rodney DuPlessis, Drew Flieder, Elizabeth J. Hambleton, Matt Owensby, Raphael Radna, Jon Fielder, Chris Ozley, Whitney Wynn, June Bash, Christian Casolary, and so many others.

Finally, I must extent my sincerest appreciation for my family who have supported my musical journey from the very beginning. Many long months were spent listening to me say "it's *nearly* there" ad nauseum, when in reality, we all knew that there was likely another hundred pages before my perfectionism would be sated. Though you nodded and smiled knowingly while supporting my obsession all the same. Thank you for everything- always.

VITA OF KRAMER ELWELL
MAY 2023

EDUCATION

2023 Doctor of Philosophy, Music Composition
University of California, Santa Barbara, USA

2021 Master of Science, Media Art and Technology
University of California, Santa Barbara, USA

2016 Master of Music, Music Composition
University of Texas at Austin, Austin, USA

2013 Bachelor of Music, Music Composition
Bachelor of Music, Percussion Performance
Western Washington University, Bellingham, USA

AWARDS, GRANTS, FELLOWSHIPS

2023 Citta' di Udine International Composition Competition
Finalist: *What Sleeps Beneath*

2022 METAMORPHOSES International Competition
1st prize (ex æquo): *What Sleeps Beneath*

2021 Music Nova International Competition
Finalist: *What Sleeps Beneath*

2018-22 Fricker Graduate Fellowship in Composition
University of California Santa Barbara

2019 Dorothy and Sherrill C. Corwin Award in Composition
2nd Place – Electroacoustic Music
3rd Place – Chamber Music

2016 Sonic Explorations – Viseu 2.0
Finalist: *Return to the Earth*

2013-16 Kent Kennan Endowed Fellowship in Composition
University of Texas at Austin

2013 Award in Compositional Excellence
Western Washington University

2012 Vox Novus 60x60 Voice Mix
Contest (Collaboration with June Bash)

2008-13 College of Fine and Performing Arts Dean's Award
Western Washington University

ACADEMIC APPOINTMENTS

2021-22 Teaching Associate – MUS109CA Introduction to Interactive Audio
University of California Santa Barbara

2020 Teaching Associate – MUS109CA Introduction to Creative Audio
University of California Santa Barbara

2010-12 Teaching Assistant – Music 230, 232, 432 – Electroacoustic Music
Western Washington University

PROFESSIONAL ACTIVITIES

2020-22 Corwin Series Administrative Assistant
University of California Santa Barbara

CREATE Technical Coordinator
University of California Santa Barbara

2019-22 Composition Forum Coordinator
University of California Santa Barbara

2019-20 CEMEC Concert Coordinator
University of California Santa Barbara

2019-20 Digital Arts and Humanities Commons Research Assistant
University of California Santa Barbara

2017-18 Audio/Video Engineer
Marysville Opera House – Marysville, WA

2018 Personnel Manager – Marrowstone Music Festival
Seattle Youth Symphony Orchestra

2017 Stage Manager / Electrician – Marrowstone Music Festival
Seattle Youth Symphony Orchestra

2016 Personnel Manager – Marrowstone Music Festival
Seattle Youth Symphony Orchestra

2015-16 Media Technologies Research Assistant
University of Texas at Austin

2011-13 Recording Services Manager
Western Washington University

2011-13 Assistant to the Director of Bands
Western Washington University

PROFESSIONAL ACTIVITIES (cont.)

2009-13 Head Stage Manager
Western Washington University – Department of Music

2008-13 Stage Technician / House Manager
Western Washington University – Fine and Performing Arts

CONFERENCES, RESIDENCIES, AND GUEST LECTURES

2024 IN-SONORA 13
Performance: *What Sleeps Beneath*

2023 SCI Region V Conference at Ohio University
Performance: *OWN.k*

New York City Electroacoustic Music Festival
Performance: *OWN.k*

SEAMUS National Conference Rhizomatic Event
Performance: *OWN.k*

Electronic Music Midwest
Performance: *OWN.k*

2022 Festival L'Espace du Son
Performance: *What Sleeps Beneath*

International Computer Music Conference
Performance: *What Sleeps Beneath*

New York City Electroacoustic Music Festival
Performance: *What Sleeps Beneath*

Sound and Music Computing Conference
Performance: *What Sleeps Beneath*

SEAMUS National Conference
Performance: *What Sleeps Beneath*

2021 Graphic Scores – Colby College
Guest Lecture on Graphic Notation (MU281)

Composition Forum – University of California Santa Barbara
Presentation: *Qualifying Exam Research:*
Graphic Notation Systems for Electroacoustic Analysis

CONFERENCES, RESIDENCIES, AND GUEST LECTURES (cont.)

2020 Composition Forum – University of California Santa Barbara
Presentation: *Current Research: Machine Listening*

Composition Forum – University of California Santa Barbara
Presentation: *Resources for Art Residencies*

2019 Kimmel Harding Nelson Center AIR Community Lecture
Guest Lecture: *Residency Activities*

Artist-in-Residence - Kimmel Harding Nelson Center
Residency: Multiple Works

Sound Walk and Audio Basics – University of California Santa Barbara
Guest Lecture on Field Recording (FAMST-189SW)

CEMEC Concert Series
Performance: *Return to the Earth*

Composition Forum – University of California Santa Barbara
Presentation: *Existing works and compositional style*

2018 SPLICE Institute – Western Michigan University
Performance: *The Prospector*

Glen Arbor Arts Center AIR Community Lecture
Guest Lecture: *Residency Activities*

Artist-In-Residence – Glen Arbor Arts Center
Residency | *What Sleeps Beneath*

SEAMUS National Conference – University of Oregon
Performance: *When Rooms Were Rung*

2018 Atlantic Center for the Arts – Community Open House
Performance: *OWN.k* (in-progress excerpt)

Associate Artist-in-Residence – Atlantic Center for the Arts
Residency w/ Robert Normandeau | *OWN.k*

2017 SEAMUS National Conference – St. Cloud State University
Performance: *Return to the Earth*

2016 Composition Masterclass – Marrowstone Music Festival
Public Forum – Seattle Youth Symphony Orchestra

2015 Electronic LaTex Festival – Rice University
Performance: *To Ring That Bell, EKT No. 8*

CONFERENCES, RESIDENCIES, AND GUEST LECTURES (cont.)

2015 Electroacoustic Barn Dance – University of Mary Washington
Performance: Cmd+Q Laptop Trio – *Barn dance Set*

SPLICE Institute – Western Michigan University
Performance: *Orbitors, EKT No. 6*

2014 Oregon Bach Festival – University of Oregon
Performance: *Geminids*

2013 Electronic LaTex Festival – Tulane University
Performance: *Selections from Portraits: 36 N*

Northwest Electronic InterExchange – University of Montana
Performance: *Submariner, EKT No. 3*

2010-13 Composition Masterclass – Marrowstone Music Festival
Public Forum: Seattle Youth Symphony Orchestra

2012 Bellingham Electronic Arts Festival – Western Washington University
Performance: Mind Meld Improv Ensemble – *BEAF Set*

2011 Northwest Electronic InterExchange – Western Washington University
Performance: *Synergy* (Collaboration with June Bash)

2010 Bellingham Electronic Arts Festival – Western Washington University
Performance: *Selections from Portraits: 36 N*

SELECTED WORKS | PERFORMANCES AND AWARDS

2022	*OWN.k*		
		November 2023:	SCI Region V Conference - Ohio University
		September 2023:	Kramer Elwell PhD Recital - Online
		June 2023:	New York City Electroacoustic Music Festival
		March 2023:	SEAMUS National Conference Rhizomatic Event - UofL
		March 2023:	Electronic Music Midwest
2021	*What Sleeps Beneath*		
		March 2024:	IN-SONORA 13 - Madrid, Spain
		November 2023:	Simpósio Internacional de Música Nova - Curitiba, Brazil
		September 2023:	Kramer Elwell PhD Recital - Online
		August 2023:	**Finalist** - Citta' di Udine International Competition - Udine, Italy
		July 2023:	La Hora Acusmática 2023 - Argentina
		June 2023:	Electroacoustic Spring 2023 - Rethymno, Crete, Greece
		October 2022:	**1st Prize** - Metamorphoses Competition - Festival L'Espace du Son
		July 2022:	International Computer Music Conference - Limerick, Ireland
		June 2022:	New York City Electroacoustic Music Festival
		June 2022:	Sound and Music Computing Conference - Saint-Étienne, France
		June 2022:	MAT SYMADES - SBCAST
		May 2022:	Corwin Graduate Concert - UC Santa Barbara
		April 2022:	SEAMUS National Conference - Western Michigan University
		November 2021:	**Finalist** - Musica Nova International Competition, Czech Republic
2020	*Reception Interference*		
		September 2023:	Kramer Elwell PhD Recital – Online
		June 2021:	Corwin Graduate Concert – UC Santa Barbara
2019	*Barlovian Tribute (abridged)*		
		June 2019:	Clarence Barlow's Retirement Party

IN-PROGRESS WORKS

Encryptions (Revised)	Choral
Laws in the Minds of Clockwork Men (Revised)	Percussion Quartet and Electronic
Dmu Sukyrryk	Choral
Submariner, EKT No. 3	Solo Mixed Electroacoustic
The First Geometricon, EKT No. 5	Solo Mixed Electroacoustic
Pentagrams, EKT No. 7	Solo Mixed Electroacoustic
Etaoin, EKT No. 9	Solo Mixed Electroacoustic
Your Body is Not Yours	Bass Clarinet and Percussion

ABSTRACT

**Organizing an Aural Space Taxonomy for Electroacoustic Music:
Analysis via Causality and Classification**

By

Kramer Elwell

After nearly a century of musicological research, sound-based composition pedagogy still struggles to establish analytical and archival practices. The composer has access to a diverse array of typomorphological and technological dimensions, which creates an informatic space far larger than what is used in traditional note-based composition. Many published works seek to define aspects of the space, but they are spread across many disparate contexts and their terminologies and philosophies are not always aligned. Furthermore, the discipline's lack of prescriptive codes means that each work is its own idiosyncratic construction, which demands an idiosyncratic analysis in turn. Pedagogues are left with few resources to accomplish this, and no grounds with which to establish new curricula. As a result, students often progress with a greater understanding of their technological tools than the aesthetics of their field.

This document offers a resource and methodology as a solution. Pertinent aural features are abstracted from several musicological works on electroacoustic music and a taxonomic space is designed to organize them. The author's analytical methodology will then be demonstrated, showing how aural features from the space can be used in a parametric context befitting an idiosyncratic analysis. The data gathered from this analysis will be used as evidence in a case study of one of the author's own works – *What Sleeps Beneath*.

Table of Contents

List of Figures

List of Tables

List of Audio Examples

Chapter 1

Introduction

Acousmatic music and other sound-based forms of electroacoustic composition are burdened by complications in the analytical and archival domains. Analysis and archival methodologies maintain a tenuous connection to the broader electroacoustic discourse when compared to technologically-driven pedagogical and performance practices. Their role is crucial to a comprehensive understanding of the artform, and yet, more often than not, they are only loosely incorporated into American research practices. This is likely due to the sheer volume of sonic parameters potentially at play in the music discourse and our inability to process, document, and describe them. The sum of relevant data constitutes a high-dimensional informatic space of immense size; a space far larger and less hierarchically organized than anything employed in the composition of traditionally notated concert works. As such, comprehension of the total space is muddled, leading to pedagogical and research methodologies that are either insufficient or nonexistent. Even the most popularized analytical schemes can't claim to be universally applicable in all cases. Typically, they represent niche perspectives obtained through practice-based research, where systems of analysis reflect their author's compositional process.

Whether consciously or intuitively, every composer navigates an aesthetic space and conceives of internal processes via an intentional selection of salient aural features. Such selections account for only a small subset of the total space, and no two works will employ the same selection of features as no single feature is compulsory. In this sense, composition is no longer the creative exploitation of a standardized theoretical system. Rather, the creation of novel, idiosyncratic systems of organization *is* the core of electroacoustic composition. However, as understanding those systems is fundamental to analysis, having no guaranteed commonalities between works can become a complication to the observer. Most composers wouldn't write for a string quartet without an examination of a pitch space. As such, in analyzing string quartet works, we would typically rely on pitch investigations to be fruitful. Genres of sonic art, however, make no guarantees that a formal pitch structure, or any parameter for that matter, plays a pivotal role in the conception of the work. We could say the same of gestural construction, spatialization, or connotative implications suggested by source bonding [52][1].

How then are the relevant parameters made perceivable to the analyst? For this, we could look to Pierre Schaeffer's concept of *values* and *characteristics* [49], which acts as the precursor to our feature selection model. Lasse Thoresen supplies a thorough definition:

> "The values are the features of a given sound-character that through their differentiation form the pertinent elements of musical structure; the characters are the remaining, less changing, more repetitive features of sound, those that do not constantly change but through their static quality serve as a common background facilitating the integration of the differential values into a unified pattern."
>
> (Thoresen 2009: 1) [54]

We could also reference Schaeffer's original example, which offers a simplified explanation:

[1] Smalley defines *source bonding* as: "the *natural* tendency to relate sounds to supposed sources and causes, and to relate sounds to each other because they appear to have shared or associated origins."

> “The function of the piano or the violin is to produce [sound] objects having enough characteristics in common (timbre) for their value (pitch) to be differentiated.”
>
> (Schaeffer 1966a, 2017: 239 - 240) [48]

Thus, internal structures are made perceptible by clearly delineating a subset of parameters that are chosen for development against the remaining parameters which are not. In Schaeffer’s example, timbre is a static variable while pitch is chosen for development as the likely carrier of the musical structure. Our feature selection should be considered an analogue to Schaeffer’s values, though recontextualized to be more idiomatic in a 21st century multidimensional context. It holds the key to deciphering intent from the musical discourse, and as such, seeking its definition should be integral to any analytical methodology. The reconstruction of the composer’s feature selection is contingent upon navigating the sound world in search of features which display noticeable patterns of development.

Yet, each selection is unique and requires unique analytical methods to accurately classify and represent them across all timescales. This makes it difficult to devise an analytical strategy that accounts for every possible abstraction. The only way to simulate a ‘universal’ analytical system is to examine each work considering *all possible* parameters within the space of the electroacoustic aesthetic. However, as stated by Curtis Roads,

> “From a compositional point of view, music is an n-dimensional design space, in the sense that there are *no intrinsic limits* on the type and number of independent parameters that a composer can conceive and manipulate.”
>
> (Roads 2015, emphasis mine) [46]

Given this lack of intrinsic limits, the idea of enumerating an infinite sum of parameters seems outrageous. A thorough definition would be labor intensive and would require contribution on an international scale to be truly representative of *all* compositional parameters.

It should stand to reason then, that popularized analytical methods are rather narrow in scope and often scrutinized because of it [10][54]. From Pierre Schaeffer's initial typomorphology [49], its expanded definitions by Chion [14] and Thoresen [55][56], to Denis Smalley's spectromorphology [51] [52], or Stéphane Roy's functional grid [47], or other similar descriptive analysis models [24][29]. all focus on niche subsets of features, varying in size and complexity. None of which summarize the entire electroacoustic space so much as the place their compositional aesthetics have within it. As composers, they developed novel organizational systems for their works, and their analytical methodologies were inspired by familiar feature selections. Each represents isolated perspectives useful in isolated contexts.

Though, no analytical system should be dismissed as illegitimate or obsolete due to a narrow scope. Established systems become conceptual codes which drive compositional thinking. A significant corpus of electroacoustic works *was* composed and conceptualized using such systems, and as such, the systems are useful in analyzing *some* works, or perhaps aspects of some works. Their value is not diminished because they fail to function as an all-encompassing, abstracted system like those used to analyze notated concert works. In lieu of a 'universal' system, any abstracted system is useful if it can summarize *some* compositional processes.

If anything, venerating an idealized, 'universal' system of analysis- one which retains its relevancy when applied to all works - will likely hinder long-term research. The creation of idiosyncratic systems is essential to compositional practice, and as such, any analytical method will be insufficient if it fails to account for the variable size and complexity of each feature selection. Our current thinking has struck a precarious balance between continued innovation in this area and a reliance on familiar patterns of development. We acknowledge both electroacoustic works and traditionally notated works as '*music*'. However, there are centuries of precedence in support of traditional '*musical*' analysis via a standardized '*theory'* which describes '*how music works*.' At first blush, it would seem to be a safe inclination to keep with this pattern and develop a 'theory of electroacoustic composition'. However, neither Horacio Vaggione nor Leigh Landy finds this prospect necessary or possible:

> "… there is no necessity to affirm the existence of "universals" standing above musical practices, whatever these universals might be: a Platonic Idea, the dogmatics of proportion, a normative foundation of harmony, and so on."
>
> (Vaggione 2001: 55) [61]

> "Although there are significant theoretical concepts available, there are still too few means on offer for the creation of greater theoretical coherence in our field. What is likely, and this is quite understandable given the vast variety of sounds and compositional approaches we are dealing with, is that no single classification system will be universally applicable."
>
> (Landy 2007, 189) [29]

Further still, we could consider Trevor Wishart's thoughts on notation: "...the priorities of notation do not merely reflect musical priorities - they actually create them" [60]. If we assume that systems of notation are symbolic representations of theoretical systems, it would not be a stretch to rephrase the statement as '…the priorities of *music theories* do not merely reflect musical priorities – they actually create them.' The creation of a 'universal' electroacoustic music theory would be biased towards a narrow aesthetic perspective and enforce levels of structuralism that is undesirable to the electroacoustic community at large [47]. Interpreting any popularized analytical methodology as 'universal', does exactly that. They run the risk of removing the composer's prerogative to create internal systems of organization and make them external, as is tradition with most notated concert works.

Externalizing systems of composition might seem convenient to the analyst, but they contradict current electroacoustic trends. Over time, the larger community will only become more resistant to the idea of a 'universal theory' as aesthetics pertaining to contemporaneous technologies become incongruous when compared to those of the past. To maintain the electroacoustic composer's prerogative *and* reintroduce a functioning analytical methodology, the analyst must be prepared to create new, idiosyncratic analyses to suit every work. Michael Norris offers a similar perspective:

> "Electroacoustic music analysis should be more of a research programme, one that reinstates individual acts of interpretation rather than a systematized self-perpetuating model, while retaining non-subjective data as an evidential foundation… This would mean no analytical investigation is ever complete. There may be a sense of comprehensiveness, but never a sense of completion."
>
> (Norris 1999: 66) [34]

Attempting to standardize anything would be a willful exertion of bias upon the aesthetic space and would override the creative freedoms of its practitioners. Recently published analyses in Michael Clarke's *Inside Computer Music* [13] and Lasse Thoresen's analysis of Ake Parmerud's *Les objets obscurs: III* (1991 [54] are evidence of trending idiosyncratic analysis methods.

I propose that we discontinue the search for a 'universal' all together. It is more prudent to turn our attention toward the creation of a conceptualized framework which can accommodate any number of abstracted systems in one organized context- used as a *tool* for idiosyncratic analysis and *not a theory*. To do that, we *must* pursue the labor-intensive process of parameterizing as much of the known literature as possible so that we can concatenate the result into a legitimate compositional feature space. The techniques, values, or parameters published in the works of Schaeffer, Thoresen, Smalley, and others remain valid and must be reconceptualized as low-level features which can be examined, à la carte, in the context of any feature selection. Practically speaking, the issues facing the analyst have little to do with the use of multiple abstracted systems or the creation of new ones. Any acousmatic work could be interpreted using *both* the Schaefferian typology and Smalley's spectromorphology. These systems differ in focus but the use of one does not preclude the other. It only entails additional listening and a more thorough perspective.

Real complications arise when salient features lie outside the observer's musical vocabulary. Novel methods of organization can potentially go unnoticed if they are not well documented or made plainly obvious in the context of the sonic landscape. In such cases, the observer is left stranded, adrift among uncontextualized stimuli. This is undesirable for the seasoned analyst to be sure, but it is also an imposition for students or general audiences without a specialized listening competency. To achieve a higher understanding, they must not only familiarize themselves with an infinite design space but must do so while consulting hundreds of disparate sources with few commonalities and fewer consensuses. Transitioning from a universal analysis paradigm to an idiosyncratic one implies a shift from prescriptive expectation to anecdotal description. The most logical way to accommodate that descriptive analysis methodology is to index as many abstracted features as possible and make them available to the observer- as a glossary of aural features.

A team led by Simon Atkinson and Leigh Landy have been conducting research adjacent to this since 2001 for their ElectroAcoustic Resource Site (EARS) Project[2] [1]. The stated design goal of the EARS Project is to "aid the greater understanding of the opportunities offered by these radical forms of sound organization, as well as their cultural impact…" while also "[aspiring for] the greatest possible breadth and inclusiveness" [62]. Among all the available resources for electroacoustic pedagogy today, this exemplifies the ideal model. A glossary encompasses a significant corpus of terminological entries and cross-references them with bibliographic contributions. These glossary entries construct an aesthetic taxonomy that paints

[2] The ElectroAcoustic Research Site (EARS) Project - http://ears.huma-num.fr/

a generalized picture of the electroacoustic discipline, broken into 6 categories: Disciplines of Study, Genres and Categories, Musicology of Electroacoustic Music, Performance Practice and Presentation, Sound Production and Manipulation, and Musical Structure.

The compositional space I propose has commonalities with each EARS category, but the vast majority would lie somewhere within the "Musicology of Electroacoustic Music" and "Musical Structure", evidently alongside Iannis Xenakis, Barry Truax, Curtis Roads, Denis Smalley, François Bayle, Trevor Wishart, and many others. Upon further investigation, however, we see that while the EARS glossary utilizes many similar terms- i.e., gestures, textures, abstract discourse, intrinsic morphology, etc. – it is more applicable for discussions related to fields of study. It consults bibliographic entries for global terminologies or topics of conversation but does not index the individual dimensions pertinent to compositional aesthetics. That is the area that we will be focusing on. We will create a taxonomy under the assumption that composers structure works via some logical process, and those logical processes can be parameterized into a selection of low-level features at various hierarchical levels. The resultant glossary of compositional features can then be offered as a supplement to the work already conducted by the EARS project.

Obviously, glossaries and taxonomies such as these are predestined to remain incomplete in perpetuity, as it is impossible for a few people in a vacuum to enumerate *every* parameter or topic in an electroacoustic aesthetic space. It will continue to expand with each new compositional idea, but that shouldn't deter us from attempting to record what we know. Everything that lies outside our knowledge can be contributed by a composer or musicologist of a differing perspective or listening experience. If anything, its incompleteness is a strength, as the space can never fall to prescription if it can never be fully quantified. It need only be organized in such a way that future contributions can be accommodated. For that, we must prioritize several goals:

I. The space must remain organized in such a way that it can be easily appended.

II. The space must exist as an open, public forum which receives new contributions from any aesthetic or research perspective.

III. The space must remain amenable to curation. Curatorial entities should engage with the space, consolidating ideas and revising its structural taxonomy as necessary.

IV. Any indexed features must be of neutral weight. Nothing is compulsory, and thus no feature is more relevant than any other. Suggesting otherwise enforces a bias about the nature of the space, and in effect transforms the tool into a theory.

V. The space must be as large as necessary to suit any use case. Observational intentions vary and none are more privileged than any other. Thus, the space must remain large enough to accommodate the most thorough description of sound, sound structures, sound processes, or sound art works to suit either analytical or archival endeavors.

Following these guidelines, we can begin to organize the infinitely large, sonic design space. The resulting glossary shall concatenate previous musicological ideas into a single functioning framework and do so while remaining neutral to aesthetic bias. Ideally, by providing a context for cohabitation and parameterization, historical methods can retain their relevancy in new contexts and provide the basis for future iteration. In its use, responsibility will fall upon the analyst to interpret what features are salient in the observed musical discourse. In practice, this should be consistent with most contemporary analytical procedures. However, with a map of the known space, it will be far easier to navigate one's way to a thorough interpretation. If a known feature offers little insight into the context of a work, then perhaps an unknown or overlooked feature can elucidate things.

1.1 Methodology

Considering the previously stated design goals, a preliminary case study is necessary to comprise the first iteration of the space. Published works were consulted for parameterization with the intent of seeking out any dimensions pertaining to the perception of electroacoustic music at various timescales. Processes related to aural analysis, or the conception of the composition process were deemed viable for inclusion. Though, more attention is given to the former. Examining dimensions of compositional practice will be paramount to the longevity of the space, but that knowledge is less centrally organized in published texts. Compositional aesthetics arise in many anecdotal or disparate contexts, potentially littered throughout interviews, program notes, CD liner notes, compositional notes, memoirs, computer code, or recorded lectures. This requires a broader research study that goes well beyond the bounds of what is possible in this document.

More specifically, the texts or chapters which comprise the cornerstone of the space are those that explicitly discuss an analytical discourse- establishing, reaffirming, or critiquing terminologies which conceptualize the electroacoustic medium or compositional process. This encompasses notable analytical methodologies such as Schaeffer [49], Thoresen [56], Smalley [52], or Roy [47]. In cases where methodologies have been expounded upon in more contemporary research, the newer material and terminology is used, provided no information was lost between successive entries. Additionally, some editorial liberties have been taken when naming low-level features or classifications. In some published contexts, abstracted dimensions were referenced by their classifications only, while the observed phenomenon itself lacked definition. Also, in cases where terminology does not easily translate to English, I accepted a localized equivalent or determined a reasonable substitute myself. Any localization was intended for the benefit of this document only. In the future, we can revisit each entry and catalogue regional variants or terminological preferences.

1.2 Motivations

My conceptualization and use of the electroacoustic space is driven primarily by my experiences within American academia. As a student and lecturer, several pedagogical, technological, or archival processes have, at times, been a source of either interest or frustration. A comprehensive understanding of electroacoustic aesthetics requires a multifaceted, specialized knowledge, and yet obtaining such knowledge is far from convenient in the current pedagogical paradigm. It took a heuristic approach to parameterization to expand my knowledge and improve my compositional methods. I found success in that regard, but more importantly, I believe that the definition of an aural space would befit electroacoustic pedagogy. Having a thorough public resource would make access to essential knowledge more convenient and might mitigate frustrations for others.

However, to productively discuss these frustrations, I feel I must first reflect on the American curricular model. The following assumptions will be more anecdotal in nature but are supported by my experiences collaborating with various academic institutions and professionals. For this discussion, assume that American electroacoustic research, as an abstract model, ideally operates as an iterative system in which technology, composition, performance practice, analysis, archival, and pedagogy are interconnected. Figure 1.1 illustrates my interpretation of how knowledge might be disseminated in such a system.

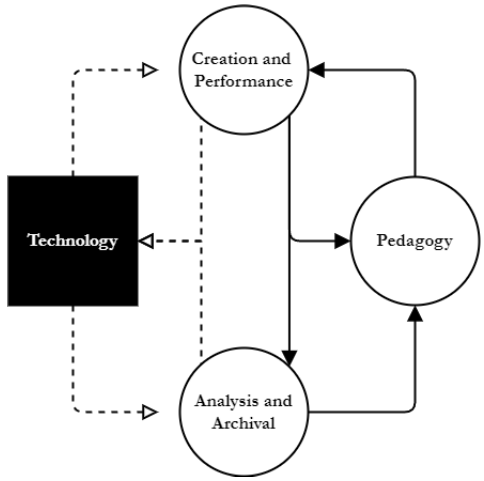


Figure 1.1 - An idealized model for American electroacoustic research

In the idealized model, new technologies inspire creative and performance practices. An analytical discourse investigates the output and devises a means of communicating artistic intent to an abstract repository of research, perhaps with technological assistance. Once quantified and encapsulated, the recorded knowledge is reserved for a pedagogical discourse. Individual pedagogues accept new aesthetic findings, integrating them with existing techniques and developing new curricula in a constant dialogue with performance practice. The collaboration between these entities drives innovation and creates further technological need, which can be fed back to developers to inspire further refinement or invention.

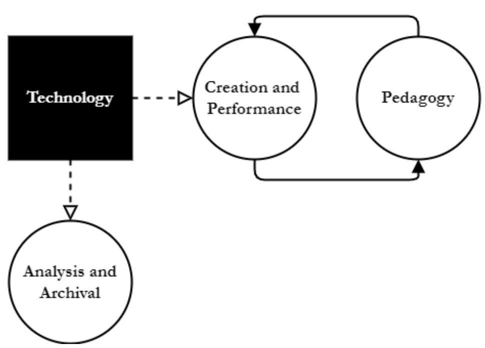


Figure 1.2 – An American electroacoustic research model with Analysis and Archival decoupled.

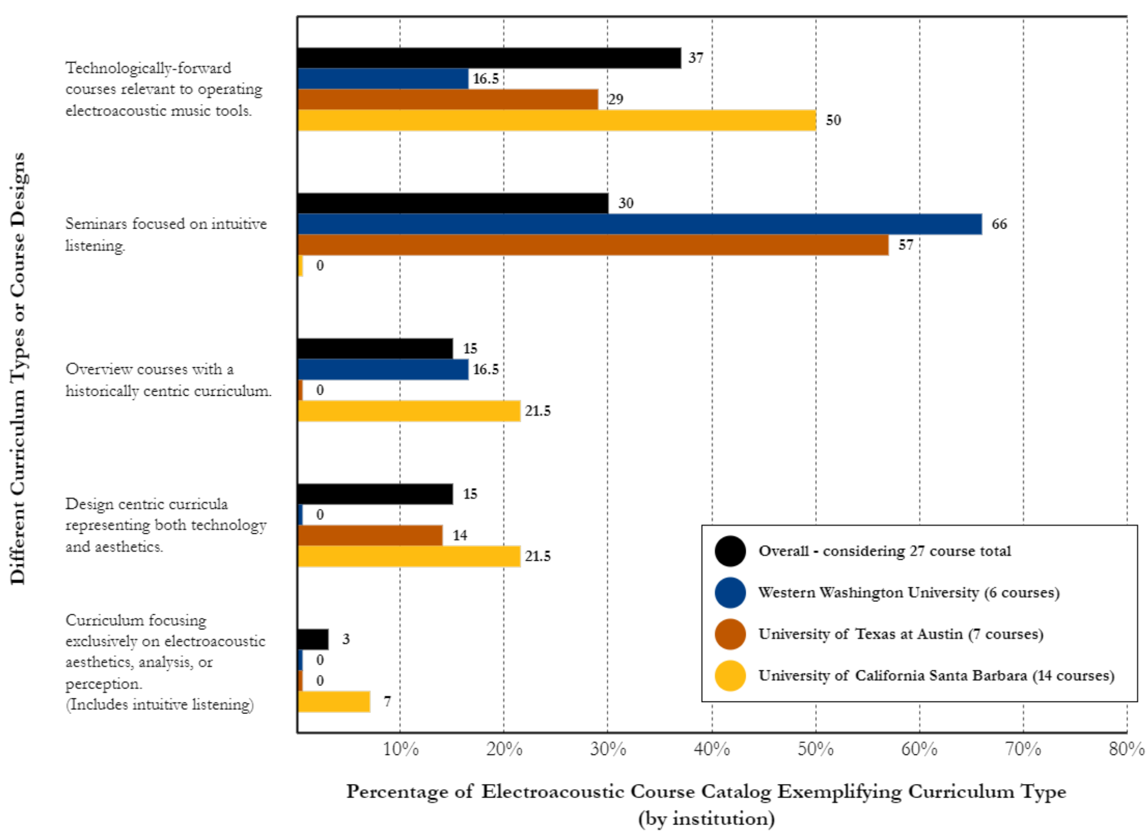
However, this interpretation assumes that the analytical and archival discourses function as the proverbial database for recorded technical and aesthetic knowledge. Not only that, but it assumes that the pedagogical discourse utilizes such findings in formalized curricula. Without analysis and archival methods, the system is reduced to a conversation between pedagogy and the creative application of contemporaneous technologies (see Figure 1.2 above). An excess of creative prototyping might occur, but the result is rarely evaluated or recorded for its aesthetic viability. Similarly, past aesthetic knowledge is infrequently consulted or iterated upon. This creates an environment where electroacoustic research and pedagogy is untethered to an abstract understanding of the musical discourse. Instead, it is preoccupied with current technological trends and the availability of resources. Atkinson and Landy recognize similar trends:

> "Despite the overwhelming expansion in creative and artistic practice that the period in question has witnessed, it would seem fairly uncontentious to argue that resources in the field have expanded largely in terms of the development of those technological tools that have enabled this creative and artistic expansion. The same period has produced many fewer resources in terms of the musicological or wide-scale understanding of these artistic practices and their cultural implications. … the discursive flavour in the field can often seem dominated by the model of an ever-onwards march of technological innovation and refinement in which discussion of the 'hows?' overshadows the 'whys?''"
>
> (Atkinson and Landy 2004: 79) [1]

Many prominent institutions surely operate under the ideal model, but in my experience, the latter case is more often indicative of American institutions. The normative research model lacks a strong analytical and archival presence, and individual pedagogues are instead designated as living proxies for recorded aesthetic knowledge. Though, the depth of that knowledge is still tightly focused on their own technologically preoccupied perspective, and the curricula they establish reflect that trend. For the average student, matters pertaining to aesthetics and perception are (at best) transmitted orally, perhaps in private lessons, while the formalized curriculum follows a narrow trajectory in parallel with technology. Technology, in this case, still exhibits trends of iteration, but the same can't be said of our understanding of the musical discourse.

The curricula I have been exposed to contain few traces of aesthetics. Even generalized overviews in aesthetics or perception are rare. I've created a statistical representation of my own academic experience in Figure 1.3 below. The data represents all courses relevant to electroacoustic music that I've undertaken at prior institutions of learning, including adjacent coursework in media arts. The data shows an obvious trend towards certain types of curricula. Technologically dependent curricula represent the majority across all institutions, while *undirected* intuitive listening seminars come in at a close second.

Figure 1.3 - Statistical Representation: Author's academic experience- considering curricula and course design.



Based on the data, the most likely avenue for aesthetic and perceptual learning was via intuitive listening alone. However, the intuitive listening seminars I am familiar with had little in the way of vocabulary to describe the observed musical discourse. Conversation topics began and ended with "*What did you think*?" or "*Did you like that*?", as opposed to "*What did you hear*?", "*What were you listening for*?", "*What is the composer doing*?", or "*What is the composer highlighting*?", etc. Useful impressions may have been attained, but no way to communicate them beyond the technological procedures necessitated by their construction. In retrospect, I see now that the breadth of our perceptual competencies was in line with the established curricula we studied. The pedagogical discourse was technologically dependent, and so too was our perception. Any insight into the abstract musical discourse was obtained infrequently and through word-of-mouth in a one-on-one meeting with a mentor.

The adoption of such oral transmission methods isn't inherently problematic. The oral dissemination of technical and aesthetic knowledge from teacher to student is a ubiquitous operation and comprises most pedagogical interactions. However, real concerns begin to arise when considering oral traditions in the context of a technologically dependent system, like the one we find ourselves in. Technology, specifically, poses the greatest issue. Summarizing the thoughts of Bruce Pennycook, the electroacoustic discipline is inextricably bound to technology, and by extension, its availability and the propagation of technological trends affects pedagogical practice [39]. However, while technology may serve as an initial input to the research system, it follows its own patterns of progression regardless of artistic or academic interests.

Digital artforms gravitate towards specific tools and software, and curricula are frequently structured around those that are fully featured and receive ample developer support. However, those same platforms are bound to the commercial prerogatives of their parent companies.

Thus, the tools we rely on- the tools which define our perceptive competencies - are just as susceptible to forced obsolescence or monetization as any other contemporary technology. By extension, pedagogical systems that subsist on technologically forward curricula are also tied to that obsolescence. When practiced technologies are deprecated, so too are the curricula pertaining to it. Without an established archival methodology, any relevant information pertaining to compositional use or aesthetics is also lost. We must have some way to encode that aesthetic knowledge. Even if the technologies are lost to time, we must preserve what trends they started, and those trends must be defined in abstract, musical terms.

Electroacoustic music is relatively young in comparison to other musics, and yet several cycles of obsolescence have already run their course. We can easily identify several obsolete, deprecated, or prototype technologies that are only considered today for their historical or operational significance. Technologies such as magnetic tape and tape reels, IBM computers, the Ondes Martenot, Ondioline, the UPIC system, Radio Drums, Fairlight CMI, or Music-N languages are rarely ever consulted for their *aesthetic* or *practical contributions* to the compositional discourse. In their time, each technology functioned as a limiting factor, much in the same way 12-tone equal temperament or staff notation are limiting factors for concert works. The capability of the technological medium determines what is compositionally possible. Any choices made by the composer given those limitations ultimately influences communal aesthetic knowledge and defines genre characteristics. The question becomes how do we preserve those aesthetic inspirations when we know longer have access to deprecated technologies or the artists who championed their use?

Judging by the established curricula, the student's intuitive perception is the most likely avenue. However, for most students, this creates discontinuities whenever the conversation shifts to canonical electroacoustic works. The average competency established through the formalized curriculum does not introduce a vocabulary to bridge the historical gap. When presented with a context devoid of technological commonalities, most are left with no way to communicate their intuitive impressions. And yet, the curricula offered reinforce the implication that undirected listening is enough. With enough listening, the student will eventually figure it out. However, it's unlikely that a 21st century composer will intuitively come to *the same* aesthetic conclusions as their predecessors while disconnected from the technological resources and era that inspired them. Today's students lack that lived experience, and similar experiences are out of reach. This includes deprecated technologies, as few units remain in working condition and no curriculum exists to teach them. As such, they likely won't be privy to their intrinsic aesthetics, nor could they abstract and parameterize that knowledge for newer contexts. Without archival methodologies, the only recourse would be to interview the individual pedagogues that *do* have practical experience, as they represent the available, accumulated knowledge. But over time, those pedagogues will pass on and "much that once was will be lost, for none shall live who remember it" [57].

Thus, for longevity's sake, we must ask ourselves several questions. What percentage of aesthetic and compositional features are retained through word-of-mouth or intuitive listening alone? Can we circumvent cycles of technological and aesthetic obsolescence, or will we acquiesce to it? The survival of our cumulative aesthetic knowledge hinges upon whether an archival discourse can outpace the rate of technological obsolescence. If it can't, then electroacoustic music will be hard pressed to maintain generational iteration in any dimension other than in what tools we use. This paints a troubling picture if you consider how musical cultures are built upon generational iteration- building upon the aesthetic knowledge of those that came before you. There is plenty of history about our technologies, but our cumulative aesthetic knowledge is dangerously underdeveloped given the volume of art that has been created.

That said, there are notable examples of those pushing for stronger archival practices. The Electroacoustic Music Mine out of New York University collaborates with the New York City Electronic Music Festival to archive all concert programming [38]. Given composer consent, the works are even accepted as examples for analytical research. Though in NYU's case, they are pursuing an empirical, audio analysis approach. Researcher Tae Hong Park notes ample success in obtaining quantitative data from machine assisted listening methods, but states that those results provided little musical significance [37]. Park identifies the missing element- a ground truth, or a collection of "human annotations of audio signals":

> "An even more difficult task, however, in the quest for creating a comprehensive framework of electroacoustic music is the issue of incorporating the widely ranging, and partially complete, top-down and bottom-up analysis techniques for electroacoustic music from existing literature."
>
> (Park 2016: 142) [37]

This presents yet another area where progress is hindered by the lack of an established vocabulary. For machine assisted audio analysis to come to any substantive results, the system must deterministically connect empirical data to our conception of electroacoustic music. But if we as researchers can't accurately define our conception of electroacoustic music, how can we represent it in an intelligent system?

In all cases, be it the interaction with intelligent computer systems, our emancipation from technological obsolescence, or our ability to communicate in the classroom- they all exhibit an urgent need for a thorough, organized, human definition of the electroacoustic aural space. That definition must be made freely accessible to all and exist in abstraction- impervious to aesthetic bias and isolated from cycles of obsolescence.

Personally, my research interests coincide with all three of the aforementioned areas, so I have a deep invested interested in seeing improvement in this area. If possible, I would like to offer a more comprehensive resources to those I would endeavor to teach. I've found that this electroacoustic aural space in a good first step towards providing that actionable vocabulary. It offers unlimited avenues for analytical inquiry, can concatenate compositional dimensions from any generation, can expand compositional thinking, and can serve as the basis for a new pedagogical model. It is suitable for new listeners at almost any level of competency and provides a more suitable ground floor with which to acquaint themselves with the electroacoustic discipline.

1.3 Overview

In this chapter we discussed the complications facing the electroacoustic analyst, and by extension, the complications facing the electroacoustic discipline and its practitioners. We covered methodologies and motivations for an indexed glossary of aural features, and now, we will overview the remaining chapters in this document.

In chapter 2, we will investigate the taxonomic organization of the electroacoustic aural space. We will discuss characteristics of individual feature types, followed by an observation of the two subdivisions of the space and its subgroups following a bottom-up approach. In cases, we'll make note of musicological contributions, commenting on abstracted feature definitions and their place within the space.

Chapter 3 outlines my analytical process, and how I make practical use of the aural feature space. We'll begin by discussing tools and listening goals. After that we will discuss event and unit segmentation processes, which ultimately result in a statistical frequency analysis of salient aural features.

In chapter 4, we will make practical use of the data gathered during chapter 3 by analyzing my acousmatic work *What Sleeps Beneath* (2021). We will discuss the history and narratological motivations behind the work, aspects of my composition thinking, and then we will walk through the piece in sections. We'll justify our analysis, using visual evidence and auditory examples that demonstrate the use of the aural feature space.

Finally, in chapter 5, I will reflect on the research that still needs to be conducted. We will discuss the aural space and the specific steps that must be followed to accommodate its growth. Then, we will discuss the future of my analytical methodology including future applications, future tools, representation strategies, and more.

Chapter 2

Organizing an Aural Space Taxonomy

As previously stated, there will always be room within this space to incorporate additional parameters, and so it shall always be incomplete. New compositional ideas and new technologies inevitably lead to new levels of control over the musical discourse. As such, I make no claims that this space is in any way "conclusive"- it is a first iteration. There remains a wealth of borrowed features from notated concert music, music information retrieval, machine learning, mathematics, or countless other subdisciplines; all of which are omitted here in lieu of a focused case study. References to '*tonal harmony*' or '*Mel-Frequency Cepstral Coefficients*' (MFCC's) will be more aptly defined in the context of their own adjacent spaces, which could be considered as modules to the electroacoustic space in time.

The enumerated features in this document are exclusively pulled from the published work of composers and musicologists in the electroacoustic or acousmatic tradition, with additional features conceived from my own compositional practice. The texts that interest us are those that classify musical structure and the compositional discourse via an *aural analysis* strategy rather than methods of information retrieval provided by machine assisted *audio analysis*. To those immersed in current machine listening trends, a close examination of the aural feature glossary will likely yield parameters which seem arbitrary when compared to quantitative alternatives. Thoresen's *Spectral Brightness* for example [56], may seem vague when weighed against the more empirical Spectral Centroid. However, our primary focus at this time will continue to be a framework that coalesces the wealth of classifications available to the human analyst in the context of unassisted listening. The organization of the feature space taxonomy, while knowingly emblematic of my own compositional priorities and conceptual interpretation, has been intentionally designed to accommodate that limited scope. Quantitative features obtained through an audio analysis (i.e., Spectral Centroids or MFCC's) will have to be reserved for future research. All that said, however, this doesn't mean that the aural taxonomy is intended as a compositional framework or a basis for prescriptive learning. It can be an aid for reflection post hoc, but only when it fulfills its intended purpose of aiding descriptive analysis.

Our taxonomy will be in good company, as several electroacoustic taxonomies already exist in academic research. Atkinson and Landy's EARS Project is a comprehensive example [1], but there is also the computer music taxonomy of Stephen Travis Pope [40], which coalesces unpublished taxonomic structures from Dannenberg, Loy, and Pennycook. In each case, a top-down musicological focus remains a constant theme. Categorizations of genre-styles, technological mediums, or disciplines of study often predominate the taxonomic structure. These resources are indispensable to the accomplished researcher but don't elucidate as much as I would like at a compositional level, thus diminishing their utility to the individual composer or those acquainting themselves with the field. Conversely, the reader should consider the construction of this taxonomy to be from the bottom-up. It prioritizes parameters found at the initial point of creation with the intention of establishing a point of entry for those looking to understand the compositional structure of sound-based art.

The existing aesthetic corpus will continue to grow, and as such, this taxonomic organization will undoubtedly change. Further iteration will lead to the development of new features, arbitrary classifications will be refined and converted to more quantitative variants, and research into relevant subdomains will yield entirely new families of features and alter our impressions of the space. For now, however, I feel the first iteration is sufficient in unifying many prominent contributions of 20th and 21st century research. For now, the reconceptualization of their work accounts for a space of 128 features. We won't define each feature within the main body of this document, but the reader may refer to Appendix A.1 for the current feature glossary to supplement their reading of the following chapters. We'll outline the feature space taxonomy beginning with feature types. Then we will discuss the two highest levels of organization and their subsections.

2.1 Feature Types

Before discussing the full taxonomy, we require terminology that defines low-level feature types and their relationships. Like other datasets, low-level features within the aural electroacoustic space can be *Quantitative*, *Ordinal,* or *Categorical* [25]. Quantitative features can be represented as numerical values existing along continua with defined scales and orders. The ranges of these continua can be explicit, as is the frequency spectrum in relation to *Pitch* or dynamic range in relation to *Dynamic Level* (in DbFS). Or scales can be incremental and unique to the observed sound unit or the entire work. This is the case for *Sectionality*, *Structure Unit Density*, or *Structure Duration*.

Ordinal and categorical parameters, however, are resistant to definition via a scale. In these cases, parameters are enumerated by the number of states they can exhibit, and sounds are classified as inhabiting a state. Those features without a defined scale, but have a defined order are ordinal. For example, Denis Smalley's levels of *Gestural Surrogacy* could be considered an ordinal feature- i.e., there is no defined scale for surrogacy but there are ordered levels, ranging from primal to remote surrogacy [52].

Categorical features have an indeterminate number of classifications with neither scale nor order. An essential categorical feature in my works is a sound's *Identity Class.* It classifies the conceptualized source of a sound (i.e.- the object or entity that created that sound is a: "dog", "cat", "car", etc.) with no consideration for scale or order. It is defined in the context of a single work and can be represented as *N*-number of states. It functions similarly to Trevor Wishart's 'sound-image' classifications [60] and is useful when constructing narrative sequences. The creation of such narratives closely aligns with what Curtis Roads calls "sonic causality", which he defines as:

> "The idea that one sound appears to cause or give rise to another *in a narrative sense*, … That is, what if one sound was the necessary antecedent that appears to cause a consequent sound? We see this effect in cinema where a succession of sounds (often not recorded at the same time as the filming) spliced and layered together lends continuity to a visual montage (e.g., footsteps + yell + gunshot + scream + person falls to the ground). "Appears to cause" is the operative phrase; my use of the term "causality" is metaphorical."
>
> (Roads 2015: *emphasis mine*) [46]

To determine what feature type to ascribe to a compositional parameter we refer to Julian, who says: "Features can be defined by the allowable operations that can be performed on them." Averages, means, modes, ranges, variances, maximums, or minimums are all typical operations. Averages are useful for quantitative features, medians for ordinals, and mode for categorical features. Additionally, "we can call the range of possible calculations that can be performed on a feature as its statistics" [25]. Considering this, we can define an additional class of features- *Statistical Features*. These features represent the product of a statistical operation upon a low-level feature. Thoresen's *Spectral Width* parameter [56] could be seen as a statistical feature which considers an approximate range between a sound spectrum's minimum and maximum values (both of which are also statistical). Similarly, a sound object's *Dynamic Peak* is also a statistical quantitative feature.

Conventionally, we develop statistical features when observing a single typological feature over time. However, we might also notice the formation of mesostructural relationships between several high-level structures. This invariably leads to features which depend on others or aggregate to form larger features. A *Dependent Feature* is the most rudimentary case. Dependent features can be quantitative, ordinal, or categorical but are only deemed necessary when a superior feature is existing in a particular state. For example, when we discuss unit segmentation and structural organization in the next chapter, we will utilize Smalley's terminology for sound structures [52]. However, I have expanded and recontextualized his terminology into three features:

- *Spectromorphological Structure Type* [Impulse, Pedal, Gesture, Texture]
- *Spectromorphological Function Type* [Onset, Continuation, Termination, N/A]
- *Spectromorphological Subfunction Type* [*Variable based on Function Type*]

The subfunction is dependent on the function, and function is dependent on the structure type. We may have no need to classify a function type (*Onset*, *Continuation*, or *Termination*) if the observed sound structure does not conveniently constitute a discrete structure of type *Gesture* or *Texture*. Perhaps the observed work is similar to Hildegard Westerkamp's *A Walk Through the City* (1981) or *Kits Beach Soundwalk* (1989). Similar pieces might be more aptly described using terminology relevant to continuous soundscape composition, where the ideas of Schafer [50] Truax [63], Bregman [7], or McGregor and Turner et al [58] are more pertinent and structural developments do not exemplify the prototypical spectromorphological case in Smalley's terms.

In such cases, any features that are dependent on *Spectromorphological Structure Type* would not be required.

Furthermore, we should expect there to be several terms or descriptors in published musicological works that will not be included in their original forms. These descriptors are more indicative of *Structured Features*, which Julian describes as formulated features that represent an aggregate of *N*-number of low-level features [25]. We have a history of equating complex behaviors with simple descriptors, but the definition of those behaviors is bound to change with context. Despite their evocative implications they aren't sufficiently concrete in describing their interaction with low-level features.

For example, the first chapter of Adrian Moore's *Sonic Art: An Introduction to Electroacoustic Music* opens with numerous descriptor pairs which pertain to various compositional aspects [30]; terms such as: "*clean/dirty", "gentle/violent", "floor/ceiling", "unstable/stable",* or "*ascending/descending".* These terms are evocative and immediately suggest any number of referential sounds, spatial motions, or sound transformations, but nothing conclusive. "*Ascending"* or "*Increasing"* when applied to *Pitch*, for example, could imply either a continuous glissandi movement or a stepwise motion in *any* tuning system. Conversely, the same terminology could represent a crescendo when applied to *Dynamic Level* (**Audio 2.1** 🔈). In each case there is an operation applied to a low-level feature value causing a perceivable increase. However, we lack a concrete definition of *which* parameters need be altered to achieve the desired effect, because the abstracted features used to express one composer's interpretation of *rising*, *flying*, or *ascending* will be unique from any others. This variability is desirable. It encourages a free exploration of the space and befits the creation of idiosyncratic systems of musical organization.

Any attempt to quantify such audio descriptors as formulaic actions in our space would inevitably entail the definition of a prototypical case- an idealized representation of that descriptor. For example, consider the *Perfect Authentic Cadence* as an act of "*resolution*". "*Resolution*" entails some degree of closure, but to enact it as a *Perfect Authentic Cadence*, the structure must exhibit harmonic movement between specific sonorities and resolve via specific voice leading. The descriptor becomes prescriptive code, and those codes must be followed to create a functional resolution in those terms. But prescription introduces bias. To strip away the interpretive variability of the descriptor would infuse an aesthetic bias upon that action, which is counterintuitive to our goals. Representations of such formulaic descriptors could not remain aesthetically neutral. As such, descriptive structured features are only included when their definition does not infringe upon the goal of neutrality, otherwise they are reserved as conceptual classifications.

Finally, we should move forward keeping Schaeffer's original terminology in mind; specifically- the *Values* and *Characteristics* we spoke of earlier. Again, a sound object's values are the features that undergo development and thus create the abstract musical discourse. Characteristics on the other hand remain static, maintaining a constant foundation which allows values to be more easily perceived. However, this terminology was conceived for a focused observation of the sound object. Additionally, an alternative definition for the term 'value' in a context which utilizes quantitative data creates an obvious complication. I would prefer to redefine them, so they fit the new context of our space.

Thus, when considering the entire space, those developed features which carry the musical discourse will be referred to as *Salient Features*, and those that remain static will be *Static Features*. There is precedence for such terminology going back to at least 1998, where Camilleri and

Smalley identify salient features as a substitute for Schaeffer's values [8]. Though, they define the concept further by using the term 'pertinences' as a shorthand:

> "In a particular work what are the salient sonic features (pertinences) on which a particular listening strategy alights? … Since in electroacoustic music there are "no 'pre-segmented' discrete units like notes" we are faced not only with the problem of deciding what is pertinent, but also with locating it, and with describing how its identity is to be expressed. In terms of location, we may not necessarily be able to delineate a self-contained unit or sound, but instead will need to highlight a prevalent sonic characteristic or a structural behaviour; we may not necessarily be concerned with a discrete 'unit' at a low level of structure but with a more global feature.
>
> (Camilleri and Smalley 1998: 3) [8]

I find the term 'pertinences' to be less functional as descriptive terminology in this case. 'Salient features' is direct, it is more ubiquitous in a 21st century context, and clearly indicates the connection between "prevalent sonic characteristics" or "structural behaviours" and the multidimensional design space.

In the interest of future-proofing the ever-expanding space, I feel that we should also establish the possibility of *Latent Features*- i.e., features that are neither static nor perceived as salient. Given the size and interconnectedness of the space, it is entirely possible that developments on one feature will have ramifications upon other, non-salient features. For a simple example, consider a sine wave sweeping from 1hz to 10,000hz over 20 seconds with no amplitudinal change (though safely attenuated) (**Audio 2.2** 🔈). The Fletcher-Munson[3] curve indicates peaks in perceivable loudness as the frequency approaches ~1000hz - 4000hz [20], but in classifying this sound we would be less inclined indicate a crescendo into 4000hz as a salient feature. The salient operation is upon the frequency of the sine wave, the change in perceived loudness is an unintended (latent) byproduct.

[3] The Fletcher-Munson curve graphs the ear's sensitivity to different frequencies at different levels of loudness. Discovered by Harvey Fletcher and Wilden A. Munson in 1933, through experiments conducted at Bell Labs [20].

In this sense, a salient feature should not necessarily be considered the antithesis of a static feature. Merely demonstrating a non-static character is not enough to determine saliency- a pattern of *intentional development* is necessary. As such, the core component of our analysis methodology will be to determine which features are *salient* in the musical discourse- deciphering the structure from the composer's intent. Likewise, an application of static features can be equally as intentional, and just as valuable to the understanding of the work. Once the work has been surveyed and determinations about feature saliency have been made, the resulting subset of salient and static features will comprise our *Feature Selection*. The feature selection serves as the 'fingerprint' of the work, and determining the best way to represent that data should be the highest priority of the analyst.

2.2 The Perceptual Domain

At its highest level, the aural electroacoustic space is comprised of two domains- a *Perceptual Domain* and a *Conceptual Domain*. One regards the ways in which we *hear* a work while the other concerns itself with *ideas* about the work's construction, functionality, or meaning. In the case of the latter, observation of the composer's perspective is just as pertinent as the listener's. Both halves operate according to generalized principles of aesthesis and poiesis[4] respectively, which is also consistent with Pierre Couprie's findings, who describes two categorizations of analysis methodologies:

> 1. Methods based on the auditory perception of the audio medium …
> 2. Methods incorporating the sources of creation made available by the composer.
>
> (Couprie 2015: 14) [15]

[4] Terms credited to French poet Paul Valéry, which distinguishes between aspects of a works creation from its perception or reception. http://ears.huma-num.fr/49b196e0-a464-4365-b519-454efe4cc4ef.html

The former supplies evidence regarding the material '*what*' of the equation, while the latter encompasses all features which describe the '*how*', the '*why*', or the '*who*'. Though in practice, this distinction is rarely simple, especially where perception and conception are concerned. We can't interpret stimuli if we haven't perceived it first, and any incoming stimuli is meaningless if we lack pre-existing concepts about their context or implication. These two domains are linked and as such their dividing lines can become blurred. Areas of the musical discourse can, and will, have features present within both domains.

An organizational logic for the remaining space taxonomy was supported by numerous factors, included precedents set by Atkinson and Landy [1]. Listening (perception) being the first, which has been frequently researched and has yielded many perspectives on listening modes [35][36][49][52][50]. We will assume that all of these suggested modes of listening are valid but simply represent targeted domain listening. Many salient features found in a reduced listening context [49] will befit the perceptual domain, while alternative modes will suit the conceptual. For example, Smalley identifies aspects of technological listening:

> "Technological listening occurs when a listener 'perceives' the technology or technique behind the music rather than the music itself, perhaps to such an extent that true musical meaning is blocked. Ideally, the technology should be transparent, or at least the music needs to be composed in such a way that the qualities of its invention override any tendency to listen primarily in a technological manner. It is difficult for the composer to adopt a 'purer' spectromorphological ear untainted by technological listening when there are so many technical preoccupations which interfere with the creative stream, *clouding perceptual judgment*."
>
> (Smalley 1997: 109. Emphasis mine) [52]

According to Smalley, "technical preoccupations," or subjects of observation beyond that of a reduced context, "[cloud] perceptual judgement." Following this definition, the perceptual domain must house features which identify and classify any materialistic units of sound within the musical discourse– i.e., determining '*what something is*' as opposed to '*how something was made*' or '*what something means*.' This pertains to sound objects, larger structures, longer processes, or sectional divisions. We will consider everything else under the auspices of the conceptual domain. Smalley's source bonding is an example which falls into the latter category, which he claims to be the extrinsic factor in "intrinsic-to-extrinsic" links. Spectromorphology (intrinsic) is the musical context inside the work, and the extrinsic associations are the world beyond the work [52]. Thus, we must first search for any features which qualify as intrinsic qualities of the musical discourse.

Intrinsic structural details can occur on multiple timescales from short instantaneous developments at the level of the sound object, to shorter structures, to full sections or whole pieces. How composers operate within these timescales is unique, and yet the perception of multiple timescales is typically a constant. This creates a convenient logic with which to organize the domain. *Feature Families* in the perceptual domain are defined in consideration of such timescales, and low-level features are sorted into the most relevant family at the most localized timescale.

Beginning at the most atomic level (the sound object) and expanding outward to a global context (the piece), we can subdivide the perceptual domain into five families of classification. Those families are *Typomorphology*, *Spectromorphology*, *Spatiomorphology, Intermorphology, and* the *Macro-Level Structure*. A more detailed description of each family will proceed below.

2.2.1 Typomorphological Classification

The typomorphological family of classification encompasses all perceptual features which operate on lowest possible level- that of the sound object. Of all the taxonomic families, typomorphology contains the most documented evidence by a sizable margin, and as such, requires the least exposition. The pertinent features to a typomorphological investigation are already encapsulated in the works of Pierre Schaeffer [48][49] and the expanded versions published by Chion [14] and Thoresen [56].

In "*The Soundscape: Our Sonic Environment and the Tuning of the World*", R. Murray Schafer offers his perspective on Pierre Schaeffer's sound object, calling it a laboratory specimen lacking context [50]. This perspective seems leveled as criticism on Schafer's part as it juxtaposes his own listening philosophy. Yet, within our taxonomy, 'observation without context' is an ideal description for typomorphological features. As we move towards the global context, spectromorphological and intermorphological features will be used to describe relationships between sounds in time-varying contexts. Detached from that context, typomorphology can excel in describing the qualities of sound objects in isolation, regardless of their connection to larger structures or processes. It should be noted, however, that typomorphological classifications can become source data for statistical observations at higher levels approaching the global context.

The typomorphological family is divided into two subsections- *Frequency Varying* features and *Attack-Time Varying* features- in parallel with observations made of the frequency domain and time domain respectively. Examples of frequency varying features include: *Sound Spectrum* , *Spectral Brightness*, or *Spectral Width*, while features such as *Duration*, *Dynamic Level*, *Energy Articulation*, or *Granularity* are included among Attack-Time varying features.

2.2.2 Spectromorphological Classification

As we move beyond the isolated observation of the sound object, the intuitive sense of the listener begins to predominate. It employs gestalt processes or engages in patternicity to segment and group unique audio stimuli into meaningful agglomerates. Works which suggest this level of organization transition from typomorphological to spectromorphological investigation. The term spectromorphology is owed to Denis Smalley, whose work of the same name constitutes the majority of spectromorphological features [52], though I am also offering some original contributions.

In spectromorphological thinking, individual sounds can be perceived either as constituent members of larger structure units (i.e., Smalley's 'gestures' or 'textures'), or as exhibiting the prototypical formula for such structures themselves - i.e., containing an onset, continuant, and termination function in some combination. We will utilize much of Smalley's terminology, but for our purposes, *sound structures* will be used as the default terminology to refer to all spectromorphological units, regardless of type.

Spectromorphological features describe the anatomy or variable state of such sound structures. Like the typomorphological family, the scope of spectromorphological investigation does not exceed that of the observed structure. We interpret multiple sounds in the context of a single structural unit, but *not* that unit's relationship to other structures or the rest of the work. Considering this scope, the perception of a spectromorphological structure is best defined by its duration, proportionality, and density. Other dimensions *are* pertinent to the spectromorphological structure, but their classification requires a global context, a statistical observation of typomorphological features, or additional conceptual features.

The perception of gestures and textures, as defined by Smalley, presupposes the existence of internal development within the structure that mimics the characteristic spectromorphological formula. Any sound objects from the typomorphological level that do not function this way can alternatively be classified as an 'impulse' or a 'pedal', depending on its duration. These classifications assume that the observed structural unit *does not* exhibit development but instead perpetuates a static character. Though, it should also be noted that shifts between static and dynamic states are still viable operations and can, in fact, be central to the construction of a musical discourse.

The spectromorphological formula – Onset, Continuation, and Termination – is well known and frequently referenced in pedagogical practice. Though, for our purposes, it requires additional specificity to more thoroughly "explain sound *shapes*" in a parametric context, at least to the degree where it encourages comparisons between discrete structures. I've included a number of *Spectromorphological Subfunction Types* to aid in that purpose. They are intended to elaborate on the context of each spectromorphological function, adding additional delimiters which distinguish between points of perception and points of causality. The quantitative measurements they add become evidence when comparing individual structures as members of intermorphological processes. By pairing typomorphological *and* spectromorphological statistical data, we can begin to ascribe unique shapes to spectromorphological units, manifesting a methodology adjacent to Manuella Blackburn's pre-compositional "sound shapes," but made tangible for analytical purposes [6]. Any further significance is added to the sound structure in the conceptual domain. These are all points that will be clarified in the following sections, but for now, we should focus on the expansion of the spectromorphological formula and quantifying sound structures.

For both Smalley and Roy [47] a thorough definition is created through the use of Function descriptors (see Figure 2.1). They not only add context to the discrete unit but also clarify the unit's role in the global context of the work. By attributing *exclusive* functions to the onset, continuation, and termination phases, we acknowledge that each spectromorphological function performs a dual purpose. They are perceivable time intervals which delineate the chronological progression of a discrete musical structure, but they are also conceptual units with some relevant purpose. However, Smalley and Roy's functions are more adept at describing the latter, while a thorough definition of the perceived time interval lacks definition. To expand on this area, I am introducing *Spectromorphological Subfunction Types*, which better describe the perceived structure in time.

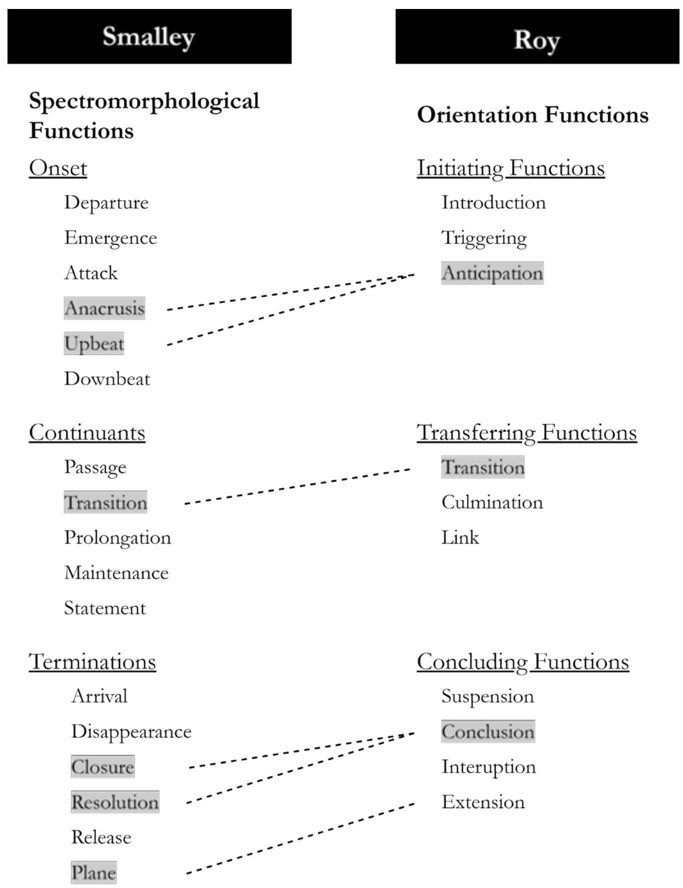


Figure 2.1 - Comparing Smalley's Spectromorphological Functions [52] with Roy's Orientation Functions [47].

In practice, a function's time interval might be brief enough to be perceived as an instantaneous event, or it can present with its own beginning and ending. An onset function might be an abrupt attack, or it might slowly build from nothing- a distinction Smalley acknowledges in his own structural functions (i.e., the *Attack* function versus the *Emergence* function [52]). Thus, in a goal-oriented event paradigm the point of emergence versus the point of arrival are two separate points. The time interval between those two points may still be perceived as one continuous motion representing the onset of a larger structure even if the limits on its duration are indeterminate. Subfunctions exist to quantify this interval.

Proceeding chronologically through the formula, we have the *Anterior Onset, Onset, Medial Valleys* and *Peaks*, *Medial Events*, *Anterior Terminus*, *Termination*, and *Posterior Terminus*. A spectromorphological structure can be composed of any of these parts in any combination. The *Anterior Onset* represents the earliest point of perception, where the structure first breaks a threshold of perceivable loudness, and the listener is made aware of its existence. However, its existence does not imply any causal relationship with the following structural functions. The *Onset* is the point of arrival. It suggests a causal transition to either continuation or termination phases.

In a continuant phase, we might define *Medial Valleys or Medial Peaks*. These terms originated as a way of discussing the internal variation of the amplitudinal trajectory, signified by notable changes in directionality. The medial valley suggests that the continuation phase has been attenuated to a low point but has shifted directions and is resurfacing. The medial peak is the opposite. It suggests the continuation phase has reached a peak (like you would see in a dynamic "swell") and is now receding. In practice, these distinctions are made when the variability in the continuant phase represents an event which is both intentional and clearly perceivable. Should dynamic growth changes be constant to the point of reaching static perception, like you might see if the internal trajectory is "oscillating", then it likely won't qualify as a series of valleys and peaks. These subfunctions suggest something resembling causal or event significance. However, they also imply a continuous motion.

For continuant moments which are discontinuous or instantaneous, we have the *Medial Event*. Medial events demonstrate a noticeable shift in typomorphological or spatiomorphological character which may or may not be influenced by causality. It registers as an event, but it does not imply a causal transition into a terminating phase or a secondary structure. Despite the aural shift, medial events still perpetuate a continuous state. The continuation phase's primary function is to maintain a dynamic, yet persistent, energy. If an instantaneous change occurs and the structure returns to, or iterates upon, the established continuant energy, I tend to classify it as an event. For instance, the actions of one structure may influence the continuant phase of another, compelling it to react immediately and sporadically. Conversely, a continuant phase may exhibit intermittent fluctuations but consistently return to a stable state. Obviously, such a conclusion will be dependent on context, but similar phenomena have appeared frequently enough that it warranted definition.

The termination subfunctions are the inverse of the onset. However, we include both anterior and posterior subfunctions for the termination. The *Anterior Terminus* is more common in structures with lengthier continuant phases. It suggests event significance and denotes the moment where the internal trajectory of the onset or continuation phase is shifting in preparation for the final point of termination. The *Termination* is the final causal nexus. Once we have arrived at this landmark, we perceive some logical conclusion or expect the deterioration or removal of the structure. Provided the termination is not an abrupt cut off, the *Posterior Terminus* defines the point where the termination function diminishes below a point of perception where the listener can no longer acknowledge its existence.

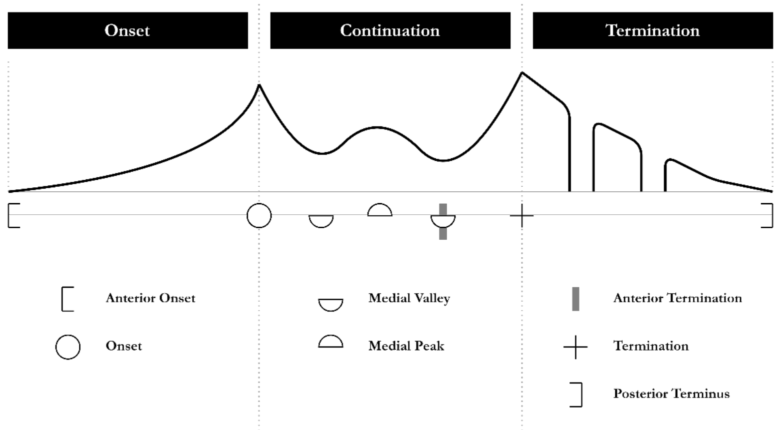


Figure 2.2 - Expanded Spectromorphological Formula with time delimiting Subfunctions.

I find these eight *Time-delimiting Spectromorphological Subfunctions* to be particularly useful when outlining the chronological progress of a discrete structure. They establish a coherent timeline and also highlight significant points of causal transition, provided a causal interpretation is warranted. In later sections we will discuss conceptual spectromorphological subfunctions that are more aligned with those of Smalley and Roy.

2.2.3 Spatiomorphological Classification

Sound spatialization and sound projection are synonymous with electroacoustic music. It is the focus of countless academic and industry research initiatives, and the development of the spatial dimension characterizes many genre-styles, marking its implementation in fixed media as one of the most significant contributions to 20th and 21st century music. Yet, despite its significance, the parametric observation of the spatial discourse remains one of the most difficult areas to parse. Its application straddles the border between compositional craft and performance practice, and much of its aesthetic interest is just as viable for conceptual inquiry as it is perceptual, if not more so.

Many authorities in the discipline, such as Annette Vande Gorne [22], Robert Normandeau [32], JoAnn Kuchera-Morin [28] and the AlloSphere Research Group [53],or the researchers at IRCAM [9] have published works, created tools and fixed installations, or have established training initiatives with intentions of comprehending the nature of space. Most published findings are dedicated to the digital or real-world architecture of various projection systems, which, while valuable information, is less pertinent to the abstract perception of the musical discourse. However, a few musicological investigations do offer insight into the connotative implications of the sound space environment or its perceptual classification [22][32].

Vande Gorne's terminology describing spatial perception is derived from an active projection (diffusion) practice at the Acousmonium[5], and as such befits a recipe for performance. She enumerates 16 spatial 'figures' (techniques), some of which are named for technical operations (the 'crossfade') while others are associated with evocative descriptors ('Empty/Full', or 'Invasion'). As these techniques are indicative of structured features, they will be reserved for the conceptual domain. Conversely, she describes 4 'species' of space relevant to spatial perception, as well as 6 levels of space applicable to spatial composition. Normandeau, on the other hand, expounds upon the 'cinema for the ear' philosophy, borrowing cinematic terminology to impress the relevance of the conceptual space.

Between these two perspectives we begin to see commonalities. After removing the connotative implications of space, kinetic descriptors, and technological resources, what remains of the spatiomorphological discourse is narrowly focused to the time-varying geometry, locality, and diffuseness of sound sources in the abstract 'performance space'. Both acknowledge

---

[5] The Acousmonium, as defined by INA-GRM (per https://inagrm.com/en/showcase/news/202/the-acousmonium last accessed on February 22nd, 2023) is: "an orchestra of loudspeakers arranged in front of, around and within the concert audience. …It was designed and inaugurated by François Bayle in 1974 and is still mainly used for the performance of acousmatic works."

Spatialization Archetypes - i.e., *Spatialization* versus *Localization* - though, in each case, the definition of 'spatialization' is informed by their experience with high-density speaker arrays. The sentiment can be easily generalized, however, to differentiate sounds which fill the entire spatial medium (be it stereophonic or high-density Acousmonium) or have a discernable location within it. Additionally, we can classify a sound's *Spatialization Archetype* as static or dynamic. If sounds exhibit movement in space or amplitudinal variability in certain subsections of space, we can expound further upon their rates of change and directionality in abstracted cartesian or polar spaces. Considerations for perceived *Proximal Depth* and *Volumetric Size*, as supported by reverberation or equalization, are also useful perceptual features.

However, defining space becomes convoluted as we begin to explore the definition of the 'performance space', which must remain vague, as it can apply to headphones, the studio, the concert hall, or site-specific works in unorthodox venues such as parks or galleries. Projections of Karlheinz Stockhausen's *Spiral* in the German Pavilion at the Osaka World Fair in 1970 or the original performance of Edgard Varèse's *Poème électronique* in the Philips Pavilion at the 1958 Brussels World Fair exemplify cases of the latter. Atypical projection scenarios such as these expose the limitations of a spatial analytical discourse.

The aesthetics of space can be expressed through a fixed interpretation by the composer or performed live by a sound projectionist. In both cases, the perception of spatial motion will be colored by the physical space the work is observed in. Interpreting intent from space or spatial movement in performance requires immersion within the performance venue and a listening perspective closely aligned with an intended orientation. Atypical projection scenarios, however, cannot guarantee that the listening condition of the observer will match those of the composer. Consider a musical section which alludes to a distant spatial source by projecting sound to distant loudspeakers. If the public can approach that distant location and stand in front of the loudspeaker, any illusion created by the exploitation of *Proximal Depth* is broken. Thus, to analyze space as a component of compositional aesthetics, the analyst must do so from the normative location determined by the composer.

Unorthodox performance spaces or asymmetrical configurations may not establish that proverbial 'sweet spot'. Perhaps a normative listening location was never intended to exist in the first place, which raises several questions. What perceptual spatiomorphological features are common between all projection environments? Can one perceptually classify space in abstraction without impedance from the observational space? Are there more approachable or ubiquitous spatial dimensions befitting analysis in conception as opposed to the perceptual domain? Are there undiscovered spatial dimensions made manifest in sound art installation that we have yet to consider? No feature is compulsory, and thus the aesthetics of space as determined by Vande Gorne and Normandeau are not a prerequisite, but it's clear that this area requires additional aesthetic research.

Regardless, when consulting a spatiomorphological discourse, one should expect unique cases which cannot be heard in their intended context or in a reasonable facsimile. The analysts will have to abstract what they can from fixed, published versions. This, however, only presents additional evidence necessitating the adoption of archival methodologies. In cases where the original spatial context cannot be replicated, archival evidence about the intended venue should be preserved to lend further insight into compositional intent. Alternatively, such archival data could be of use to recreate original listening contexts if a concept of "historical reconstruction" ever becomes a greater interest to the artistic community at large.

2.2.4 Intermorphological Classification

In keeping with established terminological conventions, I am offering *Intermorphology* as a term to describe higher-level syntactic processes similar to those defined by Roy [47]. *Inter-* meaning 'between', and *morphology* meaning an observation of forms. Its purpose is to describe finite parametric processes that cannot be attributed to a single sound unit or structure, which is intended to fill the mesostructural gap between the discrete spectromorphological unit and the macro-level structure. In effect, intermorphological classifications describe either the relationships between discrete structures, or the processes that dictate the development of the global context of the work. These relationships can occur in either sequential or stratified configurations. *Sequential* and *Stratified Intermorphology* pulls inspiration from Roy's horizontal (orientation) and vertical (stratified) functions respectively. The former implies a continuous pattern of iteration or development applied to discrete structures over time, and given its' relationship to time, is strongly influenced by aspects of causality. The latter considers the relationship between structures occurring in counterpoint or in simultaneity. Certain stratified elements can be still influenced by causality, which Roy defines as "diagonal processes" (in respect to being both vertical and horizontal), and others are "purely stratified" in that they exist in simultaneity without causal relationship.

Similar to spectromorphology, intermorphological processes can iterate upon structures from more localized mesostructural levels. This includes sound objects, gestures, or textures. They can also operate within the bounds of an entire section or the global context of the work. The only prerequisite on intermorphology's scope is that the observed process must represent a perceivable pattern of change between N-number of discrete sound structures, where N is greater than or equal to 2. For example, we might theorize an intermorphological process where a series of five clearly discernable gestures arise in a sequence (see Figure 2.3 below). Over the sequence, a typomorphological change is perceived to begin on the first gesture and concludes on the fifth- perhaps a growth process operating upon *Spectral Brightness*. Conversely, we could imagine a continuous sound mass that has no discernible lower-level structure beyond the global context (see Figure 2.4). In such cases, we might describe similar parametric changes occurring in the whole audio mix, upon specific frequency bands, on timbres, on pitch classes, etc. An intermorphological process describes the variability of some typomorphological or spectromorphological dimension within a finite time interval.

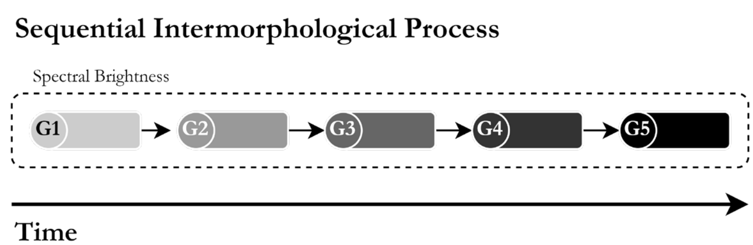


Figure 2.3 - Reference graphic illustrating a sequential intermorphological process applied to a gesture sequence.

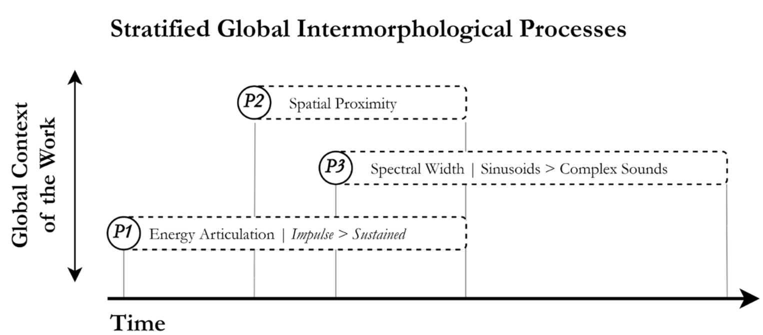


Figure 2.4 - Reference graphic illustrating stratified intermorphological processes applied to the global context.

This means that in practice, intermorphological processes are themselves structured features but quantified as a structural unit. It suggests a growth process is modifying a typomorphological or spectromorphological aural feature over an indeterminate number of parsable sound units. However, unlike the structured feature descriptors we've already mentioned, intermorphological processes do not infringe on our goal of neutrality. They elevate an isolated aural classification to a time-varying process that represents typomorphological change over time. I've found this to be an essential addition to my own analytical lexicon, as it is better at describing aural events in a continuous global context. Many prominent acousmatic works do not rely on clearly discernable sound objects, structures, or spectromorphological functions. Thus, being able to reformulate the macro-level structure of a work around a stratified collection of parametric processes is invaluable.

Many significant aspects of intermorphology have been pulled from Roy's work, however much of his functional grid is more at home in the Attributed Classification family of function descriptors, which we will discuss in greater length later. They aren't sorted here in intermorphology, but many of the proposed 40 functions *do* conceptualize an intermorphological process. Many suggest structurally delimiting functions (i.e., beginnings, middles, and endings) which are reminiscent of the established spectromorphological formula. Others attribute intra-musical functions to sound units, such as that of a 'supportive' entity, a 'triggering' impetus, or an immediate 'reference' to a stated idea. These are the type of structured features that work best in the conceptual domain as their definition is intuited in the mind of the listener, and the qualities that justify that description are indeterminate. That then calls into question what aural features we reserve for intermorphology in the perceptual domain. The results are very reminiscent to that of spectromorphology. Intermorphological aural features describe the anatomy and density of sound strata and sequences. They don't quantify specific roles, functions, or *significance*. They record abstract structural connections, segmentations, or perceptual focus in the sonic landscape.

R. Murray Schafer's Keynote and Signal sounds follow similar patterns of vertical segmentation (i.e., a stratified intermorphological context) [50], though through their definition, Schafer does ascribe significance to them. Regardless, the natural impulse for the ear to gravitate towards prominent, foregrounded sounds is a constant theme in many listening strategies. Like spectromorphology, this is permissible in that it utilizes innate gestalt practices and patternicity without making value judgements.

Compared to typomorphology or spectromorphology, this area is less developed in published literature. Roy's functions are just an exemplary case. Though, in practice, intermorphological processes should be ubiquitous in most electroacoustic music applications, including musique concrete or computer music. Michael Clarke's analysis of John Chowning's *Stria* (1977), for example, cites the use of the golden ratio (abbreviated to 1.618) as a deterministic factor in "the structuring of temporal aspects of the work, both the timing and duration of individual events and the large-scale structure" [13]. Thus, for Chowning, the golden ratio has been abstracted to determine a macro-level structure, but it also acts as a constant throughline for sequences of micro-structures. By modifying the duration of local events over time, Chowning is implementing a continuous intermorphological process over the course of the entire work. If I were to indulge in a technological metaphor, a sequential intermorphological process such as this is a lot like an automation lane in a digital audio workstation. It represents a continuous pattern of change, where *M* number of parameters effect *N* number of tracks or soundfiles.

Let's foreshadow our upcoming analysis with a hypothetical example of stratified intermorphology. Suppose that at the bare minimum, the entirety of the audio mix represents a single stratified intermorphological context. In this case, there is always at least one observable *stratum* (singular noun – "a series of layers"). We might then elaborate on the definition of the stratum by making note of the *Stratum Density*. Such a feature would quantify exactly how many parsable audio layers are present in a single instance of time. Perhaps one of those audio layers has additional vertical layers intrinsic to itself, like a static harmonic texture that occasionally shifts or modifies aspects of its sonority. In such a case, we might classify that sound layer as a *substratum* and record its *Substratum Density*. In referring to those various substrata, we might order them by their perceived foregrounded-ness. This would be their *Substratum Index*. For my purposes, I imagine the quantification of the global stratum as being similar to a layer-based graphics software. The most backgrounded image has an index of 0 (or 1 depending on ordering), while the indices of foregrounded images increment until the index is equal to the number of layers (or layers - 1). Thus, when defining a *Substratum Index*, substrata are labeled from 1 to N, where N is equal to *Stratum Density*. Over time, we can note changes in a sound's *Substratum Index* to imply changes to foregrounded-ness and backgrounded-ness.

Sequential intermorphology demonstrates many of the same characteristics. Sequences are indexed by their chronological order of appearance, their densities are measured, and their component members are given their own indices in relation to the sequence (i.e., sequence component 1, 2, etc.). The component members could be spectromorphological units like we saw earlier, or they could be references to specific substratum indices. This creates an environment where parametric processes can be applied equally to structurally delimited or non-delimited works.

Following these lines of inquiry have been fruitful for my own purposes, though in all fairness, operations such as these are only an example of what is possible in specific contexts. Investigations into foregrounded-ness or sequential indexing have been accessible in my works because my archival practices make it convenient. Having access to all compositional materials makes source separation simpler, and that grants the analyst (me) freedom to quantify or enumerate the work's various components to the most prudent level of specificity. However, the same techniques will likely be less useful in cases where dense, complex soundscapes cannot be deinterleaved by ear.

2.2.5 Macro-Level Classification

Once an analysis has reached the global context (i.e., the entire work), engagement shifts towards conversations of form or generalized statistical observations. For most, an indexed formal analysis (enumerating sections as A or B, etc.) should be the most familiar. Though, without required prescriptive codes, formal analyses may be found lacking in their utility, as they are only useful in cases where *Sectionality* is present within the observed work. *Sectionality*, in this case, is the most superior feature in a tree of dependent features. *Sectionality* is a simple Boolean feature where *Sectionality* == [Sectional, Not Sectional]. Works that have obvious sectional divisions of any kind are [Sectional], and those pieces that operate via continuous typological or intermorphological processes on a global context with no obvious dividing landmarks are [Not Sectional]. When deemed sectional, the analyst indexes each section in the macro-level structure (A, B, C… or 0, 1, 2…) as well as any patterns of recurrence or return (A' or B' - à la in refrain or parabolic and oscillating forms) like usual.

Without thematic or harmonic developments as a guide, the juxtaposition between macro-level sections might be represented via the states or selection of salient features. While we have asserted that each work is composed around a superior selection, in practice, it could be that the selection is divided into several abstractions. Each abstraction may revolve around conflicting permutations of static and salient aural features. When these feature abstractions succeed one another chronologically, the sudden change in the perceived selection contributes to the impression of a sectional boundary. An introductory section could be structured around foregrounded gestures and a musical discourse carried by typomorphological features. The second section could be a single textural context where various intermorphological processes evolve the texture over time. This is the case in my work *OWN.k* (2022). Sectional divisions are made apparent due to the juxtaposition of their contrasting salient and static feature selections. I find that juxtaposing salient feature abstractions makes the perception of formal landmarks far clearer. The perceptibility of formal landmarks can then reinforce the narratological imperatives of the work itself, which suits my aesthetic sensibilities.

However, one can never assume sectional divisions to be a certainty. My compositional aesthetic may approach the macro-level structure in this way, but 'form' is no more compulsory than any other aural feature. In cases where Sectionality is not present, the work becomes a network of contiguous salient feature states. Unique moments can be determined by the variable state changes in foregrounded voices, spectral bands, transformative processes, spatial motions, or any other novel expressions. Micro-structures can still occur in works without sectionality, but the less perceivable segmentation there is in a work, the harder it becomes to conveniently quantify its structure. This is when low-level parametric analyses are the most helpful. If a work cannot be organized through segmentation processes, then quantify the trajectory of one aural feature. A collection of several feature trajectories can then serve as a suitable substitute.

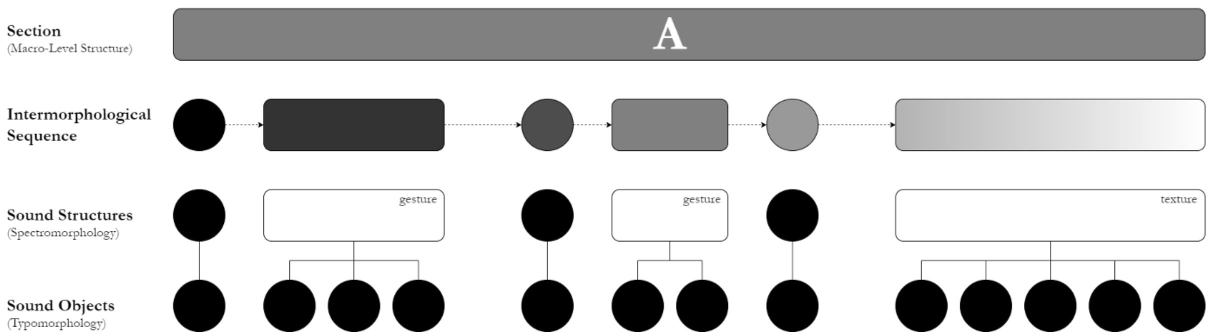


Figure 2.5 - Construction of higher-level structures from the sound object to macro-level section.

Additionally, at every mesostructural level, statistical observations can be made utilizing inherited feature data from more localized contexts. Feature data from localized contexts will always be within the scope of any mesostructural level above it approaching the global context. A visual representation of this feature inheritance can be seen in Figure 2.6. Statistical observations can start at the spectromorphological level, where all data from the typomorphological layer is generalized, bottom-up, towards the macro-level. The spatiomorphological discourse exhibits statistical operations as well. Spatiomorphological features operate on all mesostructural levels from the sound object to entire sections. As such, it has its own line of statistical inheritance that runs in parallel with typomorphology, proceeding from the most anatomical level to the global context.

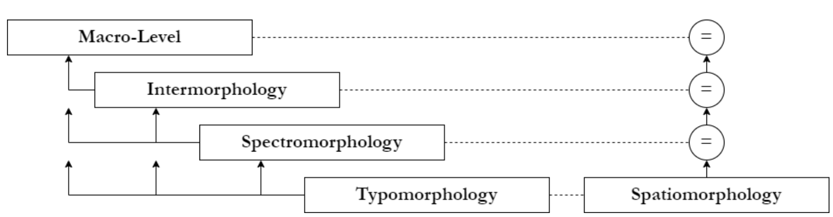


Figure 2.6 - Flow of inherited statistical features between taxonomic families.

As an example, we could envision a gestural structure which is composed of ten unique sound units, and we could classify the *Sound Spectrum* of each unit (*à la* Thoresen [56]). Perhaps nine of ten objects have complex spectrums, but the remaining object exhibits a clearly perceivable pitched sound. At the spectromorphological level, we could describe the *Sound Spectrum* of the gesture as a statistical product of inherited *Sound Spectrum* classifications. The result would be either a *Sound Spectrum Mode* or a *Sound Spectrum Median* == [Complex Spectrum], where the single pitch is interpreted as a deviation from the statistical norm. Example (**Audio 2.3** 🔈) demonstrates such a gesture.

Features of this type haven't been included in the attached feature glossary in Appendix A.1. The resulting list of features at higher levels would be exorbitant considering each possible statistical feature. It should also stand to reason that the analyst should be cautious when relying on such statistics. Though a product of statistical operations, it still reduces the existing corpus of observations down to a generalized perspective. At the same time, I am reluctant to omit such a discussion, as such operations *could* serve as the basis for musical discourse. Perhaps over time, a unidirectional process occurs where an anomalous entity (the 'pitched' spectrum) becomes the majority, or perhaps a cyclical process brings us back and forth between two generalized states (**Audio 2.4** 🔈). This could serve as the definition of an isolated intermorphological process or a process which determines the compositional logical for the entire work.

2.3 The Conceptual Domain

The conceptual domain is built upon the foundations of signification, modification, and socio-cultural understanding. It's where the perception of auditory stimuli is magnified by its assumed association with technological or real-world contexts. Our attention shifts from what sound *is* to what sound might *mean*, and we shift from listening to comprehending. If the perceptual domain classifies abstracted qualities and states of matter, the conceptual domain weighs the unique, anecdotal perspectives of the individual against an established cultural aesthetic lexicon. In conception, the listener intuitively ascribes meaning and value to perceived stimuli in accordance with their listening experience.

The inherent variability of each individual interpretation makes the conceptual domain a wellspring from which an infinite number of ideas can be made manifest. With such diversity, the structure of the space begins to shift from classification via quantitative features towards the categorical. A process of indexing more so than measuring. Further investigation will result in many additions, but for now, the domain has been divided into four families: *Abstracted Transformations*, *Attributed Classifications*, *Archival Metadata*, and the *Rhetorical Structure*.

In developing a conceptual domain, the primary goal of aesthetic neutrality played a central role. It is developed in response to the purported exclusivity of abstract or strictly empirical analytical methods. Some examples are the work of Tae Hong Park, who stands opposed to most notions of subjectivity or conception [37] or composers like Jonty Harrison who have, in the past, stated: "Acousmatic music… most fundamentally of all, relies on *perceptual* realities rather than *conceptual* speculation to unlock the potential for musical discourse" [23]. In its creation, the conceptual domain defends conceptually forward compositional practices and listening strategies.

For, when it comes to both analysis and pedagogy, a musical analysis is a comparative analysis. For traditionally notated musics, that comparison is between the observed work, the tropes of its genre, and the standardized theoretical system it stems from. However, as we have stated, the latter is less present in sound-based composition and certainly not universally agreed upon. Common, prescriptive codes are not negotiated prior to the initial point of listening. It is typically only professional composers, with ample experience and a specialized listening competency, that can approach an acousmatic work with any level of prescriptive expectation. For everyone else, sound-based works are compared against their own listening experience in its entirety.

Everything they could perceive and every association they could make could be potential avenues for understanding a work. A composer's work could be completely abstract, and conceptual engagement would still be an inevitability. In the absence of prescriptive codes, the listener only has methods of anecdotal description to convey their interpretation. This requires a vocabulary. That vocabulary is what we aim to expand through the creation of a feature glossary, but it would still qualify as a specialist tool for a specialized competency. For larger audiences with non-specialist competencies (i.e., students, musicians in traditional genres, artists from other disciplines, a general audience, etc.) their experiential listening is likely the only vocabulary they have.

Schaeffer's listening strategies and typomorphological findings certainly have their use cases, but rigidly asserting the *exclusive* use of Schaefferian reduced listening creates boundaries for non-specialist listeners. If we cite Schaeffer's own terminology, the reduced listening paradigm is an intentional action of maintaining perceptual data as 'values' and conceptual data as 'characteristics'. Or for us, perceptual data are salient features and conceptual data are static. Realistically, this will have little bearing for the average listener as they will continue to come to their own conceptual conclusions as they always have. However, for the composer, strictly regulating conceptual data to static features eliminates a potential avenue for expressivity and diminishes opportunities for communicability and comprehensibility of the musical structure for non-specialist audiences. Even composers like Francis Dhomont have recently come to recognize a balance between perceptual and conceptual ideas that they hadn't previously acknowledged:

> "…electroacoustic music oscillates between abstraction and figuration[6] as I have just defined them. It is precisely this alternation in my works that I have recently wondered about, realizing that many of those that I had considered abstract were in fact based on expressive (figurative) propositions."
>
> (Dhomont 2021) [18]

That is all to say, our design philosophy remains unchanged- nothing is compulsory, and thus no feature is more relevant than any other. By extension, *any* feature has a potential use case. Or further still, any data that *can* be perceived by the listener, be it intra-musical or extra-musical, can have a productive application when determining a musical discourse. There is no such thing as erroneous data in sound-based composition or analysis. The only prerequisite for productive use of conceptual data is that the composer takes clear and intentional actions to make such features salient.

2.3.1 Abstracted Transformations

Some conceptual classifications will likely seem contentious to those familiar with existing analytical methodologies. Parameters exist that are essential to compositional practice *and* perceivable, and yet, haven't been sorted into the perceptual domain. As interpreters, we have achieved a significant level of familiarity with certain musical or audio descriptors, yet in a parameterized context, these descriptors are more indicative of structured features or modulatory processes. This is true of *Abstracted Transformational* features, which includes growth processes or audio effect transformations.

[6] In this case, Francis Dhomont's "abstraction" and "figuration" are substitute terms to describe what we are calling "perceptual" and "conceptual".

Growth processes are key to our analytical method. The definition of a feature selection is determined by perceiving notable patterns of development in certain features. For a feature to register as 'developed', it must grow or change. It requires growth processes. We perceive these growth processes with little issue, and yet, in sorting them into the taxonomic structure, we encounter complications. Our intention is to reduce features down to their lowest level and sort them into appropriate families. However, consider Smalley's *Unidirectional Growth Process Type* [52]. An *Increasing* growth process is one of the most characteristic musical motions, and yet, attempt to musically describe an 'increase' without describing *what* is increasing.

It harbors the same complications the "*Ascending*" and "*Increasing*" descriptors did previously- it's not possible. In this way, any growth process is a conceptual pattern of change whose significance is only made manifest when it is used to modulate another low-level feature- i.e., a dependent feature which, when combined with an independent feature, creates a structured feature. Refer to (**Audio 2.5** 🔈) as an example, a unidirectional increase applied to *Dynamic Level* creates a 'crescendo', while a parabolic *Growth Process Type* applied to *Dynamic Level* creates a 'dynamic swell'. These are unique sounding gestures, using unique growth processes, but they can only be realized due to their relationship with the *Dynamic Level*.

Audio Effect Transformations, encompass various transformations, tools, or techniques that have become ubiquitous to the electroacoustic aesthetic (*à la* delay, distortion, resonant filters, granular synthesis, etc.), all of which are familiar to most listeners regardless of competency. We typically perceive their presence within the musical discourse with ease, so much so that applying a 'delay' descriptor to an observed sound is second nature. Denis Smalley acknowledges these same tendencies, so much so that he offers Technological Listening as terminology to define it. However, Smalley also states:

> "In spectromorphological thinking we must try to ignore the electroacoustic and computer technology used in the music's making. Surrendering the natural desire to uncover the mysteries of electroacoustic sound-making is a difficult but necessary and logical sacrifice."
>
> (Smalley 1997 : 108) [52]

For such a phenomenon to warrant its own terminology, we might infer that such "preoccupations" have some level of universality for audiences. Atkinson and Landy's previous comments about technological tools expanding the field more than an understanding of artistic practices would seem to confirm this [1].

Yet, as many composers know, a delay in its ubiquity may seem simplistic, but in practice has varying degrees of complexity. When describing a delay, we can reference numerous unique parameters which can be manipulated, and the state of those parameters provide a unique character. However, it will still register as a 'delay'. As an example, compare the most rudimentary tape delay with that of a digital "ping-pong" delay (**Audio 2.6** 🔈). The tape delay has a single reactivation of the original signal at a constant rate, while the "ping-pong" delay exhibits exponentially decreasing growth processes applied to both delay time and feedback. The resultant sounds vary in their typomorphological definition, but both still register conceptually as 'delay' processes.

According to the rules of our parametric system, the concept of a 'delay' cannot be perceptual, as the same descriptor yields different typomorphological interpretations. Rather, they are structured feature descriptors, which imply relationships between low-level features in abstraction. However, despite their typological variability, their feature definitions are adjacent enough in aural space that the listener can hear the commonality between them with relative ease. Both Schaeffer and Smalley likely admonished the idea of interpreting works via technological listening for precisely this reason [49][52]. An overreliance on technological descriptors underestimates the intrinsic typomorphological variability of the described action or transformation. To cease one's observation at a technological descriptor could mean missing greater patterns of development suggested within the typomorphological context.

However, assuming we have done our due diligence at the typomorphological level, these technological descriptors still have utility. The descriptor itself does little to highlight the unique typological quality of the sound being heard, but the listener's discerning ear for transformative processes can still be instrumental towards the communication of an intra-musical discourse. Imagine if you will, that there are several sound objects that exhibit [Delay] type *Processing Classes* (**Audio 2.7** 🔈). Each has their own unique character, and there are no discernable typomorphological patterns of development. However, following a spectromorphological investigation, you notice that these delayed sounds are all present within termination functions of foregrounded gestures. Thus, 'delay' as an abstracted transformation (a concept) is bound to the spectromorphological function 'termination'. Within this context, 'delay' accompanies closure. This could serve to highlight future points of closure or establish a precedent which can later be broken for the benefit of surprise or the delineation of contrasting sections. Discovering such bonded relationships between two features supplies evidence of conceptual patterns of development or correlation.

2.3.2 Attributed Classifications

Attributed Classifications encompass the broad range of intrinsic and extrinsic connotations conjured in the mind of the listener in response to auditory stimuli. They have been labeled as such because, as observers, we naturally attribute meaning to sound units beyond a description of their perceived typological quality. Sound sources can sound *like something* and through their transformation, orchestration, or spatialization they can *behave like something.* Recorded audio sources exhibit the potential for iconic signification, functioning as literal viewports into people's lives or certain places in time. That potential opens the possibility for a musical discourse that surpasses a simple comparative analysis between the work, its genre, and the standardized theoretical system it stems from. Rather, the broader context invites the listener to engage with the observed stimuli by weighing it against every known prototypical icon residing within their listening experience.

Given the vastness of this communal experience, attributed classifications quickly begin to function as a 'catch-all'. There is no limit to the breadth of attributed classifications as there is no limit to our cumulative imagination. Attributed features can connect with perceptual features at any mesostructural level, associated with typological qualities, sound structures, intermorphological processes, spatial settings, or spatial movements. Almost any feature that describes our ideas about sound stimuli can be included, or at least anything which can't be concretely described in perceptual terms. Further research will likely yield a diverse taxonomy of attributed signification, but at present, the family is subdivided into *Extrinsic* and *Functional* subsections which each contain descriptive features classifying a sound unit's *Identity* or *Agency*.

2.3.2.1 Identity Descriptors

For our purposes, *Identity* follows the dictionary definition: "the fact of being who or what a person or thing is." Identity descriptors are the cumulative evidence gained by engaging in what Dennis Smalley calls "source bonding":

> "I have invented the term *source bonding* to represent the intrinsic-to-extrinsic link, from inside the work to the sounding world outside. I define source bonding as: The *natural* tendency to relate sounds to supposed sources and causes, and to relate sounds to each other because they appear to have shared or associated origins."
>
> (Smalley 1997: 110) [52]

If source bonding is itself a "natural *tendency*" (i.e., not a noun but a verb- a mode of listening or conceiving), then *identity descriptors* are the natural byproduct of having followed through on that tendency. The act of source bonding has been carried out, and that process yields a descriptor. In practice, the listener might engage their listening faculties with the intention of listening for sources of derivation, and in targeting a singular sound they may come up with the descriptor: "water." To do so is natural, for "certain sounds retain their intrinsic recognizability under the most extreme forms of distortion" [59]. This observation by Wishart is in keeping with similar perspectives on ecological perception, semiotics, and metaphor like those of Atkinson [2] and Bayle [5]. Descriptors or comments on iconicity may provide little on their own, but by carrying out source bonding across the global context of the work we can begin to structure sound units into a narratological or semiotic network. Furthermore, identity descriptors need not be constrained to individual sound units. Connotative implications of the spatial setting or global context are also included ('landscape'). The "shared or associated origins" mentioned by Smalley can reach across several compositional dimensions, alluding to specific settings or fictious scenes.

Further still, identity descriptors need to be restricted to extrinsic connotations either. They are just as applicable when classifying intra-musical, typified narratological characters which connect syntactic and typomorphological codes. The latter might be achieved through repeated association with a particular feature abstraction, realizing a leitmotif-esque or topical functionality, where "voices", "characterizations", or "agents" are bonded with a subset of salient feature classifications regardless of that sound or sound setting's iconicity. Synthesized source materials can just as easily take on an identity following this method. A synthesized timbre with certain typomorphological qualities could recur to the point where it exhibits a recognizable identity, differentiated from other adjacent sounds. Processes operating upon identifying descriptors can be of use to the composer, regardless of their iconicity. The premise isn't dependent upon an extrinsic link or a mimetic application approaching that of Foley or sound design. Establishing an internal context in which specific typomorphological characters are recognizable in subsequent contexts is more than enough.

My work *OWN.k* (2022) exemplifies a case where the sampled sources are minimal, as my voice supplies all sampled content. Sound objects are instead differentiated by alternative vocalization types (i.e., 'Plosives', 'Vowels', 'Growls', 'Whispers', 'Slurps', 'Gurgles', etc.). In instances such as this, I could reference a sound's identity according to either its *Identity Class* or *Identity Subclass*. For *OWN.k,* all sounds would share the same *Identity Class* (my voice) while their *Identity Subclasses* would match the vocalization types listed above. There is only one *Identity Class*, so real-world associations *between* identity classes are few, but by coordinating *Identity Subclasses* with their intrinsic typomorphological features and functions (either spectromorphological or attributed) recurring structural patterns become traceable.

This intrinsic categorization of source material was an intuitive development, but also closely resembles procedures used by Trevor Wishart. Though, what I call *Identity Classes* and *Identity Subclasses*, Wishart refers to as sound-images and sound-image subclassifications [60]. His compositional application of sound-image classification can be seen in Figure 2.7 below, where sound-images play a fundamental role in realizing musical permutations in his piece *Redbird* (1973-77). Similarly, we could reference Federico Schumacher's *Pl@y* (2008). His use of doors closing or footsteps, used only to bookend the work, creates rhetorical implications of 'coming' and 'going'. They also act structural delimiters that define *Sectionality* at [2:00"]. In this case, with a single motive, Schumacher creates an expressive allusion which has both extrinsic and functional implications- utilizing both identity and agency.

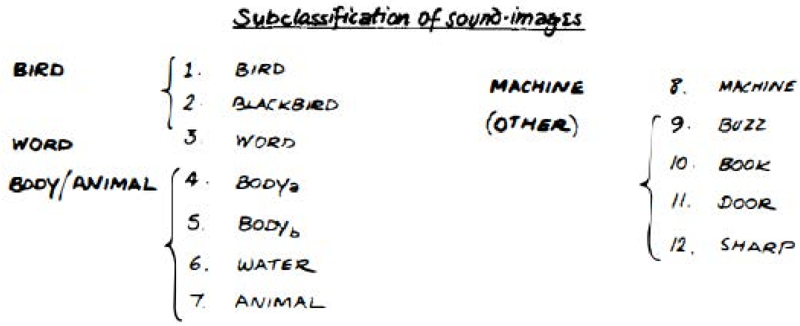


Figure 2.7 - Trevor Wishart's subclassification of sound-images in Redbird (1973-77) [60]

2.3.2.2 Agency Descriptors

In addition to its identity, a sound's *Agency* can also be fruitful for generating expressive interest within the work. Again, we refer to the dictionary definition. Agency pertains to an "action or intervention, especially such as to produce a particular effect." If a sound's identity encompasses all noun/adjective classifications, then its agency covers additional verb/adverb descriptors. Through the development of typological, spectromorphological, or spatial envelopes a sound might *behave like* a ping-pong ball, a wave, a cloud, an invasion, or an explosion. Or it might "ascend", "dissipate", or "compress".

By drawing inspiration from linguistics, we can define agency further by creating various subcategories that dictate subject/object relationships between sound units. *Intransitive Agency* implies an action where the sound unit behaves in a way that has no causal repercussions upon the global context. Such could be the case when a sound "swells" or "disintegrates". *Transitive Agency*, however, implies a unidirectional relationship between *N*-number of subject sounds and *N*-number of object sounds, where the subjects act upon the objects. This would be the case when sound units "interrupt" or "trigger" others. *Dialogic Agency* is the final category, where multiple sound units influence or cooperate with one other with equal agency. Some examples of this might include sounds that are "in conflict" with, "resonate" with, or "converge" on one another. Additionally, sound units can act "in coincidence" with one another, where groups of sound units will perform conflicting actions, but all will work towards the satisfaction of a similar goal or event.

In establishing these qualities of agency, we acknowledge that some agency descriptors perform a dual functionality, operating on both intra-musical and extra-musical levels. Classifying a sound unit as exhibiting an Intransitive "bouncing" behavior creates a connotative link to real-world entities that bounce. However, a Transitive "push" behavior initiated by one sound unit upon another not only conjures the idea of "pushing" but also exhibits a causal interaction that is manifested through typomorphological or spatiomorphological means. In this way, transitive behaviors can be both an extra-musical *and* functional agency descriptor. They can imply allegorical connections between sound agents, and also demonstrate a concrete causal interaction. A single agency descriptor can function intra-musically in accordance with Smalley's causality – i.e., "where one event seems to cause the onset of a successor or alter a concurrent event in some way" [52] – *and* Curtis Roads' 'sonic causality' that we spoke of earlier, where associated connections can create narrative contexts.

We can cite several instances of agency descriptors out in the wild. For example, Rodney DuPlessis's work *Psi* (2021) establishes a theme from the characteristic motion of a Newton's Cradle. The sound is initially present in its iconic representation, as a prominent foregrounded action from [0:18 - 1:45], slowly receding to the background before its termination. From then on, the listener notes the iconic timbre of the Newton's Cradle, preserving its identity, but its characteristic behavior is substituted for generative transformations. Leah Reid's *Ring, Resonate,* *Resound* (2014) is another prime example. The opening moments call to mind the idea of bells being rung - apropos of its title - which becomes more iconic during areas of heightened dynamic contrast like at [1:02], or in areas of causal significance, such as at [2:57]. Other agency descriptors can also be perceived in either foregrounded or backgrounded settings, including "plucking", "striking", "rolling", or "jangling".

The depiction of behavioral agency is by no means a subconscious process on the part of the composer. There is long standing precedence in musicological and compositional research for such descriptors, noted in the works Smalley [52], Vande Gorne [22], Roy [47], Wishart [60], Roads [45], Moore [30], and many others. We mentioned several cases already where musicological articles introduce terminology as perceptual criteria, but we have repositioned them within the conceptual domain due to their status as structured features. This is the category where we can best make use of those ideas. For instance, many of Annette Vande Gorne's spatial figurations would qualify, such as "swinging", "rebounding", "rupturing", "exploding", or "invading". Likewise, in referencing granular techniques, Curtis Roads describes 'sound clouds' that "lift", "evaporate", "coalesce", or "mutate". These would also be included.

Each represents a structured agency descriptor and can exhibit an infinite number of typological or spatiomorphological permutations. Being structured descriptors, however, means most agency classifications are referenced as states in the same categorical feature. This means that there aren't many individual features sorted under "Agency" in our feature glossary. The features that I frequently use are the *Agency Type*, *Behavior Class*, or *Behavior Subclass*. *Agency Type* suggests whether the indicated behavior is intransitive, transitive, or dialogic, while *Behavior Classes* and *Behavior Subclasses* are the actual descriptors for said actions. The use of classes *and* subclasses occurs when there is a group of behaviors that share some associated origin. For example, if we pull inspiration from Federico Schumacher's *Pl@y* (2008) the *Behavior Class* might be "Playing" (in reference to toys), while a *Behavior Subclass* might be something like "Winding up a toy".

For more utility in an analytical context, the analyst could connect structured agency descriptors with a characteristic selection of low-level features and growth processes. The recurrences of thematic behaviors can then be tracked through the global context provided the patternicity of spatial or morphological envelopes mimic the archetypal sound character. Any observed sound units that exhibit a morphology reminiscent of that root behavior can be considered an extension or development. Doing so is essentially a return to Schaeffer-ian typological classification, though by maintaining the connotative reference to real-world behaviors, we can preserve something of allegorical significance for interpretation at the rhetorical level. Though, even if a rhetorical interpretation is unwarranted or unwanted, like identity descriptors, agency descriptors do not necessarily need to invoke some connotative reference. They can be established intra-musically within the musical discourse. If a characteristic envelope is repeated and reutilized across the work an intentional way, enumerating that behavior is just as valuable.

2.3.2.3 Function Descriptors

Function Descriptors classify ideas about the intra-musical discourse. Like its extrinsic counterparts, function descriptors classify aspects of identity and agency. However, rather than describing a real-world signified, function descriptors imply an intrinsic action or significance that resonates within the global context of the work. This is the crux of Roy's *functional* grid [47], which utilizes familiar terminology from western music in consort with evocative descriptors.

As suggested by Roy's "diagonal" and "pure" stratified functions, we can subdivide functional descriptors into two distinct categories: those that participate in internal references or causal interactions, and those that don't. Or, as it pertains to our space, there are function descriptors which require intermorphological interactions, and there are those that don't. In describing these categories, I find Roy's use of "diagonal" and "pure" to be less cogent as terminology. Rather, I would prefer to maintain the standards we have already set. Thus, we'll call these two categories *Identifying* and *Behavioral Functions* respectively. The former might describe a sound unit that is functioning as a 'theme', a 'foundation', a 'statement', an 'exposition', or a 'motif'. The latter describes interactions or references between several sound units, such as that of a 'dialogue', a 'trigger', an 'interruption', an 'imitation', an 'antecedent' or 'consequent', an 'embellishment', or an 'accompaniment'. Like extrinsic agency descriptors, these behavioral functions can be transitive or dialogic.

Both Roy and Smalley have noted several function descriptors in their published work [47][52]. However, in both cases, they add no further qualification to the named descriptor other than the taxonomic family it pertains to. However, if we examine each entry, we can infer additional characteristics. Both Roy's "Orientation" functions and Smalley's spectromorphological functions act as chronological delimiting functions that add context to the beginning, middle, or end of a structural unit. Describing an onset as an "emergence" versus an "attack" implies a different level of articulation to the *Onset Profile*. Similarly, describing a termination as an "conclusion" doesn't imply the same level of transitive behavior as an "interruption" does. In this way, we can review established terminological entries and relate them to others based on shared intra-musical qualities. For example, refer to Table 2.1 and Table 2.2 below for my classification of Roy and Smalley's function descriptors respectively. Additionally, Table 2.3 highlights some of my own.

Stéphane Roy's Functional Grid [47]

Function Family	Descriptor Type	Descriptor	Function Type	Agency Type
Orientation	Initiating	Introduction	Behavioral	Transitive
		Triggering	Behavioral	Transitive
		Anticipation	Behavioral	Dialogic
	Transferring	Transition	Behavioral	Dialogic
		Culmination	Behavioral	Transitive
		Link	Behavioral	Dialogic
	Closing	Suspension	Behavioral	Dialogic
		Conclusion	Behavioral	Transitive
		Interruption	Behavioral	Transitive
		Extension	Behavioral	Dialogic
Stratification	Diagonal	Imitation	Behavioral	Dialogic
		Canon ("Tuilage")	Behavioral	Dialogic
		Support	Behavioral	Dialogic
		Appoggiatura	Behavioral	Dialogic
	Vertical	Background	Behavioral	Dialogic
		Foreground	Behavioral	Dialogic
		Polar Axis	Behavioral	Dialogic
Dimensional		Spatiality	Behavioral	Intransitive
		Accumulation	Behavioral	Dialogic
		Dispersion	Behavioral	Dialogic
		Amplification	Behavioral	Intransitive
		Attenuation	Behavioral	Intransitive
Rhythmic		Pedal	Identifying	
		Acceleration	Behavioral	Intransitive
		Deceleration	Behavioral	Intransitive
Rhetorical		Variation	Behavioral	Dialogic
		Theme	Identifying	
		Call	Behavioral	Dialogic
		Announcement	Identifying	
		Response	Behavioral	Dialogic
		Index	Identifying	
		Incision	Behavioral	Transitive
		Articulation	Behavioral	Dialogic
		Rupture	Behavioral	Transitive
		Affirmation	Behavioral	Dialogic

Table 2.1 - Interpreted classification of Roy's Functional Grid [47].

Denis Smalley's Spectromorphological Functions [52]

Descriptor Type	Descriptor	Function Type	Agency Type
Onset	Departure	Behavioral	Transitive
	Emergence	Identifying	
	Anacrusis	Behavioral	Dialogic
	Attack	Behavioral	Transitive
	Upbeat	Behavioral	Dialogic
	Downbeat	Identifying	
Continuants	Passage	Identifying	
	Transition	Behavioral	Dialogic
	Prolongation	Behavioral	Dialogic
	Maintenance	Behavioral	Dialogic
	Statement	Identifying	
Terminations	Arrival	Behavioral	Transitive
	Disappearance	Identifying	
	Closure	Behavioral	Transitive
	Release	Behavioral	Dialogic
	Resolution	Behavioral	Transitive
	Plane	Behavioral	Intransitive

Table 2.2 - Interpreted classification of Smalley's Spectromorphological Functions [52].

Kramer Elwell's Spectromorphological and Intermorphological Subfunctions

Taxonomic Family	Descriptor Type	Descriptor	Function Type	Agency Type
Spectromorphological	Onset	Anterior Onset	Behavioral	Dialogic
		Onset	Behavioral	Transitive
	Continuation	Medial Valley	Behavioral	Intransitive
		Medial Peak	Behavioral	Intransitive
		Medial Event	Behavioral	Variable
	Termination	Anterior Terminus	Behavioral	Dialogic
		Termination	Behavioral	Transitive
		Posterior Terminus	Identifying	
Intermorphological				
	Transitive	Trigger	Behavioral	Transitive
		Reactivation	Behavioral	Transitive
		Interruption	Behavioral	Transitive
	Dialogic	Coincidence	Behavioral	Dialogic
		Support	Behavioral	Dialogic
		Accent	Behavioral	Dialogic

Table 2.3 - Classification of Kramer Elwell's Spectromorphological and Intermorphological Subfunctions.

Note that in each case, we aren't sorting descriptors based on linguistics like we might do with extrinsic identity and agency descriptors. "Anacrusis" is a noun. However, the function of an anacrusis within the musical discourse is not solely based on its identity. It implies a preparatory action that anticipates a successive sound entity to form a relationship with.

In addition to the time delimiting spectromorphological subfunctions we spoke of earlier; I've also included several conceptual functions that are in keeping with Smalley and Roy's practice. However, there is a key difference. Smalley and Roy's functions place significance upon the overarching spectromorphological or intermorphological function- i.e., an emerging *onset* or a *transitionary* link. The classification is applied to the beginning, middle, or end of an observed structure. Mine, however, are applied to individual sound units that operate *within* the perceived structural function (hence *sub*functions). If we acknowledge that a spectromorphological function can be complex and its duration indeterminate, we can also acknowledge that there are no prerequisites on how many sounds compose that function (see *Structure Unit Density*). Cases may present themselves where a perceived passage exhibits the characteristic trajectory of an onset function, but a contributing sound member may only demonstrate functional significance *within* the context of the onset function. They may describe how a sound unit adds, detracts, or modifies the internal energy trajectory of the given spectromorphological function. For example, we could theorize a case where the *Energy Articulation* in a lengthy continuant phase has slowly moved from an accumulation with obvious *Granularity* to a sustained, static articulation. However, perhaps there is a prominent emergence of a new pitch member (**Audio 2.8** 🔈). The change in this one dimension could function as a *Reactivation* which returns the continuant function back to its original granular articulation. Coupled with Smalley and Roy's functions, it becomes possible to achieve a thorough description of spectromorphological members and intermorphological sequences alike.

However, there is additional precedence for function descriptors reaching all the way to the macro-level structure. If we refer back to the previous Wishart example, we can observe his use of function descriptors in a compositional application (see Figure 2.8 below). The structural notes for *Redbird* demonstrate the possible transformational permutations of his 'sound-images', where each permutation suggests how that material should be utilized. The descriptors in Category A are of particular interest here. Wishart delineates between permutations that function "as music", "as landscape", or as "other viewpoints" [60]. Wishart's conception of "music" and "landscape" is likely consistent with what Emmerson calls aural and mimetic discourses [19]. "Music" in this case might refer to a discourse which more closely aligns with Schaefferian reduced listening or an acousmatic style, and perceptual features are prioritized over conceptual context or the recognition of sources. "Landscape" could then be the opposite. Wishart's landscape may be more indicative of R. Murray Shafer's sound-event-based listening, where sounds have an extrinsic context that has implications upon the global context of the work [50]. Thus, for Wishart, *Redbird*'s structural permutations must exhibit some intrinsic quality that either abide by or divert from Schaefferian typomorphological operations in order to function "as music". Of course, this doesn't confirm whether a conceptionally forward listening strategy predominates in a "landscape" permutation or is just allowable in the given context. Regardless, Wishart shows a conscious awareness of a sound-image's function, and that function resonates at a sectional or macro level.

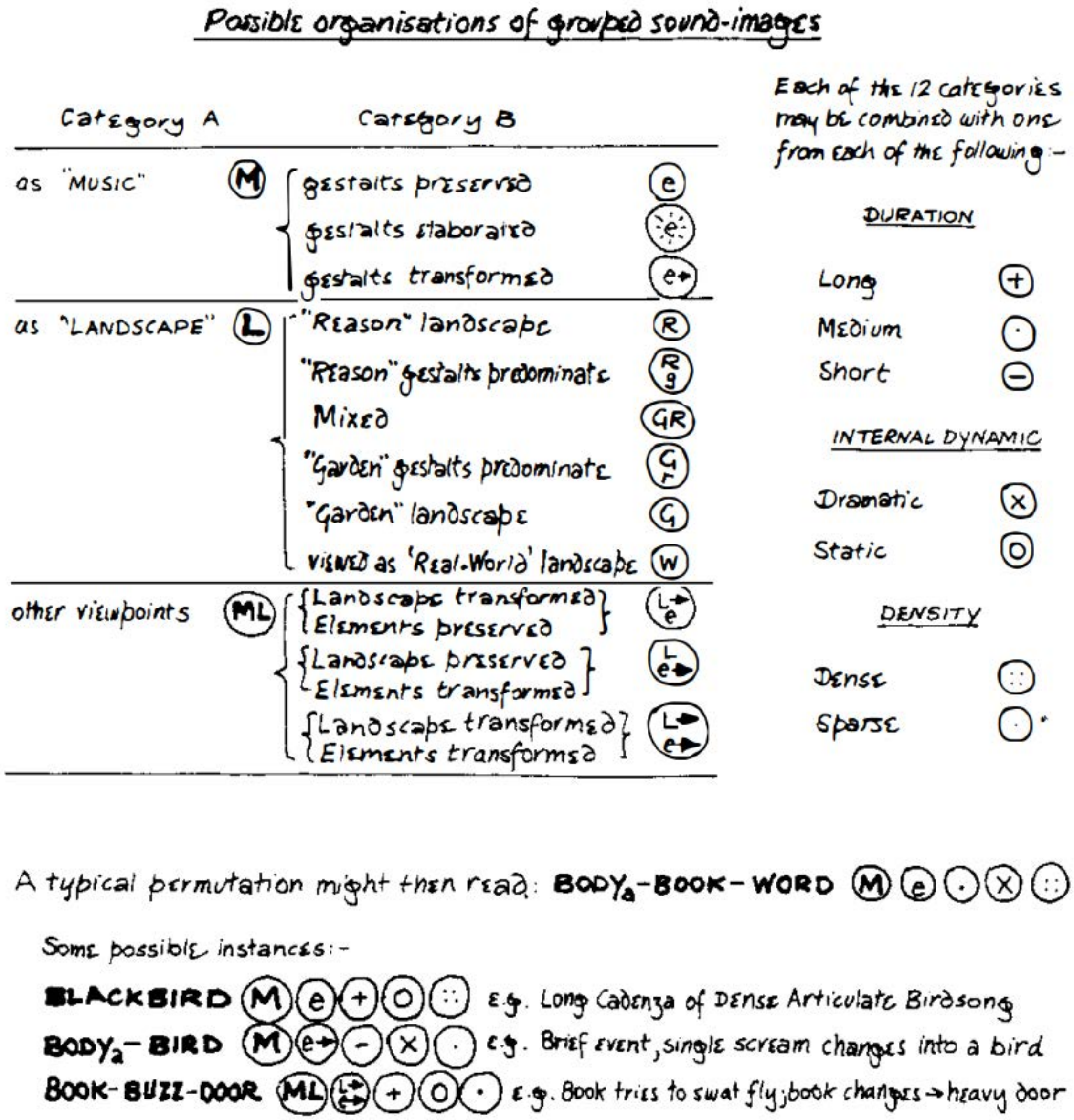


Figure 2.8 - Sound-image permutation via 'function' in Trevor Wishart's Redbird (1973-77) [60: Figure 8.5]

2.3.3 Archival Metadata

The utilization of real-world or technological resources introduces excessive amounts of metadata into the compositional process. The scope of metadata, in this case, accounts for any factor which contributes to a work's creation which can't necessarily be quantified in musical terms as defined by the electroacoustic genre. Some meta variables are intrinsic to the compositional process. Others precede it as external influences, while others follow the completion of the work as professional or cultural byproducts. Metadata can account for everything from sonification data, external narratives, socially or autobiographically relevant events, field recording practices, pertinent file data, awards, citations in published research, published analyses, and more. Everything relevant to the lifespan of an electroacoustic work can qualify, and while such data may not always be pertinent, situations will present themselves where archival metadata can aid analysis. When evaluating an idiosyncratic compositional structure, any information weighed by the composer during the creative process *could* provide a point of understanding.

I've organized the archival practice into three categories: *Pre-compositional Metadata*, *Compositional Metadata*, and *Post-compositional Metadata*. These categories create clear liminal spaces for archival data retention and are defined by timeframe or the source of contribution. Pre-compositional metadata encompasses all materials, *external* to the composer, that influenced the creation of the work. Compositional metadata are the materials which the composer *themselves* expressly exerted their influence upon. While post-compositional metadata are any references, cultural tokens, or performances that occur after the work's completion. These categories clearly delineate sources of contribution through the entire life of the work, which are numerous when you begin to enumerate them. Refer to Table 2.4 for a list of potential metadata dimensions.

This list is in no way conclusive, and while it is unlikely that *all* of these dimensions are present in the context of a single piece, it's even more unlikely that a piece is created without consciously observing at least a subset of these dimensions.

Pre-Compositional Metadata	Compositional Metadata	Post-Compositional Metadata
• Field Recordings & Sound Environments • External Audio Assets (Sample Libraries) • External Media Assets (Quoted Content) • Myth, Fiction, Narrativity • Socio-cultural Events • World Issues • Scientific Data or Processes • Specific Technologies or Tools • Specific People • Social Ceremonies and Rituals	• Studio Recordings & Performed Content • Project Files with versioning • All Composed Audio Assets • Other Composed Media Files • Specific Tools and Processes Used • Personal Notes, Charts, Plans • Structural Notes • Computer Code • Patch Structures • Parametric Data and Automation • Fixed Spatial Interpretation	• Performances • Projection Interpretations • Audience Reactions • Site-Specific Editions • Diffusion Formats • Awards • Interviews • Memoirs • Program Notes • Lectures, Seminars, and Keynotes • Published Analyses • Published Discographies • Published Citations • Quotation/Utilization in other Media
• Geolocation Data • Location (Institution, State, Country, etc.) • Meteorological Data at Time of Recording • Date and Time of Recording • Anecdotal Description of Recorded Subject • Recorded Subjects Model/Unit Name • Recording File names	• Bit and Sampling Rates • Number of Audio Channels • Recording Equipment Used • Proximity to Subject • Polar Patterns Used • Duration • Take Index and Session Index	

Table 2.4 - List of potential sources of Archival Metadata – including inspirations, processes, or references.

These criteria have proven to be useful for my endeavors, though it has created some perplexing cases. For example, there is a discontinuity when considering source material obtained via field recording versus intentional studio sampling. Whilst field recording, the composer is not exerting control over the environment they are immersed in. They follow their ears to locate inspiring sounds, but they don't impact its performance. Conversely, in a studio sampling environment where a localized object is the subject of interest, the composer themselves would likely need to act upon the subject, or instruct the subject, thus incorporating some level of compositional or performative action. Field recording in this case could be considered pre-compositional data, while studio sampling is compositional data. They exhibit similar processes and achieve similar results, but the composer's agency varies between situations. As the generation or procurement of sound source material is essential to every work, data related to sound source archival is typically in abundance.

Before sound can be orchestrated in a digital audio workstation, the composer must first audition or generate a corpus of sounds. The corpus could maintain tangible connections to real-world contexts or have intrinsic typological and semantic implications *prior* to the composer's involvement. These implications are indispensable to the composer during the pre-compositional phase. Any judgements leveled on the part of the composer will likely be dictated by some internal logic, and that logic is just as intrinsic to the understanding of the work as the sounding result. As suggested by Emmerson, the innate quality of sound sources may suggest a musical discourse themselves – i.e., the 'abstracted discourse' as opposed to an 'abstract discourse' [19]. In either case, the classification of source sound material has a profound impact on the character of the resultant piece. Either they suggest an abstracted discourse, or they exhibit innate qualities that coincide with the desired abstract discourse. Robert Normandeau's approach to source archival supports this argument, and for him, classification delineates the point at which the pre-compositional phase ends and the composition process begins.

> "…I thought, and I still think that it's true, that [classifying] sounds is the beginning of the compositional process. If you know what your sounds are, and how they sound, then you can start to compose."
>
> (Normandeau 2023) [33]

Normandeau's approach to sound archival served as an early influence for my own methods. We had discussions about his practice while in residence at the Atlantic Center for the Arts in 2018 where he demonstrated two interconnected sound databases that he developed in the low-code environment Filemaker Pro. One database is used to catalogue source recordings (see Figure 2.9), while the other documents sound utilization within his compositional work. One database is more indicative of pre-compositional metadata, while the other corresponds to compositional metadata. As you can see in Figure 2.9, Normandeau's pre-compositional database preserves information pertaining to location, duration, recording index, recording resources utilized, file format, etc. The compositional database on the other hand utilizes different metadata fields on a piece-by-piece basis. At times, he utilizes Schaefferian typological classification, phonetic pronunciations, references to cinema terminology, rhetorical interpretations, and more. All of which could potentially shed light on the salient characteristics of his works.

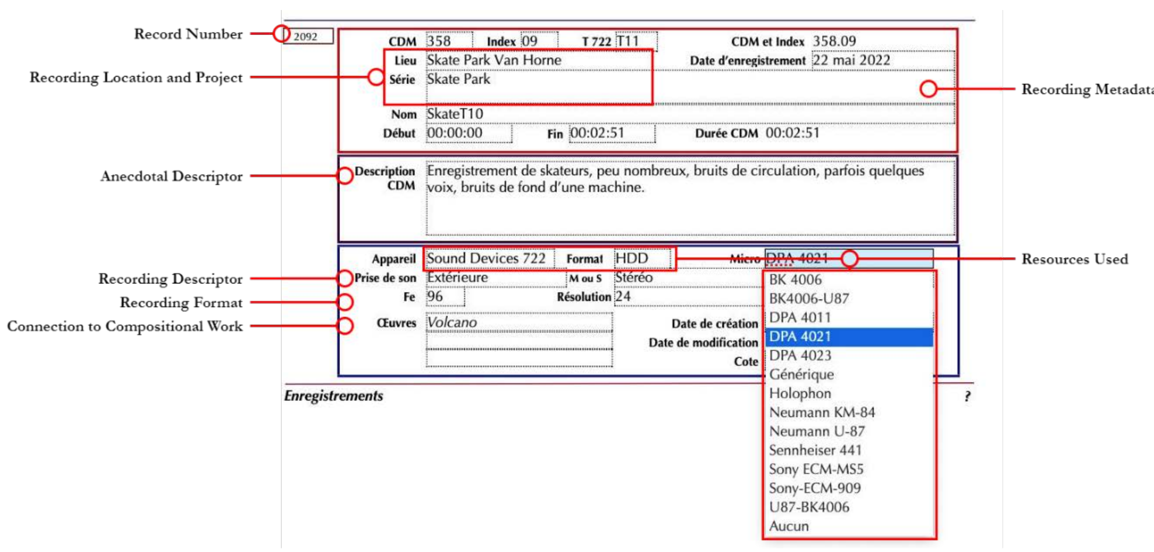


Figure 2.9 - Archival Metadata: Example of Robert Normandeau's field recording archival format [33]

Though it should be noted that Normandeau had more utilitarian motivations when constructing these databases. Each record *could* offer insight into the saliency of his sound sources, but Normadeau began the archival process primarily for his own benefit, and not as a pedagogical imperative. He cites the early days of digital media as being a motivating factor, where memory allocation only permitted the convenient use of short sounds. Thus, a single work might have had an abundant corpus of short sound materials. For Normandeau, archiving sound classifications in a queryable database was the one of the only ways to manage the sheer volume of digital data available [33].

My own archival methods were developed with a similar utility in mind, though I do still intend to preserve something of pedagogical significance. As site-specific sampling plays a pivotal role in much of my professional practice, my process focuses on recorded metadata for field recordings and other audio sources. Figure 2.10 is an example of a source catalogue entry for my work *What Sleeps Beneath* (2021). Like Normandeau's catalogue, it preserves much of the pre-compositional metadata related to geolocation, time, and resources used. As field recording can be a finicky business, and thoroughly auditioning recorded content can be difficult in the field, I preserve as much data as possible so I can recreate recording scenarios should a disaster befall my data. Any subsequent recording surely won't match the original phenomenon, but it will be as close as possible. I find this to be similar to recording the state of variable data or seeded randomness when using generative algorithms for source creation.

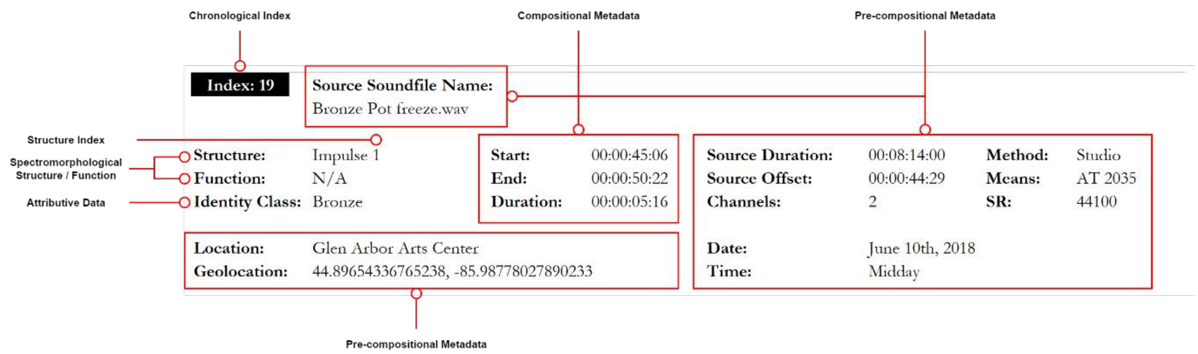


Figure 2.10 - Archival Metadata: Example catalogue entry as seen in Appendix A.3.

In this case, my archival catalogue incorporates pre-compositional and compositional metadata into a single catalogue entry. Data pertaining to geolocation is included among spectromorphological or attributed classifiers, for I feel that there is additional insight to be gained by referring to such data together. The field recording process was site-specific, as was the narratological premise for the piece. As such, the structural organization of the work considered and incorporated the iconicity of site-specific sounds. The sound of nature is fairly ubiquitous on an intercultural level, but there is an autobiographical interpretation as well. The composer is privileged to operate along a spectrum of iconicity that ranges from the abstract, to recognizable cultural prototypes, to deeply personal autobiographical content. In the same way, every listener is privileged to approach a piece considering the same spectrum. The communicability of autobiographical content may struggle without expository information, but that does not mean that it is incommunicable. All a composer must do is provide the listener with *more* than just an audio file, provided the listener is interested in such insights.

Some might consider the aforementioned metadata to be irrelevant to an analytical discourse as they lay outside the sounding result of the work. As such, existing procedures seldom accommodate personal, historical, socio-cultural, or extrinsic metadata, which can be a disservice to the innate expressive potential of the work or the entire electroacoustic genre. More frequently, analytical trends account for no more than the existence of the resultant cultural artifact and its brief description – i.e., the fixed audio/visual media file(s) and program notes. In that sense, archival methodologies have not progressed past the conventions of traditional concert music. In lieu of a score, the interleaved audiofile has become the solitary abstract unit. Rather than meet the rigorous documentation standards upheld by other digital and multimedia art disciplines, electroacoustic music lags behind to match established trends in concert music. Such trends are reinforced by centuries of musical precedence and reduce a musical work to an isolatable article which need only be observed from a generalized formalist perspective. Such actions detach the work from its author and disregard its localized significance.

Thus far, the electroacoustic space has had one common characteristic: feature data could be introduced and classified at the initial point of listening. No further prerequisites were necessary. Thus, the space has abided by the aforementioned theoretical trends. Archival metadata, however, presents as an outlier. Determining what is or is not worth archiving is a personal approach, and it remains the composer's prerogative to define the scope of the archive. It constitutes an autobiographical account of the work. Outside themselves, that autobiographical information may be imperceptible and unobtainable through repeated listening. Thus, the degree to which archival metadata can be incorporated into a formal analysis is outside the analyst's control. The best they can do is evaluate what archival data is available. Though, in adding archival metadata to the space taxonomy, we acknowledge plausible contexts where such archival metadata *is* made available to the listener. In its observation, perceptual listening can be enhanced with additional insight into pre-compositional or extrinsic factors.

The work of Michael Clarke, Frédéric Dufeu, and Peter Manning from the Technology and Creativity in Electroacoustic Music (TaCEM) Project at the University of Huddersfield are evidence of this [12]. Their "Tools for Interactive Aural Analysis" (*t*IAA*ls)* software, built in the Max language, is used in published analyses of such notable works as Natasha Barrett's *Hidden Values* (2013) and Barry Truax's *Riverrun* (1986). It includes structural and paradigmatic representations of the works in an interactively explorable format, but also documents several technological processes used in the work. In the case of the Truax piece, emulations of the documented processing tools are available for the user to explore in real-time along with interviews and written content directly from the composer describing their practice. It presents the piece as a niche time capsule, which it is far more useful to a pedagogical discourse than the audiofile would be in isolation. It lends insight into the work's construction *and* its conception, which I find to be necessary for the observation of idiosyncratically designed works.

Conversely, there are several works whose significance could be magnified if the listener was made aware of an extra-musical context. Take Annette Vande Gorne's works *VOX ALIA II: Cathédrales* (2021) and *VOX ALIA III: Vox intima* (2022 - 2023) for instance. Moments of these works are embellished with near-unaltered recordings of spoken French content and narration. There's something to be said of comprehensibility for those listeners that have no proficiency in spoken French, but for those that do, their interpretation of the spoken content differs depending on their associations with the speaker's identity. Knowing that the sampled voices belong to Pierre Schaeffer, Francois Bayle, or the composer herself elevates the rhetorical context beyond what can be gleaned from a purely syntactic observation.

Similarly, Elainie Lillios' works *Contemplating Larry* (2002) and *Tonic in G* (2022) don't have the same nostalgic weight if the listener is unaware of the dedications to Larry Austin and Jonty

Harrison respectively. Structural interpretations of such works might also differ when considering the artists' relationships or the derivation of their sound materials. The former was written in memory of Larry Austin and was composed entirely from unaltered recordings of his own works. *Tonic in G* on the other hand has a playful, almost satirical narrative context that reminiscences on students and mentors imbibing together in a social context. Such a context might be more elusive based on the typomorphological content alone. It's far more apparent if you have a personal acquaintance with either composer or an awareness of their relationship.

2.3.4 Rhetorical Structure

Of all of the taxonomic families we've listed thus far, the Rhetorical Structure is the most complex and also the least accessible to parameterization. Its purpose is to achieve the most thorough, wholistic interpretation of a work; not based on statistical or structural premises, but on musicological or semiotic ones. It weighs evidence from every possible source, including every known aural feature in the electroacoustic space, and all those that are yet unknown or have yet to been assimilated from outside the electroacoustic genre. It is the distillation of several independent ideas into a thorough, unified thesis. Such a thesis could posit a work's allegorical implications, its connection to other canonical works, its connection to the composer's entire catalogue, its history, its socio-cultural significance, or its association with genres, styles, or disciplines. In this way, we can consider the Rhetorical Structure a structured entity in itself. It compiles perceptual data, attributed extra-musical descriptors, archival metadatas, or any other evidence and presents it as one wholistic argument intent on defining the "*who*", "*why*", "*where*", "*when*", or "*how*" of the work. It is an eventual end goal to all artistic investigations.

The purpose of the Rhetorical Structure contradicts the rest of the taxonomic space. It is not easily defined as a liminal subspace of low-level features because, in reality, that is not its nature. It is not an isolatable subspace like our other taxonomic levels. It is the artistic conclusion which all other features are in service to. If aural features are the parts, then the Rhetorical structure is the conceptual whole. Information from every taxonomic family is fed to the Rhetorical Structure and fuels an interpretation by the listener- clearly stating "this is what this arrangement of sounds *means*". Or, conversely, given knowledge of socio-culture or autobiographic information: "this arrangement of sounds represents a significant musicological position within regional or international communities, *and it is…*".

Answers to such nebulous questions would likely seem untenable coming from a low-level glossary such as this, which is precisely why I invested little time and effort into expanding the family of Rhetorical features. My primary goal was to facilitate a vocabulary suitable for compositional pedagogy, and the quantification of musicological features is a bit beyond that purview. More importantly, the parameterization of such information would certainly be better served in the hands of an experienced musicologist. The quantification of compositional dimensions was our focus, but, that said, specific classifications did arise. They are cogent and useful for an analytical discourse and needed to be sorted somewhere, which is what inspired the creation of a family of rhetorical features.

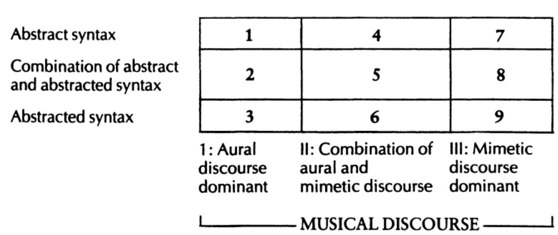


Figure 2.11 - Simon Emmerson's "Language Grid", a 2-dimensional definition of musical discourse [19].

The primary source of interest was the first chapter of *The Language of Electroacoustic Music,* in which Simon Emmerson offers a model for conceptualizing high-level processes in an electroacoustic music discourse [19]. The model (shown in Figure 2.11 above) exists in 2 dimensions, whereby a piece is defined by its *Musical Syntax* and its prevailing *Musical Discourse* (either aural or mimetic). These two axes parallel our perceptual and conceptual domains, though not conveniently. They attribute conceptual classifications to the structural Macro-Level and Rhetorical Structure respectively. Each dimension is itself a concept, and both *Musical Syntax* and *Musical Discourse* operate on a spectrum ranging from a perceptually-forward archetype to a conceptual one.

The *Musical Discourse* classifies the degree to which the work chooses to signify "not only nature but also aspects of human culture not usually associated directly with musical material" [19]. Thus, a mimetic discourse is one that references some real-world signified and intends to maintain such connotative references. A completely aural discourse, however, does not intend to maintain connotative references beyond the intrinsic world of the work that has already been established. Emmerson notes Pierre Schaeffer's *Etude aux Objects* (1959, 71) as being as an exemplar of the latter. Between those two extremes, Emmerson accounts for a middle ground where aural and mimetic principals can coexist on localized or global levels.

The perceptual, syntactic element ranges from abstract to abstracted extremes. This dimension describes the source of derivation for the work's organizing principles. Abstract works are governed by rules or laws that stand separate from any connotative or typological implications suggested by its source material- a formalist plan that supersedes any association with its content. Works like Milton Babbitt's *Ensemble for Synthesizer* (1962) and Karlheinz Stockhausen's *Telemusic* (1966) are given as examples, though each reside on different ends of the discourse spectrum. Source material for Babbitt derives from electronically synthesized sources, while Stockhausen utilizes recordings of recognizable folk musics, but in both cases, serialist or formalist processes determine the macro-level structure.

Abstracted works, however, derive organizing principles from the nature of the source material itself. While signification of the original source may not be intended, their typological or extrinsic associations still contribute to the larger formal trajectory. Denis Smalley's *Pentes* (1974) and Luc Ferrari's *Presque Rien no. 1* (1967-70) are offered as examples, similarly on opposing ends of the discourse spectrum. For Smalley, the overall structure of the work stems from the harmonic qualities intrinsic to the source material (Northumbrian Pipes), while Ferrari's is a "straightforward recording of several hours duration of the activities on the beach around sunrise" [19]. In each case, the construction of the global context is dictated by the characteristics of its source material.

Finally, I am introducing one additional dimension which I feel builds well upon Emmerson's 2-dimensional language grid. It is the prevailing *Listening Discourse*. Electroacoustic music has grown to encompass a broad interdisciplinary aesthetic where values and philosophies are synthesized from various sources. In so doing, the prototypical listening scheme utilized in concert may not be intended. Or, conversely, the projection of the musical discourse may proceed at paces that are incongruous with human perception. In regard to the former, there may be sound art installations or non-linear projection methods whose form is indeterminate or non-existent and the work persists to the point of ubiquitous reception. We could consider Clarence Barlow's *Songbird's Hour* (2011) as such a piece. A computer algorithm generates intermittent, ersatz bird chips and silences of indeterminate duration, which were meant to be enjoyed outside amid libations and socialization. In the case of the latter, you may have a generative computer music work whose internal development proceeds too quickly to hear. Or, conversely, though it may not be electroacoustic, we could reference works similar to John Cage's *Organ²/ASLSP* (1987) which will be performed in Halberstadt over the course of 639 years. Works could exhibit a complex syntax, either 'abstract' or 'abstracted', but still have varying degrees of digestibility depending on their deployment and projection.

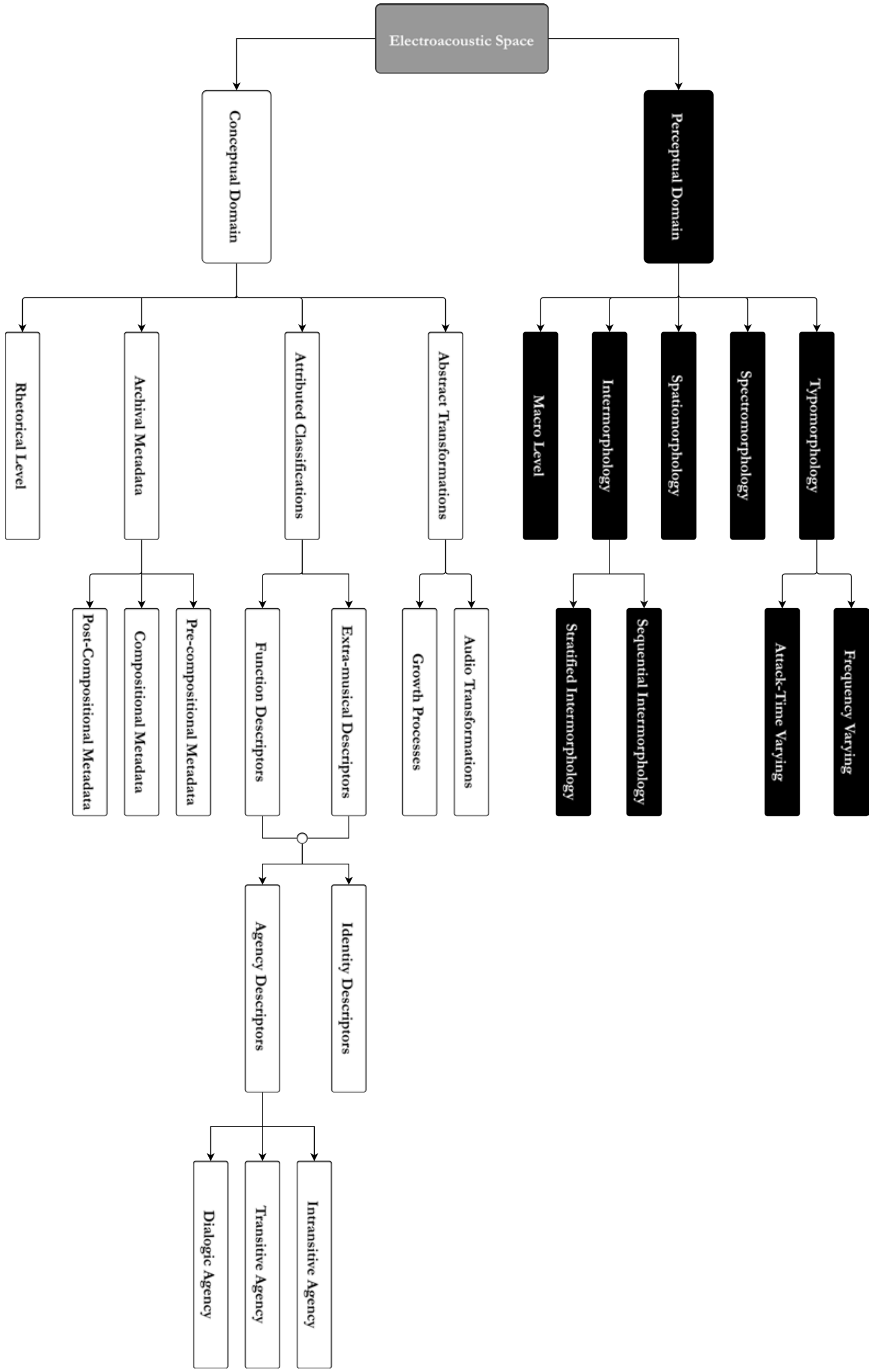


Figure 2.12 - The proposed taxonomic structure of the aural analysis space.

Chapter 3

My Analysis Process

The following analysis method stands distinctly separate from the multi-dimensional space we have just defined. In chapter 1 we concluded that a glossary of low-level features was needed to assist in idiosyncratic analysis, not a theory. As such, while my analytical process may utilize the electroacoustic space as a tool, its implementation in practice is unique to me. They remain separate entities. In designing an analytical method, I referred to Pierre Couprie who describes five stages present in most analytical systems [15]:

1. Instrumented listening: navigation in audiovisual files, comparison of fragments, modification of the gain of certain spectral zones.
2. Annotation during instrumented listening by time markers, texts, or drawing.
3. Extraction of audio descriptors and transcription in order to extract clues and singularities at the spectromorphological and/or syntactic level.
4. Production of tables and maps (typological, paradigmatic, etc.) to analyze the correspondences between different sounds or different parts.
5. Modeling of musical structures and flows in the form of complex representations.

My analytical practice was established intuitively over time, but reflects all five of Couprie's level, though perhaps in different orders. It unfolds in five stages:

1. Pre-Processing
2. Event Onset Analysis
3. Unit Segmentation and Structural Organization
4. Unit Classification and Parametric Examinations
5. Representation

In this instance, pre-processing is inserted as a primary phase to cover some of the topics Couprie mentions- i.e., navigation or modification of files. The event onset analysis phase is where listening first begins and encompasses Courpie's first two steps. Unit segmentation and structural organization engages with the first three steps, while classification and parametric examinations loosely corresponds with the third and fourth steps. For the purpose of this document, our discussion will predominantly focus on Courpie's first four phases. There are several hurdles that must still be overcome when applying a parametric system to visual representation. The topic is broad and requires a significantly deeper investigation. As such, it is reserved for future research. Some representative documents are included as examples, though they are more indicative of paradigmatic references and charts like those mentioned in Couprie's fourth step.

Internally, I subdivided this model into a preliminary stage and extended analytical stages. The event onset analysis is the cornerstone of the preliminary phase, as it can be executed upon any listening phenomenon. For example, in a concert listening scenario my mode of listening would be primarily focused on event analysis. It does not require additional audio assets or resources and can lead to a coarse interpretation of the work. However, when I *do* have access to audio assets and intend to do a thorough analysis, I push further into the expanded stages. It should also be noted that while awareness of the electroacoustic space may improve the clarity of one's interpretation, in practice, utilization of the space occurs during the expanded stages of analysis when assets are available for classification and deeper insight into the salient feature selection can be achieved.

This model is valuable to me, and I feel it suitable for anyone at most any level of competency. However, its design has always been intended for pedagogical deployment, suitable for listeners bearing a student or amateur's competency. After all, these processes originated from my own desire to learn. I exhibited a need to contextualize a complex phenomenon in a digestible, but comprehensive format. Structuring a method that satisfied that requirement was one of the goals and it is most helpful for those experiencing similar circumstances. Rather than interpreting this method as some paragon of academic rigor, it's best to regard it as a pedagogical aid. The intention is to supply tools which can support new curricula and fill in missing gaps in our conception of electroacoustic music.

To illustrate the method's applicability, I will be conducting an analysis of my work *What Sleeps Beneath* (2021). The contents of Chapter 3 will cover the first four analytical stages with examples, putting more emphasis on the process than the result. The evidence gathered in this chapter will then be used in context in Chapter 4 when *What Sleeps Beneath* is the focus. It should be noted that an *expanded parametric analysis* following my exact specifications remains possible in part because it is being applied to my own music. I have access to each individual audio stem, sound fragment, and relevant piece of metadata which permits easy classification according to my stringent specifications. The efficacy of such a method may diminish dramatically when applied to different analytical contexts. For example, when applied to real-time stimuli with no fixed article, or historical works which only exist as interleaved stereophonic files, multichannel stems, or non-digitized mediums. The expanded analysis as demonstrated is undertaken with the assumption that the analyst has access to original project stems and relevant digital metadatas, which is a uniquely 21st century privilege.

3.1 Pre-Processing and Tools

To prepare for the analysis proper, I follow a number of pre-processing steps to organize audio assets. First, to accommodate a greater level of specificity, I choose to observe works via project stems, as opposed to an interleaved, stereophonic output file. Ideally, the original project should be exported with one audio file per track (with audio effects frozen), and the output stems should be reorganized into a new DAW project. Organizing sound units in this way makes the identification of spectromorphological structures and intermorphological processes clearer and more convenient. Analyzing from a single stereophonic audio file, to me, compares to analyzing an orchestral work from a piano reduction. All sound units may be present and perceivable, but source separation becomes complicated. The subtleties of orchestration are necessary to plot mesostructural and causal relationships, but that information is prone to being lost when parsing several independent audio streams in an interleaved format. The stereo file could suffice if the analysis were to begin and end with intuitive listening and there was no intention of gathering additional evidence in expanded analysis phases. However, I typically endeavor to be more thorough. This may be a convenience, but it yields a more thoughtful interpretation, and any inconvenience it creates isn't substantial enough to outweigh the result.

My digital audio workstation of choice for analysis is Reaper. The platform receives ample developer and community support and is less prone to commercial railroading, making it appealing for deployment in a classroom scenario. Its API is also exposed to the user via scripting in various languages (REAscript, Lua, and Python currently). This means that we can streamline analytical processes by calling upon Reaper's API. This has been indispensable at pulling compositional metadata, some of which can be found in the attached Source Unit Catalogue in Appendix A.5.

With the project stems loaded into a fresh Reaper project, I begin by utilizing Reaper's built-in Dynamic Split function to strip the silence from every track (see Figure 3.1). The Dynamic Split enforces a dynamic gate upon all selected audio stems. Any audio that does not exceed the dynamic threshold will be trimmed away, and the remaining audio segments have leading and trailing pads added (with fade-ins and fade-outs). For my purposes, I have determined the ideal dynamic threshold to be a *very* conservative -80dbFS. This number has fluctuated between -50 and -80dbFS at times, but a -80dbFS threshold has provided the best results thus far, as it avoids any unintended loss of low frequency resonances or lingering subtleties.

The split creates a finite series of audio segments that will function as our indexed sound units. To avoid any discontinuities where the split operation might interrupt a sound unit mid gesture, a minimum silence length of 3000ms is stipulated, which was chosen to roughly coincide with the short duration of echoic memory[7]. Provided there are no internal silences that exceed that 3000ms stipulation, this parameter encourages the split operation to interpret audio segments into meaningful gesture-fragments. Though, conversely, the same stipulation may contradict the structure perceived by the analyst by grouping unrelated units, such as two independent impulses within 3000ms of each other. Though as with most things, it's easier to manually cut away audio than it is to reinsert it.

[7] A term attributed to psychologist Ulric Neisser in 1967, Echoic Memory is the sonic equivalent to iconic memory in the visual domain. It is a form of short-term sensory memory that roughly coincides with immediate human perception of audio stimuli, lasting between 3 and 4 seconds [31].

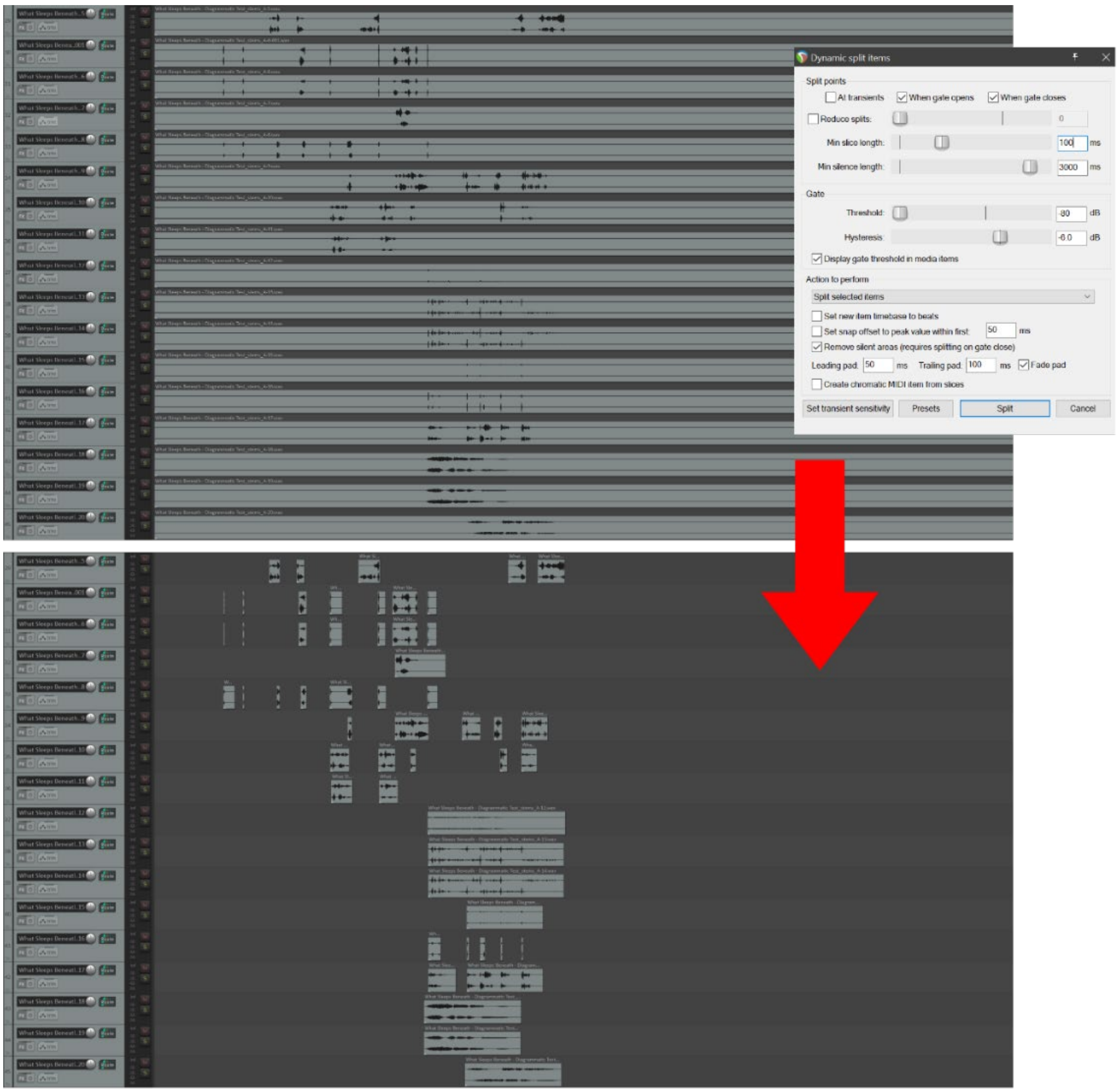


Figure 3.1 - Pre-processing: Using Reaper's Dynamic Split function to process audio stems for analysis

3.2 Event Onset Analysis

The analytical process begins in earnest with a coarse observational tour of the work via undirected listening. Like most analytical methods, the preliminary phases often incorporate some level of segmentation- parsing audio data into the manageable fragments which could dictate structural or causal relationships. The pre-processing phase performed one of those tasks already, but it must be verified via perceptual data. In my early listening, observational intentions are directed towards the identification of unique and notable *Events*. The global context of the work is perceived, and specific timestamps are noted as carrying some interest worthy of investigation. This bears some resemblance to the sound events described by R. Murray Schafer:

> "When we focus on individual sounds in order to consider their associative meanings as signals, symbols, keynotes or soundmarks, I propose to call them *sound events*, to avoid confusion with *sound objects*, which are laboratory specimens. This is in line with the dictionary definition of *event* as 'something that occurs in a certain place during a particular interval of time'- in other words, a context is implied."
>
> (Schafer 1993: 131) [50]

Schafer's sound events recontextualize anatomical units of sound in that it permits the observation of both intra- and extra-musical associations while acknowledging its position in the global context. My use of the term "event" is more generalized than that. The simplest distinction is that Schafer's event references a finite unit represented as an *interval* of time, while mine are *points* in time. Schafer and I likely follow similar listening processes, but his events imply the elucidation of smaller anatomical units (i.e., "focus[ing] on individual sounds"), while my events intend to loosely plot a trajectory of aural change in the global context, regardless of any associations. For me, an "event" can imply the introduction of new sound characters à la Schafer's sound events, or it can be a noticeable state change in a pre-existing sound structure. To disambiguate this terminology, I prefer to refer to event data as a sequence of *Event Onsets,* where specific onset times are recorded while remaining agnostic to any immediate structural associations. These event onsets can apply equally to impulses or landmarks in larger intermorphological processes. They could refer to any point where sound sources arrive or retreat, reach obvious climaxes, are accentuated, embellished, or where amplitudinal energies exhibit an obvious change in directionality like you might find at the peak of a dynamic swell. Any point in time where the observer perceives a *change in state* or a *point of significance* in the sonic landscape is valid as an event onset, and the priority should be to record their occurrences.

Markers or timestamps are good ways to annotate such findings. I utilize Reaper's markers myself (Figure 3.2). Note that while assumptions about *what* is changing are useful, attention on singular parametric states should not supersede the search for additional event onsets at this stage. There will be time to follow sequential changes in low-level features in the following steps. Our first goal should be to record a thorough sequence of event onsets.

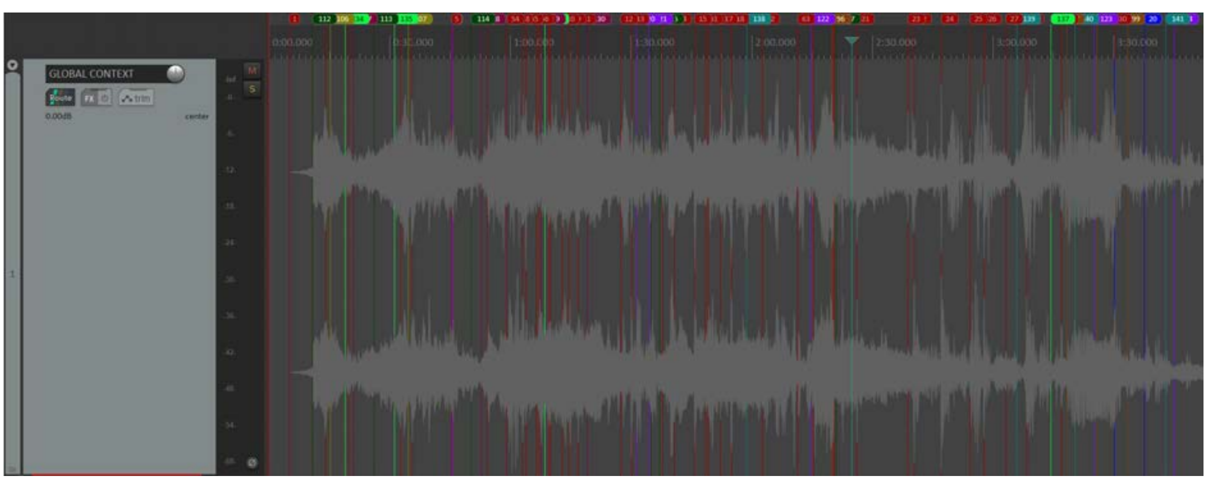


Figure 3.2 - Event Onset Analysis: Representation of onset analysis as seen with Reaper's markers.

This might seem like a convoluted practice where dense, gesturally energetic works are concerned. However, in practice, not all attack transients, dynamic subtleties, or spectral fluctuations will register as an event onset. Ultimately, smaller event onsets are grouped into larger structures where beginnings and endings register more prominently than inner processes. Additionally, other repetitive utterances will quickly fade from perception as they are converted to static artifacts. The listening quickly becomes a game of perceptual attention as certain sonic parameters become more foregrounded in lieu of others. This again calls back to Schafer, whose "keynote" sounds are reminiscent of backgrounded sounds who, in their ubiquity, fall from conscious observation, while the prevailing "signal" sounds demand conscious observation [50]. However, as it pertains to compositional practice, Schafer's terminology does not do well to accommodate circumstances where a singular sound may shift and mutate between various foregrounded and backgrounded states, which is a distinction my event onsets intend to avoid, reserving such judgements for later when tracking sound qualities as isolated, time-varying parameters.

Let's take Steve Reich's *Come Out* (1989) as an example. Within the first thirty seconds of the work the listener's attention is drawn to the semantic utterances of the original source recording, comprehending the meaning of the spoken word, and forming assumptions about who is speaking or what they are speaking about. However, it only takes a few repetitions through the loop of "*come out to show them*" for the listener's observation of sematic context to recede in favor of the development of the audio loop and how the time displacement of various phonemes creates rhythmic effects. Even then, after a certain amount of time, the state of the loop will become familiar enough to become static. One's perceptual attention will only reengage when the character of loop has changed significantly enough to register as a new event onset. Or in using Schafer's terminology, when the state of the loop shifts between from a "keynote" state to a "signal" state.

In difference to Emmerson, it should be noted that sequences of event onsets can exemplify similar macro-level archetypes - i.e., being abstract, abstracted, or some hybrid of the two. Both sampled and generative content, by the nature of their own existence, may *imply* crucial event onsets. An unaltered sound's intrinsic quality may suggest specific points of arrival, conclusion, or change, which is useful in both listening and creative contexts. For example, during early compositional phases I will typically employ generative techniques to expand my palette of source sounds. I'll intuitively audition the output in search of a sound that can function as a primary carrier for a new sound structure. Following my own aesthetic inclinations, I'll analyze sounds for any intrinsic event onsets and then structure subordinate sounds around them, aligning their intrinsic event onsets to create points of causal linkage. Indeterminate or inconsequential moments can be made to seem intentional by embellishing, accentuating, spawning new sounds, or transforming around the peak causal events of the primary structure-carrier. You can refer to the second section of my work *OWN.k* (2022) for a clear example of this operation in action (**Audio 3.1 🔈**).

Events onsets are driven by these traits. Foregrounded sounds and parameters distribute energy into the sonic landscape, which we perceive as audible change. That is at the heart of what we are attempting to observe. The assumption is that every work exhibits some degree of intra-musical logic determined by the composer. The orchestration of event onsets on a global scale not only obeys that logic but highlights it, and selections of salient features either create or gravitate towards the perceived causal nexuses. Essentially, the modus operandi here is that perceived sonic changes may create or point to intra-musical points of causality (à la Smalley

[52]), points of causality may demonstrate a pattern of logical or intentional action, and by tracking intentions we may achieve greater comprehension of the work by observing what parameters fuel the perceived causal action.

3.2.1 Windowed Event Operations

On its own, a recorded sequence of event onsets is relatively uninformative. They could serve as temporal guideposts when viewed in conjunction with other time-varying parameters, but each datapoint in isolation represents nothing more than a moment in time. However, the possibility of performing statistical operations upon the event sequence makes it far more useful. I have found that applying sliding window operations to the event onset sequence to be particularly fruitful at tracking *Event Onset Density*, which carries implications about the macro-level structure.

Figure 3.3 shows the windowed event onset analyses for *What Sleeps Beneath* (carried out in Python). In this distribution, each data point represents the center of an observation window whose sum is the number of event onsets perceived within that timeframe. To calculate the size of the observation window, the total piece duration is multiplied by 0.05. At this point, this factor is arbitrary. It was tested against multiple pieces and was found to be sufficient for the creation of an accurate and human readable representation. For *What Sleeps Beneath,* that means the total duration of the work (7:34", 454 seconds, or 454000 milliseconds) multiplied by 0.05 gives a window size of 22.7 seconds, or an observation window looking ~ +-11 seconds from the point of observation.

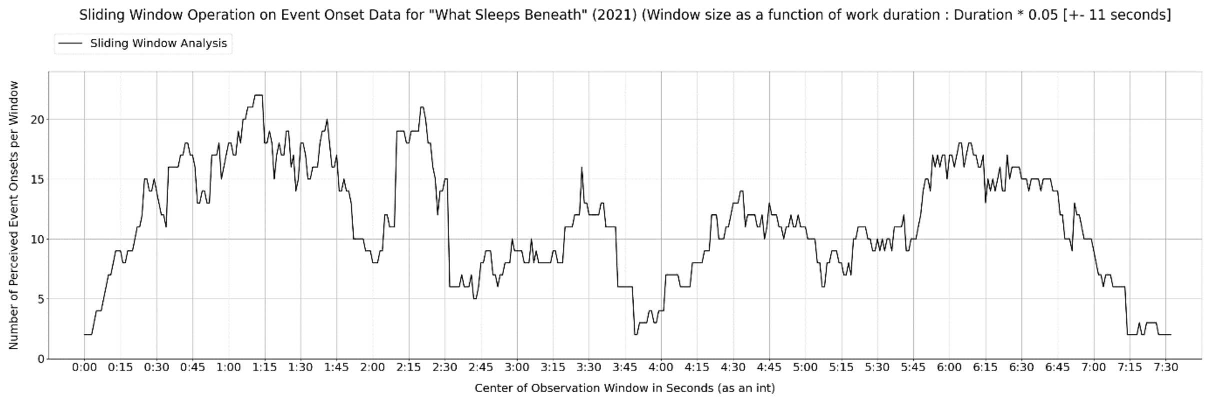


Figure 3.3 - What Sleeps Beneath: Sliding Window Operation on Event Onset Data

Additionally, the curve generated by the sliding window operation can be made more digestible by applying a moving average operation, as seen in Figure 3.4 below. This step is nearly identical to the initial sliding window operation. However, all values within the observation window are averaged together, thus smoothing the curve. The observation window in this step is the same as it was in the sliding window operation:

*Total work duration (454 seconds) * 0.05 = ~22 second window = +- 11 seconds*

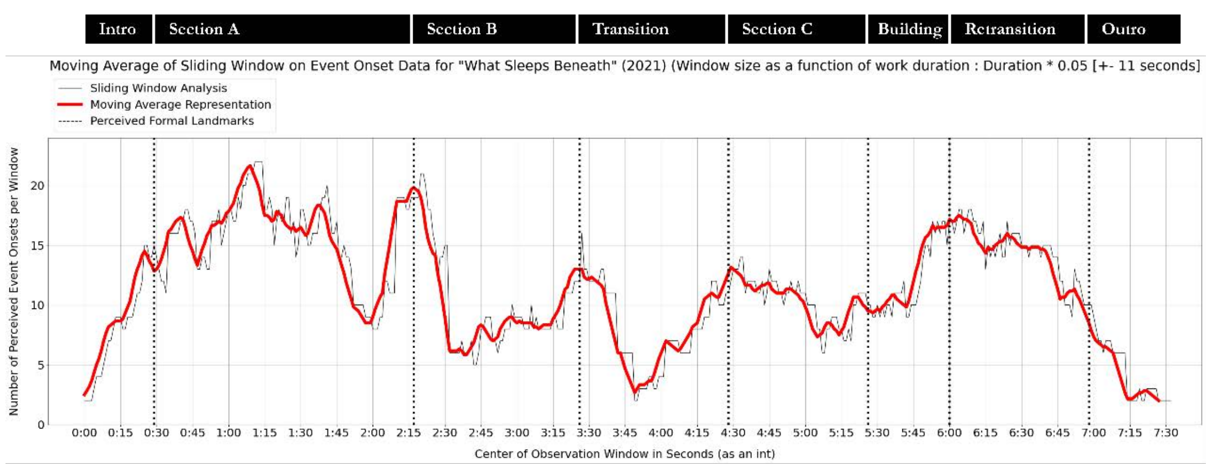


Figure 3.4 - Moving Average Representation of Sliding Window Analysis with formal landmarks.

I began experimenting with a windowed event onset analysis as a way of showing a time-varying representation of the event onset data. Rather than a series of discrete points in time, we are given a curve. I find this representation extremely helpful to my analytical process as a visual shorthand, however, it shouldn't be taken as empirical data. The windowed analysis is only a time-varying representation of how *we perceived* developmental changes throughout the work. It is just masquerading as quantitative data. Contextualized to a listening scenario, the significance of this curve could be interpreted as one of two things. 1) Heightened or lowered points of perceivable activity within the work. Points of statis would register lower while peaks might imply a climax or heightened frenetic activity. 2) The curve highlights the observer's own listening engagement throughout the work. Low points signify inattentiveness or disengagement, and peaks imply high engagement. Seeing as how we are engaging in aural analysis, which is fueled by an individualistic interpretation anyway, I don't find either option problematic. At the very least, it offers a convenient visualization of my perceived contour of the work and offers a coarse interpretation of sectional boundaries at the macro-level.

One of the strengths of a sliding window representation is its accessibility in the preliminary phase of analysis. All it requires is a listening scenario to observe. It could occur in a concert environment or in an analytical context with no more than a stereophonic audio file. If the mode of listening permits the collection of a timestamp sequence, then it is viable for a sliding window operation. Taken out of context, it has even been useful as a compositional tool, allowing me to track macro-level pacing or momentum as a function of my own interest.

3.3 Unit Segmentation and Structural Organization

I have used the term 'sound units' on several occasions in this document. I use this terminology to describe *uncontextualized* units of sounds at the most anatomical level. By referencing a sound unit, I am referencing a finite audio segment without consideration for its spectromorphological relevance or its typological classification. Sound "units" are archival designations, rather than quantified structural elements. They are the byproduct of performing Reaper's Dynamic Split function during the pre-processing phase. We automated the process for expediency, but at this point, we must review the results. The goal should be to create a catalogue of sound units which are aligned with our intuitive perception of the work. Any exceptional cases that don't ideally fit the specifications of the Dynamic Split should be either broken up or rejoined depending on the context.

Provided the segmented output meets our perceptual expectations, we then begin organizing the resulting sound units into larger perceivable structures, provided there *are* structures to perceive. How we go about organizing sound units will vary dramatically by context. Some works might be amenable to the spectromorphological formula, and others might be one continuous global context. We could organize by individual sound units, sound structures, specific voices, transformative processes, or any other novel expressions. In respect to *What Sleeps Beneath*, much of the piece was written with spectromorphological construction in mind. So, for this case, we will organize our sound units into gesture or texture structures. For example, refer to the Source Unit Catalogue in Appendix A.5. The first gesture structure notated is comprised of 6 sound units, which are referenced by their *Chronological Index* (units 11, 12, 13, 15, 16, and 17). In later analysis phases, our operations could reference any of these sound units individually by their index, or by the type and index of the higher order structures they belong to (Gesture 1 or [G1] in this case). Similar data can be seen in the *What Sleeps Beneath* Structure and Source Unit Catalogues in Appendices A.4 and A.5, along with various pre-compositional and compositional metadata points.

3.4 Unit Classification and Parametric Testing

At this stage, we should have vague impressions of the intra-musical discourse. We've created a sequence of event onsets and a catalogue of sound units via segmentation, and those units have been sorted into larger structures or sequences. However, we have yet to define the work's feature selection, which is our eventual end goal. The question now is how we go about defining the feature selection without pursuing the exhaustive practice of classifying each sound unit by every known aural analysis feature. First, we will return to our event onset sequence to add further definition via *Event Classification*. The results will provide useful clues for a targeted *Unit Classification* process thereafter. Data abstracted from the event classification will be reduced down to a test selection. Using that selection, we will begin the full analysis of the work looking for any intentional patterns of development that coincide with our perception of the work. If it does, we can include it among the feature selection.

3.4.1 Event Classification

In the event onset analysis section, I mentioned that assumptions about change should not supersede the search for additional event onsets. At that stage, our listening intentions were focused on the construction of the event onset sequence, but now, we can return to the data to add further definition. Now, we take notes about *what* aural features we believe to be contributing to our perception of events. This process could be conducted in observation of the entire global context of the work, isolated voices, or structural units. In fact, I've found that classifying both global *and* local events in combination yields the best results.

That was the process I followed for *What Sleeps Beneath*. I classified events in several passes, focusing on one parsable audio group at a time. Luckily, the original project file was already organized to accommodate that method, as source material was sorted into one of ten tracks groups based on either their identity or their function. If I were observing a piece other than my own, that didn't have any organization logic to its project file, I might reorganize it as an additional step. Sorting audio fragments into groups based on the perceived structures found in the previous step would be a good option.

However, regardless of the organization criteria, on the initial listening, one should observe a single, parsable audio stream and classify its typomorphological, spectromorphological, spatiomorphological, or intransitive conceptual significance in isolation. On subsequent passes, the listening should expand to include any relationships that audio stream might have with the global context of the work, noting any significant intermorphological, macro-level, or functional characteristics.

This will yield data reminiscent of what is shown in Table 3.1 below. This is an excerpt of my results from the *What Sleeps Beneath* event classification, which is organized in a table view (the complete table can be found in Appendix A.3). It starts by recording the Reaper marker index and timestamp for the event, the name of the audio group the event belongs to, and a thorough description of what was heard in both localized and global listening contexts. After considering every event in the work, we reevaluate our description making note of what taxonomic family our description alludes to, followed by a list of specific aural feature classifications that were identified. In cases where a structured feature descriptor is used, we expand the description to include any component aural features that comprise the structured feature.

ID	Time	Group	Description / Notes	Families Present	Aural Feature Present
M219	03:56.7	"FG-C"	[T15] "Sand" Class diminishes in dynamic activity and spectral width. Perception of increased resonance and processing	Typomorphological Intermorphological Abstract Transformation Attributed: Identity	Dynamic Level :: Decrease Spectral Width :: Converge Processing Type :: Resonant Filter Unidirectional Growth Type :: Increase Unidirectional Growth Type :: Decrease Multidirectional Growth Type :: Converge Identity Class
M142	04:01.3	"Water"	Low frequency content is all that remains. Dissipates to almost nothing. Narrowing Spectral Width of "Water" class juxtaposes the remaining "Rock" high frequency content in transition section. Coincides with rate increase in "Splash" behavior class	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch :: Converge Spectral Width :: Converge Dynamic Level :: Decrease Pulse Rate :: Increase Unidirectional Growth Type :: Increase Unidirectional Growth Type :: Decrease Multidirectional Growth Type :: Converge Identity Class Behavior Class Dialogic Function
M125	04:05.2	"Vocal."	Reemergence of "Vocal" class [T16] masked by "Splash" behavior class. Notably different than Section A "vocal" class - much lower frequency, phonetic quality	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Pitch Spectral Width Spectromorphological Function Stratum Density :: Increase Identity Class Identity Subclass Behavior Class Transitive Function :: Object

Table 3.1 - Example of "What Sleeps Beneath" Event Classification data.

By taking our 'per-event' findings and aggregating them into a feature list, we invite the possibility for a frequency distribution analysis. It stands to reason that any feature that reoccurs throughout the work with any notable frequency, should be regarded as more salient. In the case of *What Sleeps Beneath*, our event classification yielded 89 unique feature classifications. Some of those entries represent variants of a single aural feature. For example, *Dynamic Level* is noted several times. In some cases, it's bonded with a growth process such as a *Parabolic Reciprocal Growth Type* or an *Increasing Unidirectional Growth Type*. In other cases, it's listed without any additional qualifiers. However, by observing the list of 89 aural features as a frequency distribution (as shown in Figure 3.5 below), we begin to see a clearer picture of feature saliency.

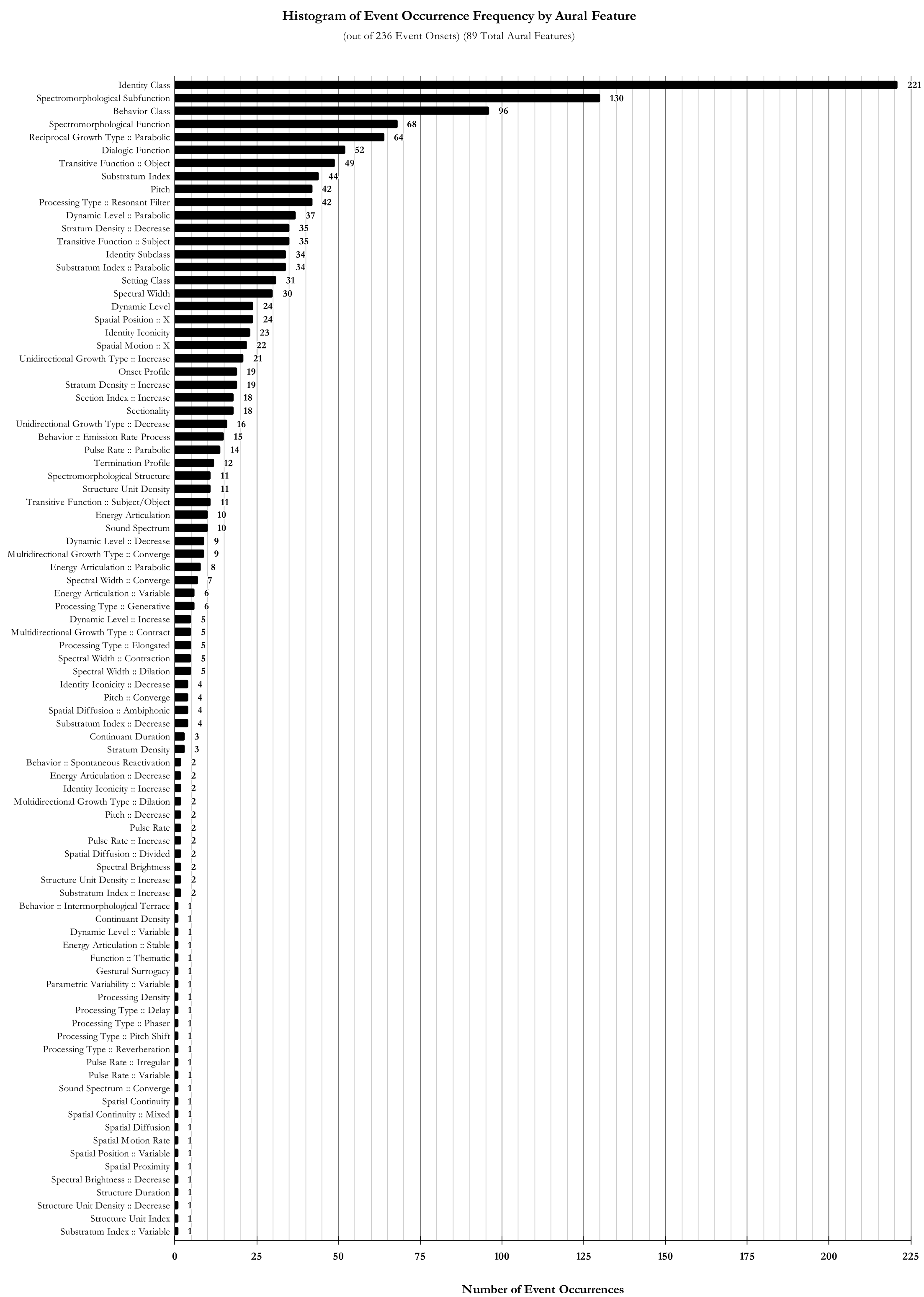


Figure 3.5 - Histogram of Event Occurrence Frequency by Aural Feature.

3.4.2 Reducing the Feature Abstraction

Obviously, an aural feature that is present in 221 of 236 events demonstrates a far greater level of saliency than an aural feature than is noted a single time. By referring to the frequency distribution, we can devise a shorter list of reexamination features. For in practice, a reexamination of the work considering all 89 of the documented aural features will likely be unproductive. One option would be to interpret the results in percentiles, thus focusing our attention on more meaningful subsets. For example, Figure 3.6 reinterprets the histogram, displaying only those features that are above the 90th percentile. This subset of features presents a more salient picture of the work.

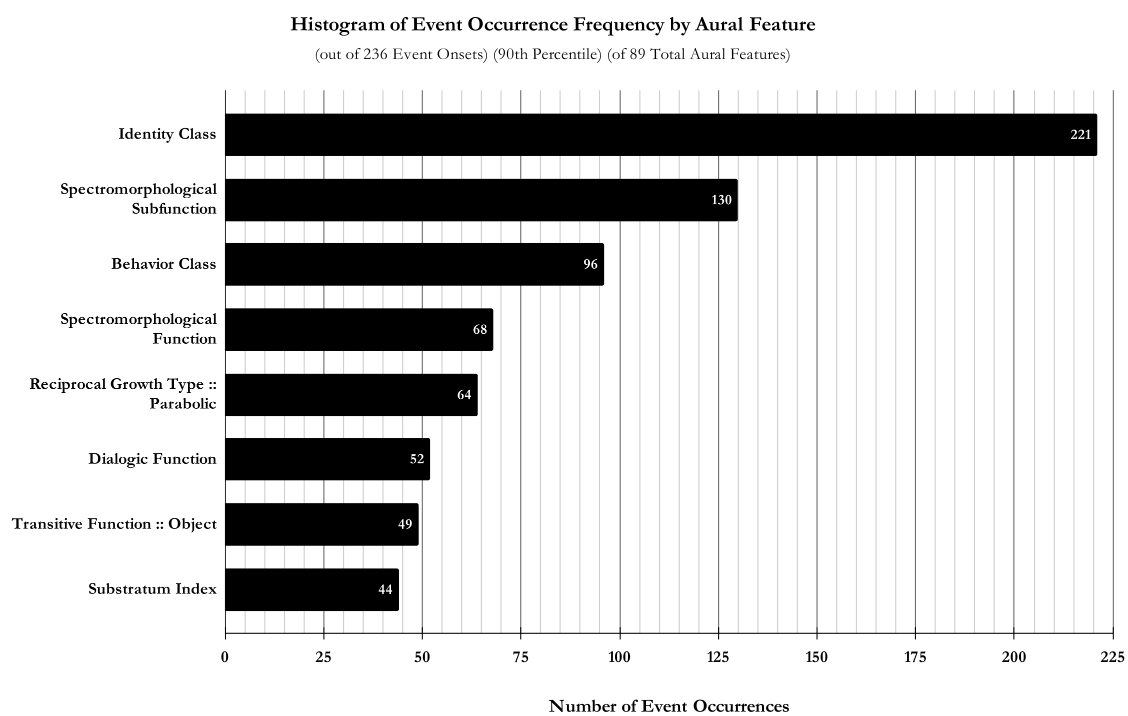


Figure 3.6 - Histogram of Event Occurrence Frequency by Aural Feature (Above 90th Percentile).

Conversely, we could examine taxonomic occurrence as a frequency distribution as seen in Figure 3.7 below. In this instance, all documented aural features are tied to the taxonomic family they belong to. The frequency distribution in Figure 3.7 shows event occurrence frequency for each family. For *What Sleeps Beneath*, attributed classifications pertaining to identity and spectromorphology clearly show a predominance over the remaining taxonomic space. Based on this data, one might assume that further inquiry into Identity and Spectromorphological features might lead to more tangible results than say Spatiomorphology. As its composer, I can attest that *What Sleeps Beneath* is stereophonic and intended for live projection. As such, the fixed version doesn't take too many liberties in regard to spatialization (perhaps to its detriment). However, as the analyst, the data demonstrates less of a need for a spatiomorphological analysis, as it is less salient to my perception of the work.

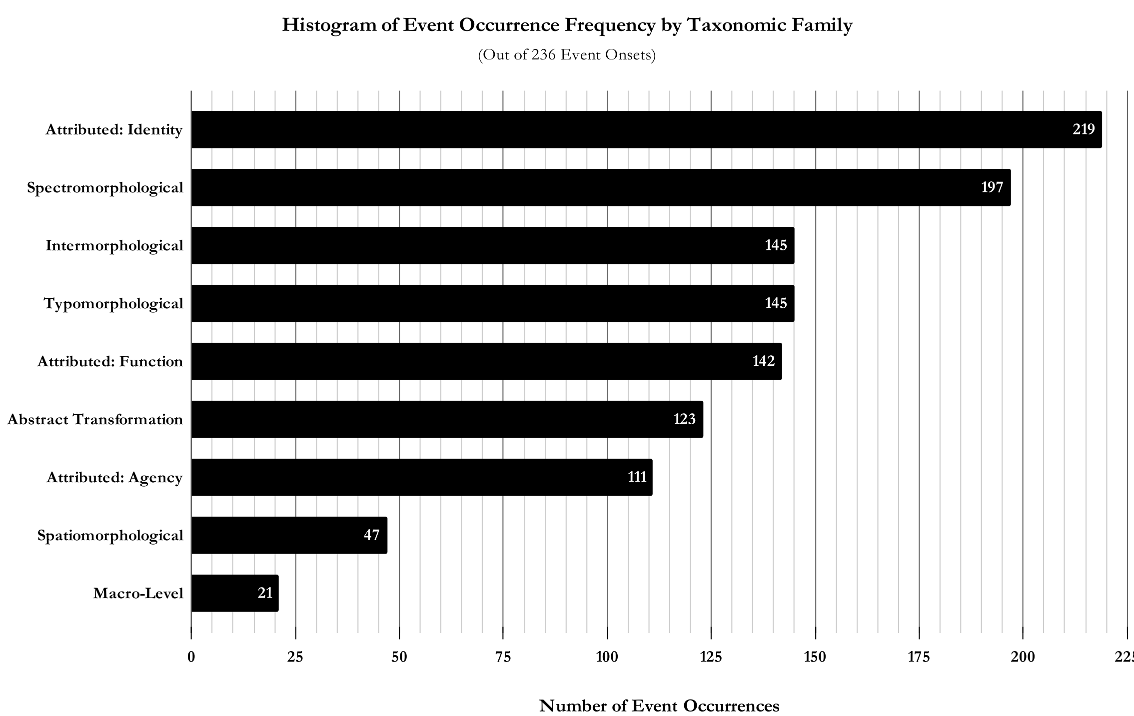


Figure 3.7 - Histogram of Event Occurrence Frequency by Taxonomic Family.

Currently, we have an array of 89 aural features, as seen in Table 3.2. However, according to the frequency distribution, many features are less convincing in their saliency. So, we should reduce the event classification results into more meaningful test abstractions. As we saw in Figure 3.5, many of the features were rare occurrences, with 37 features being observed only one or two times out of 236 events. However, in some cases, features are listed with multiple variants, such is the case for *Processing s* or *Behavior Classes*. I'll begin by aggregating the data to account for only singular features, and not their variants. The reduced histogram can be seen below in Figure 3.8.

Identity Class	Spectromorphological Structure	Spectral Brightness
Spectromorphological Subfunction	Structure Unit Density	Structure Unit Density :: Increase
Behavior Class	Transitive Function :: Subject/Object	Substratum Index :: Increase
Spectromorphological Function	Energy Articulation	Behavior :: Intermorphological Terrace
Reciprocal Growth Type :: Parabolic	Sound Spectrum	Continuant Density
Dialogic Function	Dynamic Level :: Decrease	Dynamic Level :: Variable
Transitive Function :: Object	Multidirectional Growth Type :: Converge	Energy Articulation :: Stable
Substratum Index	Energy Articulation :: Parabolic	Function :: Thematic
Pitch	Spectral Width :: Converge	Gestural Surrogacy
Processing Type :: Resonant Filter	Energy Articulation :: Variable	Parametric Variability :: Variable
Dynamic Level :: Parabolic	Processing Type :: Generative	Processing Density
Stratum Density :: Decrease	Dynamic Level :: Increase	Processing Type :: Delay
Transitive Function :: Subject	Multidirectional Growth Type :: Contract	Processing Type :: Phaser
Identity Subclass	Processing Type :: Elongated	Processing Type :: Pitch Shift
Substratum Index :: Parabolic	Spectral Width :: Contraction	Processing Type :: Reverberation
Setting Class	Spectral Width :: Dilation	Pulse Rate :: Irregular
Spectral Width	Identity Iconicity :: Decrease	Pulse Rate :: Variable
Dynamic Level	Pitch :: Converge	Sound Spectrum :: Converge
Spatial Position :: X	Spatial Diffusion :: Ambiphonic	Spatial Continuity
Identity Iconicity	Substratum Index :: Decrease	Spatial Continuity :: Mixed
Spatial Motion :: X	Continuant Duration	Spatial Diffusion
Unidirectional Growth Type :: Increase	Stratum Density	Spatial Motion Rate
Onset Profile	Behavior :: Spontaneous Reactivation	Spatial Position :: Variable
Stratum Density :: Increase	Energy Articulation :: Decrease	Proximal Depth
Section Index :: Increase	Identity Iconicity :: Increase	Spectral Brightness :: Decrease
Sectionality	Multidirectional Growth Type :: Dilation	Structure Duration
Unidirectional Growth Type :: Decrease	Pitch :: Decrease	Structure Unit Density :: Decrease
Behavior :: Emission Rate Process	Pulse Rate	Structure Unit Index
Pulse Rate :: Parabolic	Pulse Rate :: Increase	Substratum Index :: Variable
Termination Profile	Spatial Diffusion :: Divided	

Table 3.2 - Identified Aural Feature classifications in "What Sleeps Beneath" Event Classification.

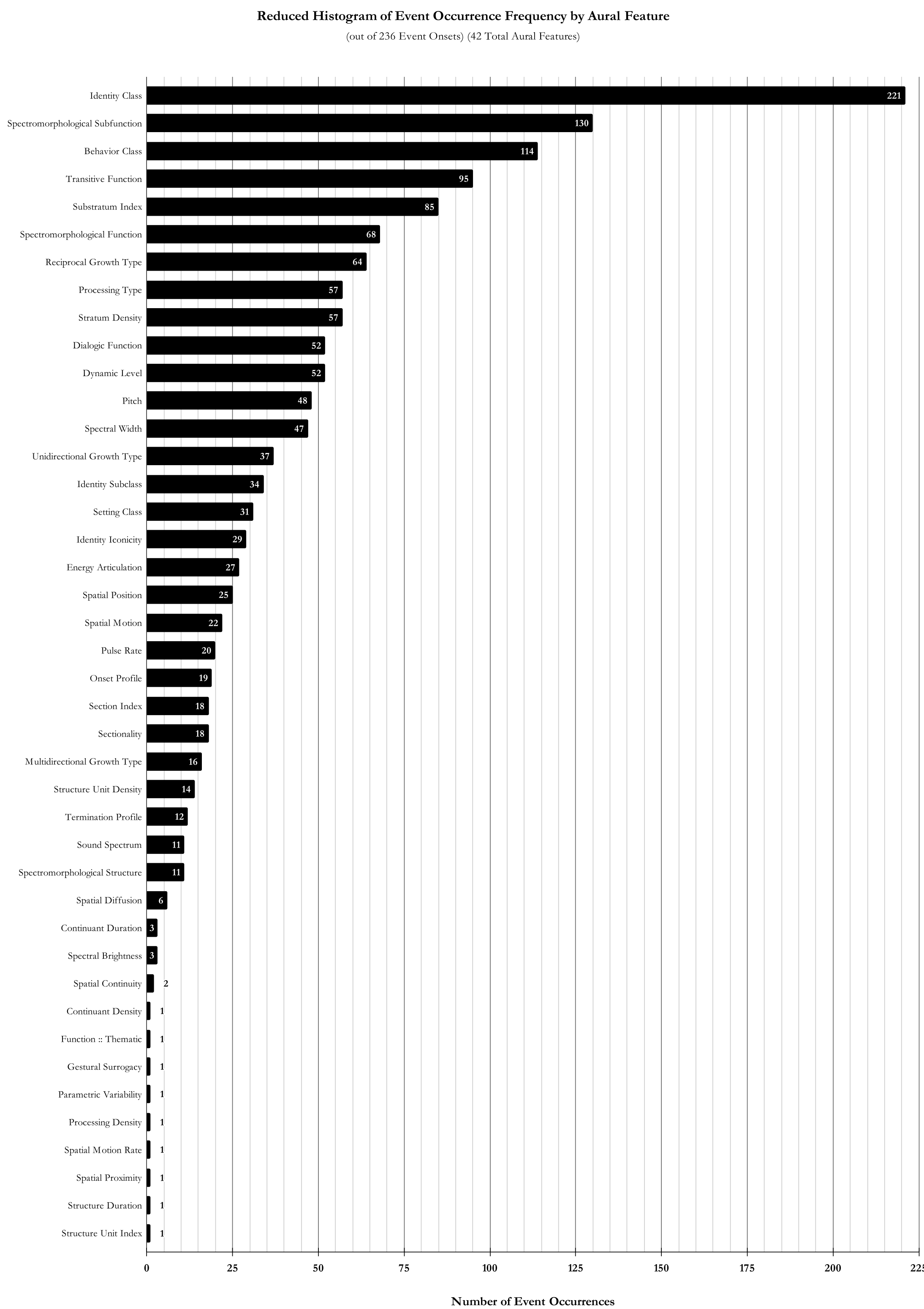


Figure 3.8 - Reduced Histogram of Event Occurrence Frequency by Aural Feature.

By aggregating the variants, we reduce the selection from 89 features down to 42. However, while we consolidated many outliers, there are still several that occur only a handful of times. To me, that suggests that these features represent fringe cases. Perhaps they are not salient on a macro-structural level, but they could still be pertinent on a more localized scale. Their saliency is dubious, but we will still include them for good measure. This keeps our selection on the larger side, but luckily, we can still reduce the selection further.

Refer to Table 3.3 below where the remaining 42 features are reorganized into their taxonomic families. When combined with our established data, we can see that there are a number of features here that can be omitted due to redundancy or latency. For instance, features related to spectromorphological structure are no longer needed at this point. We carried out our structural organization in previous steps and the spectromorphological structures have been well quantified. There's no need to reexamine them again. However, *Structure Duration* and *Structure Unit Density* could still potentially be worth exploring.

Additionally, there are some features that have a relatively high frequency of reoccurrence, but when we return to the event classification data, we find discontinuities. For example, some development related to *Pitch* was observed in 48 events. However, when we consult the event classification description, we see several references to "non-functional sonorities". In this case, we aren't referring to *Pitch* as being pivotal to some melodic or harmonic structure, but as a classification following Thoresen's *Sound Spectrum* feature [56]. This would be the more prudent feature to reexamine. Comparing 'Pitched' content to 'Complex' *Sound Spectrums* is more apt in this case than a harmonic or intervallic analysis would be.

Similarly, a complete reexamination of *Dynamic Level* would be tedious. All indication from the event classification data point to *Dynamic Level* being pertinent due to its involvement in various structured *Behavior Class* descriptors, thematic actions, or stratified processes. *Spectral Brightness* can be overlooked for similar reasons. Event descriptions point to it being a latent byproduct of operations occurring on *Spectral Width*.

Taxonomic Family	Reduced Feature Selection	Test Abstraction
Typomorphological	Dynamic Level Pitch Spectral Width Energy Articulation Pulse Rate Onset Profile Termination Profile Sound Spectrum Spectral Brightness	Spectral Width Energy Articulation Pulse Rate Onset Profile Termination Profile Sound Spectrum
Spectromorphological	Spectromorphological Structure Spectromorphological Function Spectromorphological Subfunction Structure Unit Density Continuant Duration Continuant Density Structure Duration Structure Unit Index	Structure Unit Density Continuant Duration Continuant Density Structure Duration
Intermorphological	Substratum Index Stratum Density	Substratum Index Stratum Density
Macro-Level Structure	Section Index Sectionality	
Spatiomorphological	Spatial Position Spatial Motion Spatial Diffusion Spatial Continuity Spatial Motion Rate Proximal Depth	
Abstract Transformation	Reciprocal Growth Type Processing Type Unidirectional Growth Type Multidirectional Growth Type Parametric Variability Processing Density	Processing Type Parametric Variability Processing Density
Attributed Classifications: Identity	Identity Class Identity Subclass Setting Class Identity Iconicity	Identity Class Identity Subclass Setting Class Identity Iconicity
Attributed Classifications: Agency	Behavior Class Gestural Surrogacy	Behavior Class Gestural Surrogacy
Attributed Classifications: Function	Transitive Function Dialogic Function Function :: Thematic	Transitive Function Dialogic Function Function :: Thematic

Table 3.3 – Table of test features pulled from reduced event classification data sorted into taxonomic families.

Finally, we can exclude a few taxonomic families entirely. The macro-level structure was well quantified during the structural organization process, so there isn't much left to reexamine. Spatiomorphology can also be retired at this point. If this were anyone else's piece, it would absolutely remain on the table, but in knowing my own piece, I can verify that the spatiomorphological dimension was meant to be activated in performance. There are specific spatial operations that occur in the static work as well, but like *Dynamic Level* they are referenced in cases where they embellish another transitive action, *Behavior Class*, *Energy Articulation*, or sound structure. Rest assured that we will mention spatiomorphology in the final analysis, but for now, it offers little for reexamination on its own merits.

After sifting through our reduced array of 42 features, we have arrived at a reexamination abstraction of 23 features. All we must do is organize them. Some features are typomorphological and warrant an investigation at the level of the sound object while others are spectromorphological or intermorphological, which operate upon higher-level sound structures. The two reexamination abstractions can be seen in Table 3.4 below. We have 15 features for review at the sound object level, and 8 at the sound structure level.

Review at the Sound Object	Review at the Structure
Energy Articulation Pulse Rate Onset Profile Termination Profile Sound Spectrum Processing Type Parametric Variability Processing Density Identity Class Identity Subclass Setting Class Identity Iconicity Behavior Class Gestural Surrogacy Function :: Thematic	Structure Unit Density Continuant Duration Continuant Density Structure Duration Substratum Index Stratum Density Transitive Function Dialogic Function

Table 3.4 - Reexamination feature abstractions sorted by structural level.

3.4.3 Unit Classification and Reexamination

The goal of the Unit Classification phase is to determine whether or not an anomalous event has greater significance in the musical discourse. Perhaps on one or two occasions we perceived a sound structure exhibiting a typological quality or pattern of behavior which we hadn't noticed elsewhere in the work. Was the event truly an anomaly or is it part of a spectromorphological or intermorphological process that went unnoticed? The only way to know for certain is to quantify the action as a series of low-level features and then classify every element in the work considering those qualities.

For example, the results of our event classification suggested perceivable developments on a sound unit's *Energy Articulation*. To confirm its saliency, we would return to the work and classify every sound unit's *Energy Articulation* with the intention of finding greater patterns of development. If we wanted to be more thorough, we could also look at higher-level structures and interpret *Energy Articulation* as a statistical representation of its constituent parts. For example we might say that the *Energy Articulation* of the "Bronze" class [T8] texture is primarily 'Sustained' and its *Sound Spectrum* is primarily 'Pitched'. We could then compare that classification to adjacent "Bronze" class textures to see if the classification persists or develops. Or, to extend that rationale even further, we could apply the same statistical approach to structures or subgroups at higher mesostructural levels. Does the entire "Bronze" identity class primarily exhibit a 'Sustained' *Energy Articulation* on average? Do all 'Texture' structures exhibit the same proclivity for 'Sustained' articulation? There could be implications or intentions that transcend the boundaries of structure archetypes, sections, or voices.

Obviously, depending on the size of the reexamination abstraction, this could quickly become a chore, and could result in far more data than anyone could handle by hand.

Understandably, we won't go through the process of classifying every feature in the body of this document. Rather, I will demonstrate my thought process for a few features, and then reserve everything else for the next chapter or the appendices.

For demonstration purposes, let's take a closer look at the *Stratum Density* and *Substratum Index* features. Both are terms that I am introducing to quantify the organization of the stratified global context of the work. To review, the *Stratum Density* quantifies the number of simultaneous audio sources sounding at any one time in simultaneity, while the *Substratum Index* defines a single sources position in the stratum ranging from the most backgrounded to the most foregrounded. The *Substratum Index* in this case is dependent, as value of the index is a product of the global density.

So, we will begin by quantifying the global stratum of the work. In the context of *What Sleeps Beneath* we can approach density from two different angles. First, we could define the stratum by the Global Unit Density, where the total number of sound units acting in simultaneity is our density. A representation of this approach can be seen in Figure 3.9:

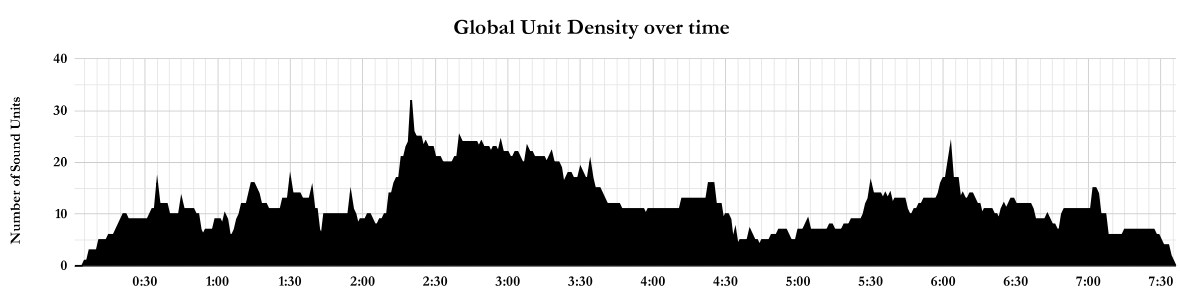


Figure 3.9 - Representation of Global Unit Density over time in What Sleeps Beneath.

I find this representation to be particularly interesting when viewed alongside the windowed event onset analysis from early. From this perspective, *Stratum Density* appears to agree with the established trajectory of events and lends further evidence of the macro-level structure. However, on a practical level, I doubt anyone perceives 32 unique and parsable sound units occurring in simultaneity at [2:20]. Many units are grouped together as component members of other structures or voices. This brings us to the second approach, which is to define the *Stratum Density* by the number of perceivable *Identity Classes*. The *Identity Class* feature is included among our reexamination abstraction, and they fill the role of 'instrumented voices' in *What Sleeps Beneath*. For this, I reorganize the sound unit representation and record only when a unique *Identity Class* is present. This result can be seen here in Figure 3.10:

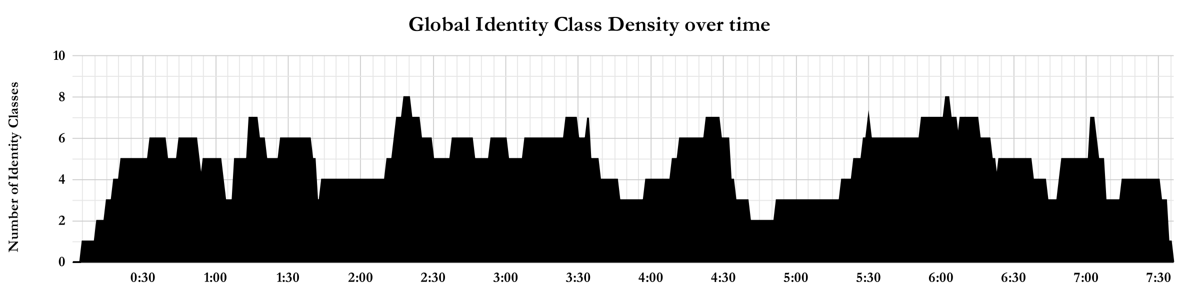


Figure 3.10 - Representation of Global Identity Class Density over time.

The contour of this representation is still reminiscent of the previous graphs, but now we are visualizing the density of *Identity Classes.* This data is more convenient to work with and more closely matches my structural perception of the work, which should prove to be more helpful when determining the *Substratum Index* and deriving other data. By assigning each class a *Substratum Index* and dividing that value by the *Stratum Density*, can create a trend of that *Identity*

Class's Stratified Position throughout the work. To start, we grade each *Identity Class* from 1 to *Stratum Density.* For example, at [2:20] the *Stratum Density* is 8, so we would grade all sounding voices from 1 to 8, where 1 is the most backgrounded voice and 8 is the most foregrounded. Dividing the *Substratum Index* by the *Stratum Density* gives us a float between 0.0 and 1.0. The continuum between 0.0 and 1.0 then serves to quantify a *Stratified Position* within the global context of the work. By plotting the time-varying *Stratified Position* for each *Identity Class* we can visualize its path through the global context. The picture becomes even clearer when we pair that data with the class's Unit Density, which can be seen in Figure 3.11, Figure 3.12, and Figure 3.13 below.

This demonstrates how much data can be gleaned by following the statistics of individual features. Though, this was only an observation of 2 reexamination features out of 23. Tracing the entire abstraction across all mesostructural levels would result in an even broader dataset. A single line of thinking may not always lead to useful insights but could establish grounds for other representations. For example, only a few of the visualizations of *Stratified Position* depicted below jump out as being pertinent to the musical discourse. However, if we expound upon that data further, we can create a representation that depicts only the most foregrounded *Identity Class* throughout the duration of the work, which can be seen in Figure 3.14 below. Such a representation is several layers of abstraction deep but can still serve as evidence of our interpretation of the work. We'll discuss it and similar processes in the next chapter where we define salient features and show evidence of their operation throughout *What Sleeps Beneath.*

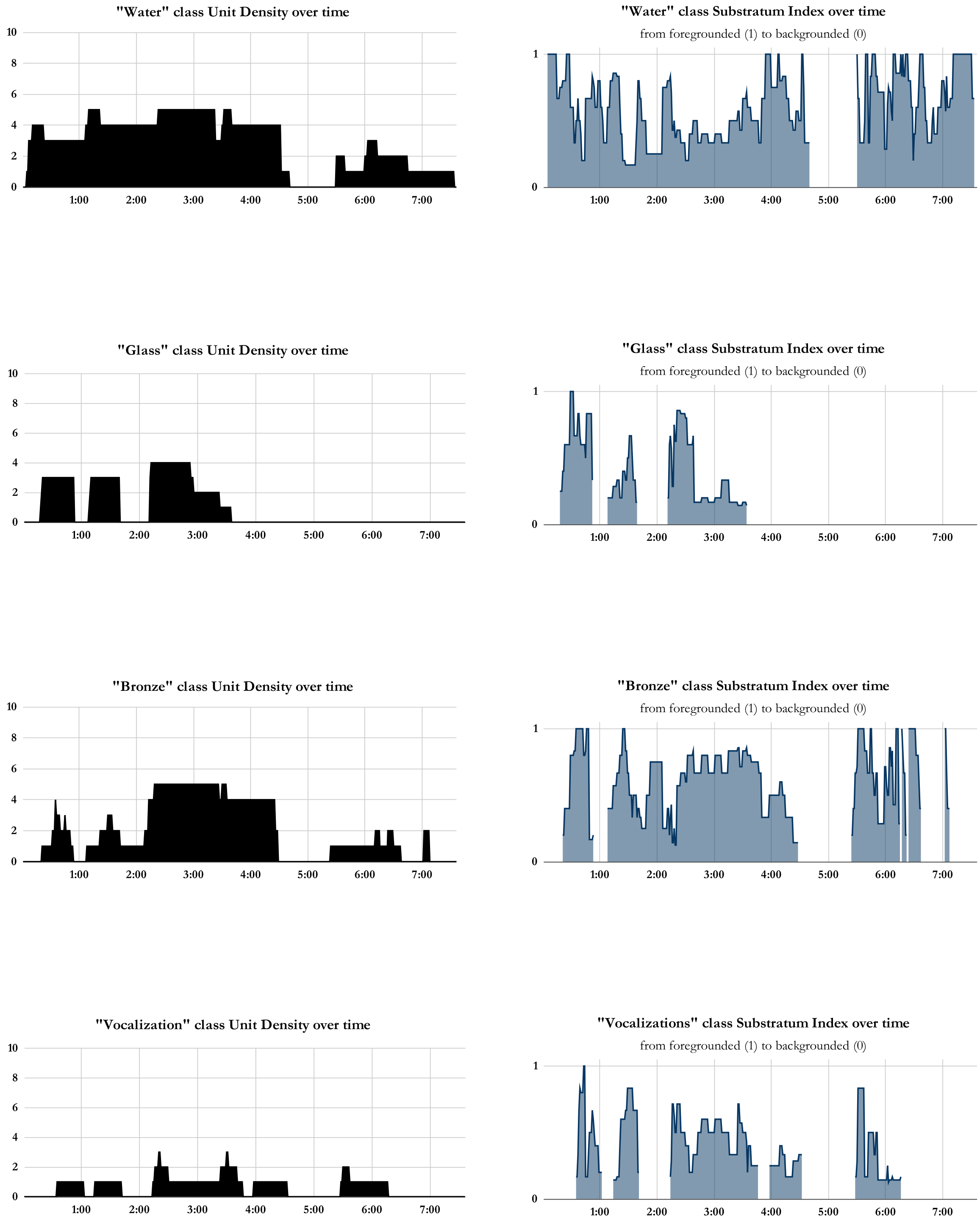


Figure 3.11 - Charts depicting Unit Density and Substratum Index by Identity Class (1 of 3).

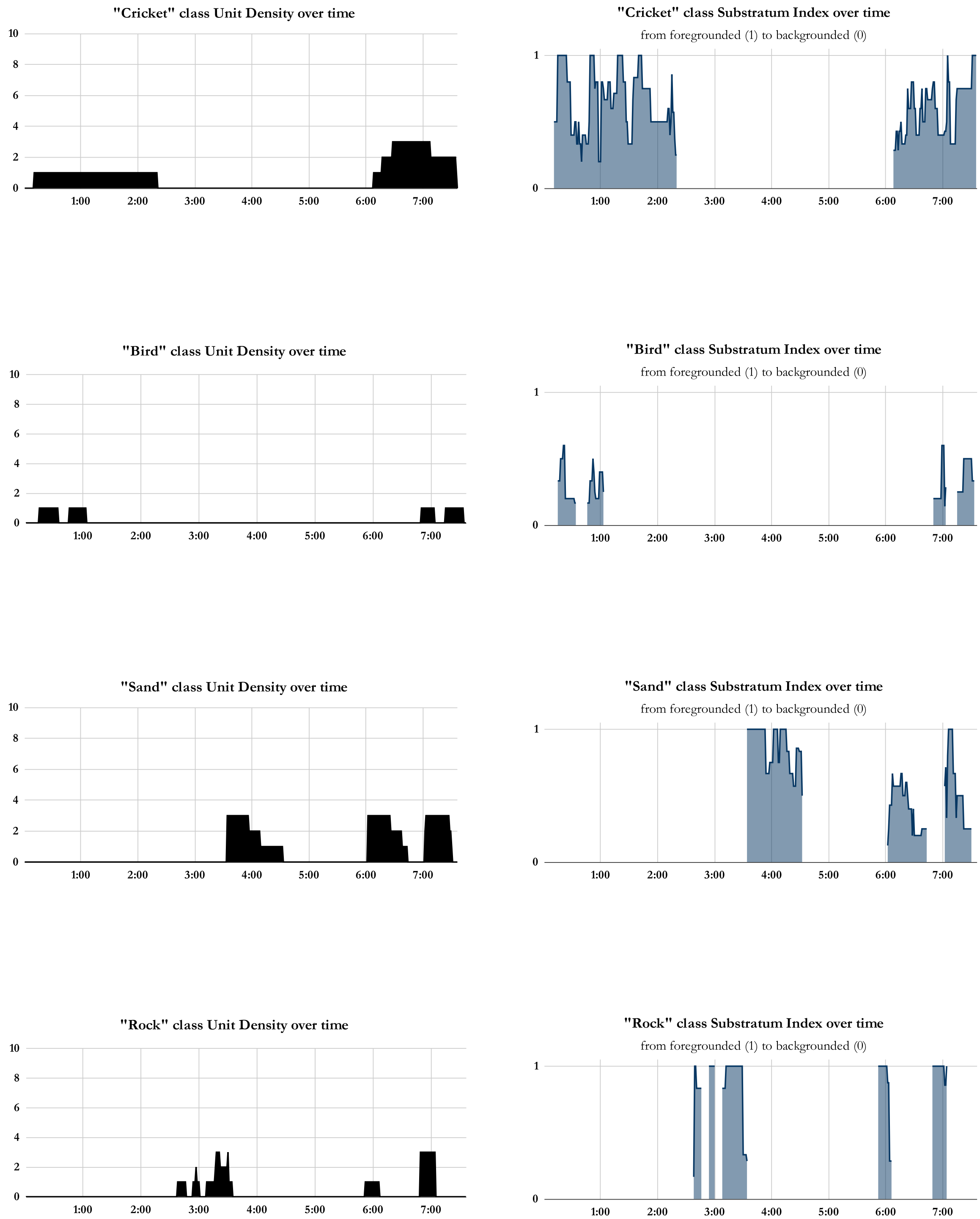


Figure 3.12 - Charts depicting Unit Density and Substratum Index by Identity Class (2 of 3).

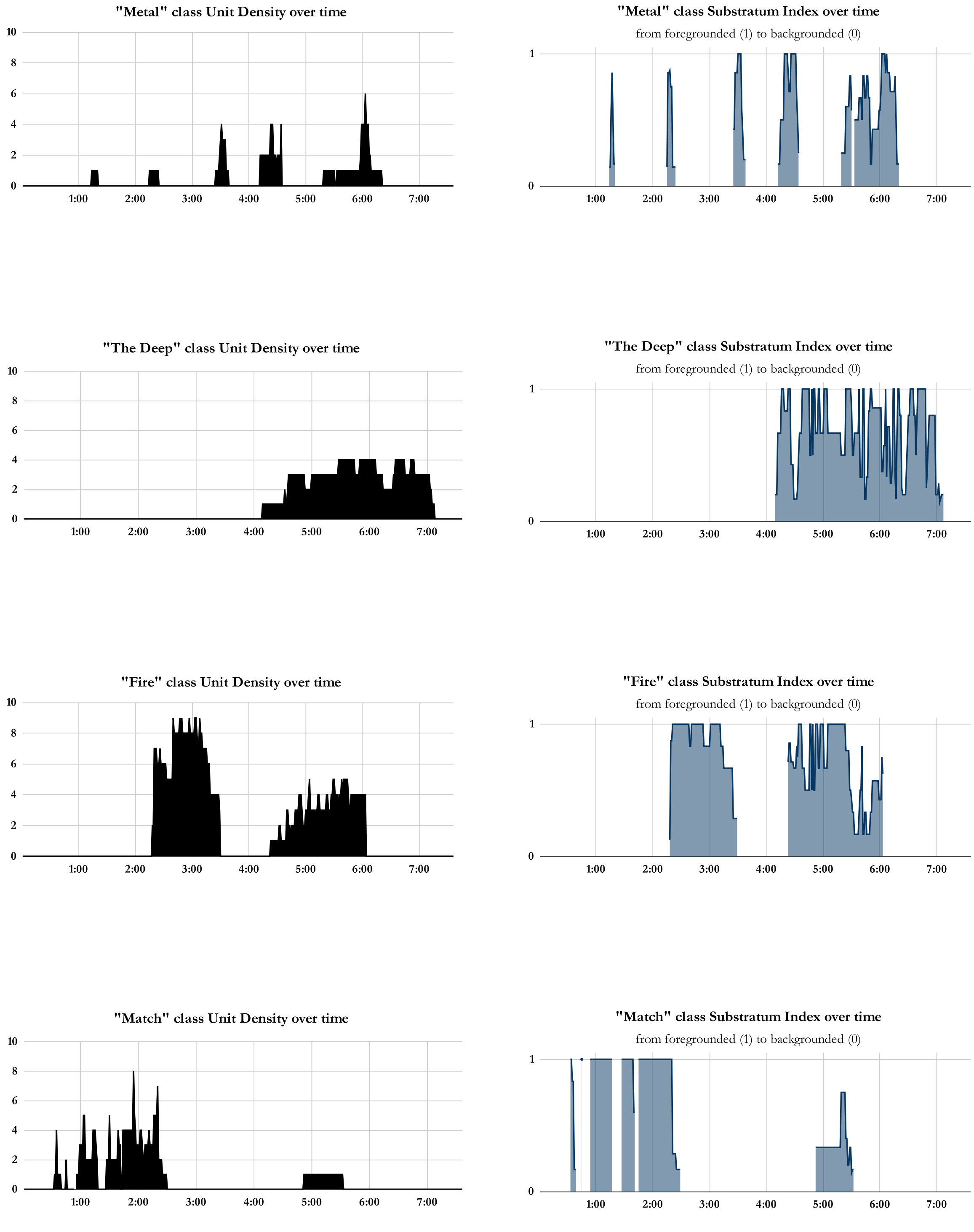


Figure 3.13 - Charts depicting Unit Density and Substratum Index by Identity Class (3 of 3).

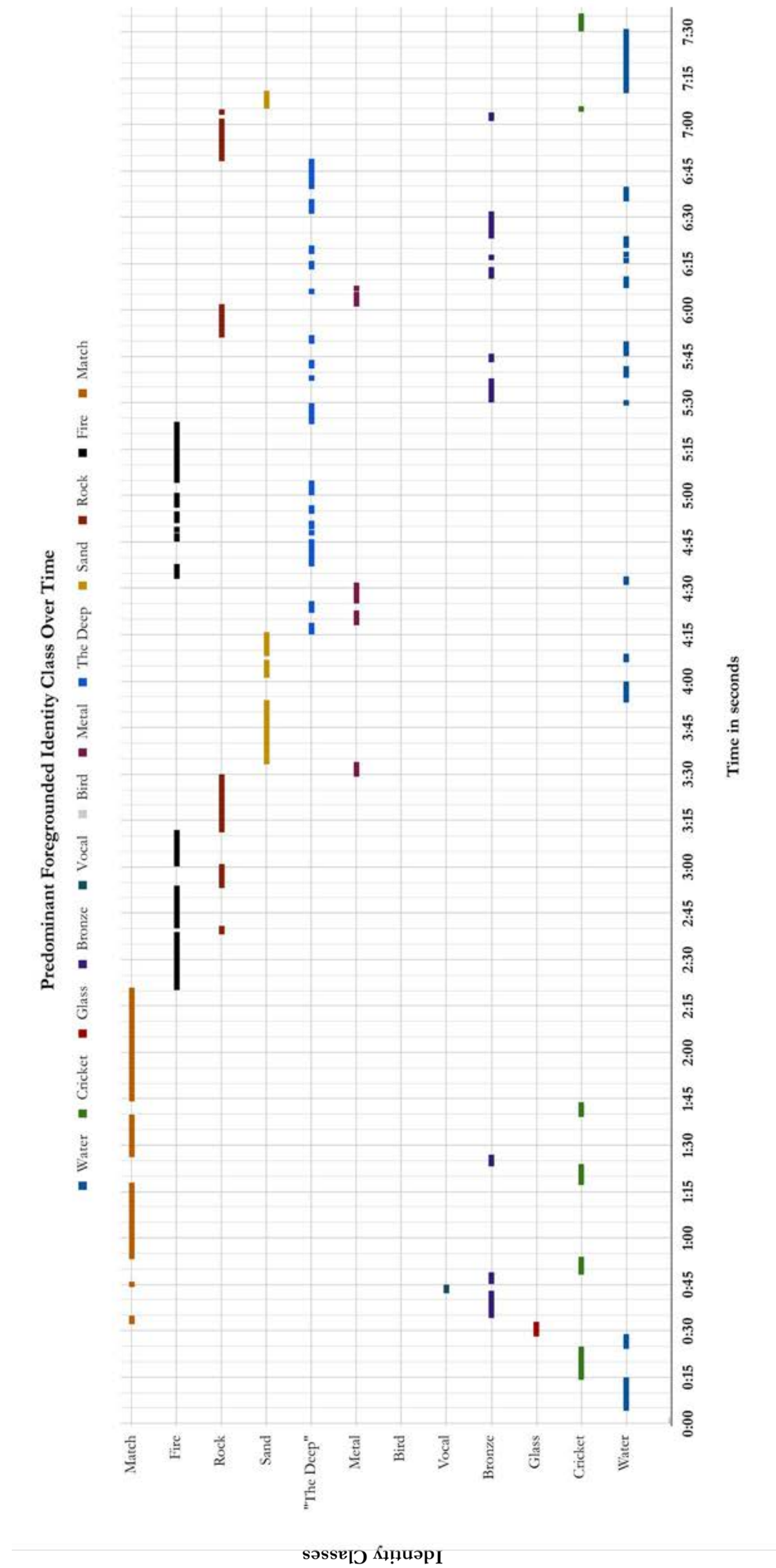


Figure 3.14 -Representation of Predominant Foregrounded Identity Class over time.

Chapter 4

An Analysis of *What Sleeps Beneath*

In Chapter 3 we compiled a broad range of perceptual data which will now serve as evidence for our interpretation of *What Sleeps Beneath*. We will begin by following a top-down approach. First, I will speak briefly about the autobiographical content and extra-musical motivation behind the piece. Second, I will offer an overview of Macro-level and Rhetorical structures and the work's salient feature selection. Finally, I will go through each section in chronological order highlighting specific examples of salient features.

The reader is welcome to reference the appendices at any time to review the perceptual data or the definition of specific aural features. The Aural Space Glossary can be found in Appendix A.1, a paradigmatic representation of the structural organization in Appendix A.2, the complete Event Classification Analysis in Appendix A.3, a Structural Catalogue in Appendix A.4, and a Source Unit Catalogue in Appendix A.5. Finally, should the reader prefer to listen to the work prior to reading the analysis, the full recording of *What Sleeps Beneath* is available in (**Audio 4.1** 🔈).

4.1 Background and Extra-Musical Motivations

Over the course of this document, I have advocated for an analysis position that is more artist centric. A position that observes the autobiographical perspective of the composer as well as the entities that influenced or contributed to the creation of the work. As such, I'd be remiss if I neglected such a perspective in respect to my own work. So, before we delve too deep into the analysis, I felt I should quickly touch on the extra-musical motivations that inspired *What Sleeps Beneath* as they determined much of the salient feature selection and how I developed various parameters. Aspects of the analysis may be clearer with an understanding of the conceptual or narrative underpinnings of the work.

What Sleeps Beneath initially began while in residence at the Glen Arbor Arts Center[8] in Glen Arbor, MI in 2018 and was later completed in Santa Barbara, CA in late 2021. The Glen Arbor residency was structured in two parts: 1) The exploration of the Glen Arbor community through a harvested corpus of field recordings and 2) the creation of a new electroacoustic work with a significant narrative structure inspired by the surrounding community.

The field recording portion of the residency lead me to the town of Glen Arbor itself, the Sleeping Bear Dunes National Lakeshore, the Glen Arbor Art Center's Thoreson Farm, the surrounding lakeshores and fields, and other such locations. The resultant corpus of sounds was composed of longer, static ambiences such as wave sounds, wind and foliage, or insectoid textures, while sounds of rocks and stones, antique metallurgy or pottery equipment, matches or fire starting implements, blacksmithing tools, glass, or bronze structures provided a more fruitful playground for gestural construction.

During the field recording process, I also conducted research on the history and culture of the surrounding area to determine the ideal narrative structure. I knew going into the residency that I wanted the resultant work to be evocative of the site, however the Glen Arbor community is more rural in nature so any narrativity focused on niche industrious factors would do little to

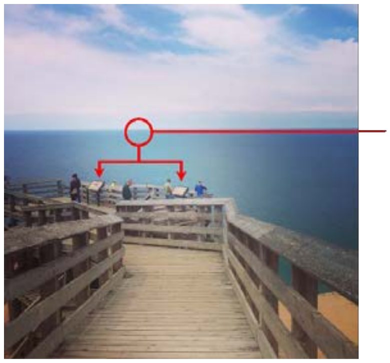
[8] The Glen Arbor Arts Center Website - https://glenarborart.org/

represent the area-at-large. In combination with the developing corpus of sounds, it became clear that a piece that could embellish the soundscape ecology would be a prudent choice. Thus, to best exemplify the ecology I needed a narrative befitting the natural history of the landscape. Inspiration finally struck in the form the of a native Anishinaabe creation myth, which the National Park Service quotes in their published materials and throughout the park (see Figure 4.1 below):

> "Long ago, along the Wisconsin shoreline, a mother bear and her two cubs were driven into Lake Michigan by a raging forest fire. The bears swam for many hours, but soon the cubs tired. Mother bear reached the shore first and climbed to the top of a high bluff to watch and wait for her cubs. The cubs drowned within sight of the shore. The Great Spirit created two islands to mark the spot where the cubs disappeared and then created a solitary dune to represent the eternal vigil of mother bear."
>
> (Anishinaabe creation myth for the Sleeping Bear Dunes National Lakeshore)[9]

Several narrative factors were compelling for the basis of a work. First, while a brief five sentences long, the myth declares the existence of several character entities (both literal and figurative) which traverse physical or emotive states ranging from merely existing, running, burning, swimming, struggling, drowning, dying, rebuilding, or waiting. This provided a wealth of evocative descriptors which could inspire spatial motions or musical structures at various levels. Additionally, while I used the version accepted by the National Park Service, there are conflicting interpretations about the source of conflict. One version says that fire is the cause of 'disaster', while another says it's famine. However, neither case specifies a root cause- i.e., a manmade disaster or a force of nature. This opened possibilities for the familiar trope of nature vs. man, machine, or industry. Implying human activation as the root cause of conflict introduced an outlet for metallurgy and fire-starting sounds to take a structural role, one that was perceptually juxtaposed to the textural ambiences of nature.

[9] Per the National Park Service (https://www.nps.gov/slbe/learn/kidsyouth/the-story-of-sleeping-bear.htm#:~:text=Mother%20bear%20reached%20the%20shore,eternal%20vigil%20of%20mother%20bear.)



Sleeping Bear Dunes Overlook
Sleeping Bear Dunes National Lakeshore

Source of exposure to the Anishinaabe creation myth that inspired *What Sleeps Beneath*. National Parks Service infographic.

June 6th, 2018 - Midday
44°51'30.4"N 86°04'01.4"W
VW5M+95G Empire, Michigan

Figure 4.1 - Source of inspiration for What Sleeps Beneath's narratological context.

For in retrospect, the result of the field recording mission was a touch too lopsided towards textural ambiences for my liking. I was concerned with the degree to which I could exploit sound transformations while maintaining recognition of source identities. The sounds of wind and waves are universally recognizable to most audiences but abstracting them to different timescales (i.e., textural to gestural) or dramatically transforming them via effects processing could move from primal to remote surrogacy quickly. Most soundscapes have simple, noisy spectra with dynamic envelopes that are more often static than not. I felt that undermining the iconicity of their identities with rigorous sound transformation would diminish their impact and communicability at the expense of the narrative context.

Luckily, the portions of the myth that suggest aspects of mysticism or spiritualism create opportunities for separate realities. The beginning (a natural, nearly unprocessed soundscape with mysterious underpinnings) and the conflict (an unaltered recording of fire) are iconic to our perception of reality. Further still, the association *between* those contexts are understandable to the listener- i.e., nature persists until human intervention causes a calamity. However, the introduction of the Great Spirit in the latter half of the myth pulls us somewhere outside our reality. In interpreting this supernatural setting, the possibility arises for a juxtaposing, transformation-heavy development section where more liberties can be taken upon textural sound sources. This play on iconicity and identity classes becomes a constant thread throughout the piece. Unprocessed recordings of textural ambiences predominate at points when nature is at a point of stasis and resolution. Gestural structures and processed recordings, however, become the impetus for change, foreign invaders, or the embodiment of mystical entities which disrupt that statis or enact change upon the environment.

4.2 General Overview and Feature Selection

At every level, the intra and extra-musical content of *What Sleeps Beneath* is intentionally focused on supporting the communication of the narratological structure of the Anishinaabe creation myth. As such, the salient feature selection is *strongly* skewed towards conceptual aural features from the Attributed Classifications family. This fact was clearly apparent from the event classification analysis in Chapter 3. *Identity Classes*, *Behavior Classes*, *Setting Classes*, and their associated *Identity Iconicity* become the main motivating factor behind the intra-musical discourse. The work's attributed content is then supported through the use of spectromorphological structure, where the rigid adherence to the spectromorphological formula itself becomes another vehicle for allegorical expression. Beyond that, ancillary typomorphological, spectromorphological, transformative, or functional aural features are taken as salient in either global or localized contexts. A list of global and localized salient features can be seen in Table 4.1 below. This selection does not encompass every notable feature, but just those whose saliency is pivotal to the comprehension of the musical discourse.

Taxonomic Family	Global Salient Features	Localized Salient Features
Typomorphological	Dynamic Level Spectral Width Sound Spectrum	Energy Articulation Pulse Rate Onset Profile Termination Profile
Spectromorphological	Spectromorphological Structure Spectromorphological Function Spectromorphological Subfunction	Continuant Duration Continuant Density Structure Unit Density
Intermorphological	Substratum Index Stratum Density	
Macro-Level Structure	Sectionality	
Spatiomorphological		Proximal Depth Spatial Position
Abstract Transformation	Reciprocal Growth Type :: Parabolic Processing Type :: Resonant Filter	
Attributed Classifications: Identity	Identity Class Setting Class Identity Iconicity	Identity Subclass
Attributed Classifications: Agency	Behavior Class	Gestural Surrogacy
Attributed Classifications: Function	Transitive Function Dialogic Function Thematic Function	

Table 4.1 - Final Salient Feature Selection in 'What Sleeps Beneath.'

At the Macro-Level, *What Sleeps Beneath* constructs a sense of *Sectionality* which is clear, intentional, and in keeping with the narratological structure. Though there is evidence supporting an interpreting of its seven-part formal structure as either a through-composed form, a moment form, or a reciprocal form. In actuality, a Frankenstein-esque amalgamation of the three would likely be the most accurate interpretation. It is comprised of three main sections, which are bookended by introductory and outro material, as well as transitionary sections leading in and out of the third major section (see Figure 4.2).

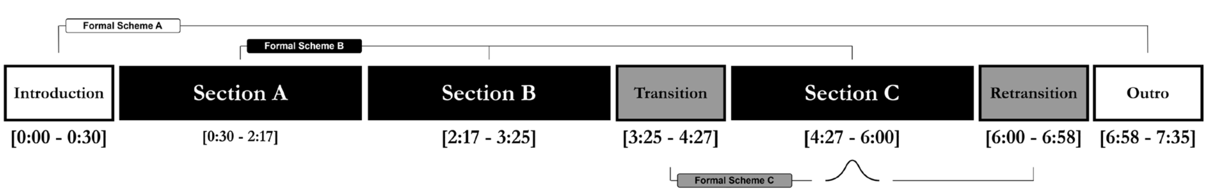


Figure 4.2 - What Sleeps Beneath: Macro-level structure and timestamps.

Taken in isolation, *What Sleeps Beneath*'s sectional content represents three distinct formal relationships on differing levels. Each of the three are characterized by their predominant formal functions, much like Trevor Wishart's *Redbird* (1973-77). For Wishart, the higher-order functions were labeled "as Music", "as Landscape", and "Other Viewpoints". My structural organization is quite similar. The first layer is a gestural substratum, which operates 'as music', and is juxtaposed by a secondary, dynamic soundscape substratum which fills the role of a 'Landscape' with developed morphologies. Finally, a static soundscape substratum persists through much of the work. It is similar to a 'Landscape' however its elements are typically not developed. They may be accentuated or embellished by other structures, but no alterations were made to its morphology beyond what was intrinsic to the source recording. At times, the static layer is backgrounded, such as the "Bird" class texture in the introductory section, or it was the main foregrounded element, such as the "Fire" class texture in Section B.

The three formal schemes that exist throughout the work can be characterized by which functional archetype carries the discourse (refer back to Figure 4.2 above). The first formal relationship is between the Introduction and Outro sections (notated as scheme A), where the static soundscape substratum is the foregrounded archetype. These two sections utilize similar sound characters with the intent of establishing a *Setting Class*. By bookending the work with familiar material, a 'return' to a previously inhabited state can be felt in the final moments. Even though a symmetrical relationship doesn't exist between these two points, the return to known territory is what's suggests a reciprocal form.

The three main sections of the work comprise the second formal function archetype. These are the sections that comprise the gestural substratum and operate 'as music'. However, that doesn't imply that all three sections are gesturally-carried, but that they contain spectromorphological structures which determine the progression of the musical discourse. Several thematic processes or feature abstractions are utilized throughout, but none of the three main sections exhibit a recapitulatory or iterative function which strongly ties it to one another. There are narratological links between successive sections which may imply iterative development, but the composition of their features selections is quite contrasting. They utilize different subsets of sound characters, employ different transitive relationships, and exhibit different structural hierarchies. However, they are quite agreeable as isolated vignettes in a moment form.

Finally, the progression from the Transition to Section C, and Section C to the Retransition, constitute the third formal archetype. Section C is less of a participant in this formal progression and more the subject of it. It's really the relationship between the Transition and Retransition that provides the context. The Transition section sets a precedent for an intermorphological process operating on the global sound spectrum. Following Section C, the Retransition initiates the inverse of that intermorphological process. Taken together, the two sections create an association of a 'journey towards' and 'return from' some event destination. In essence, the sequence from the Transition to the Retransition functions as a localized reciprocal form in its own right. The Transition 'journeys' towards Section C. Section C is its own isolated scene, and after its completion, the Retransition is the 'journey back'. The Transition and Retransition section are then the carriers of the 'Landscape' archetype, which is characterized by the foregrounded use of intermorphological processes in lieu of defined sequences of spectromorphological structures.

Between these three archetypes we move between states of static soundscape, spectromorphological structure, and intermorphological process. There are nested relationships between the three at several timescales, but when taken as one continuous sequence, it is fair to interpret it as through-composed form. Defining it as such would not contradict the narratological context of the source myth.

Embedded within these formal operations lies a compositional approach that may be considered counter to a perceptually-forward acousmatic style. Sectional divisions were composed with the intent of diverting from prototypical 'musical' structure. Or, more accurately, juxtapositions between a perceptually-forward acousmatic style and conceptually-forward sound fiction or soundscape composition were *intentionally* utilized to further narratological goals. The work's interpretation of the source narrative is centered around the characterization of several factions- man, nature, and a 'mystical' element. To create a separation between human and natural factions, aspects of compositional style were varied, and that is reflected in the feature selection. To utilize terminology from Emmerson, aural and mimetic discourses were used deliberately depending on what faction was to be signified.

With the musical discourse taken as a variable parameter, the formal cohesion was primarily established through the associated relationships of various *Identity Classes* and other extrinsic characteristics. The introduction, removal, or transformation of sound characters resonates throughout the typomorphological dimension, but it is all a latent product of structure of the sound narrative. The iconicity of instrumented voices is the key as signifying the source material efficiently warranted a departure from an exclusively perception-forward acousmatic approach. Thus, to best quantify the developments of *What Sleeps Beneath* it is best to familiarize oneself with the connotative network of *Identity Classes* as seen in Figure 4.3 and Table 4.2 below.

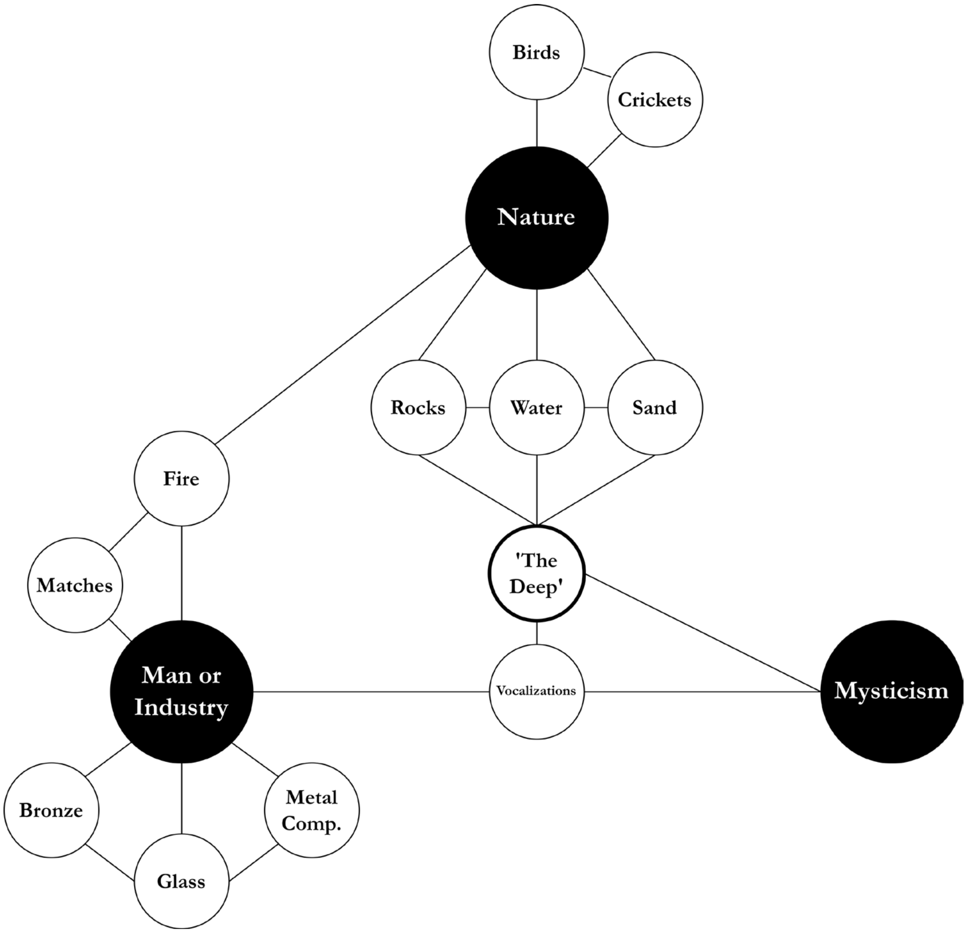


Figure 4.3 - What Sleeps Beneath: Chart of identity associations connecting identity classes and superior associations.

Identity Archetypes	Nature	Man or Industry	Mysticism
Identity Classes	Birds	Metal Components	
	Crickets	Bronze	
	Sand	Glass	
	Water	Matches	
	Rocks		
	Fire	Fire	
		Vocalizations	Vocalizations
			'The Deep'

Table 4.2 - What Sleeps Beneath: Identity classes and subclasses.

Finally, if we were to classify *What Sleeps Beneath* in accordance with Emmerson's language grid [19], it would likely be placed at the center of both axes- a hybrid work on all accounts. Its discourse cannot be called completely aural, nor completely mimetic. If anything, *What Sleeps Beneath* ebbs and flows between projected aural and mimetic states as necessary to suit the narrative structure. Likewise, its syntax is best described as a hybrid. Abstract structures do take a prominent role in determining the intra-musical logic in select cases, but other aspects are abstracted from extra-musical factors. The juxtaposition between two syntactic states is intended to create an allegorical separation between entities or groups. However, whether this would meet Emmerson's criteria for an 'abstracted' syntax is still debatable. Emmerson's prototypical example of an abstracted syntax is one that is derived from the typomorphological characteristics of its source sound material- à la Smalley's abstracted use of Northumbrian pipe spectrums in *Pentes* (1974) . In *What Sleeps Beneath,* the syntax is not abstracted from typomorphological qualities, but from the connotative implications of *Identity Classes*, *Behavior Classes*, and their association with the source myth. This may contradict Emmerson's definition, but following my own personal assessment, any intra-musical logic that is derived from a pre-compositional archival source is valid as an 'abstracted' syntax in my book. So, I would personally classify *What Sleeps Beneath* as being a hybrid in both language dimensions.

4.2.1 Introduction

Refer to (**Audio 4.2** 🔈) *What Sleeps Beneath* - [0:00 - 0:37]

The opening 30 seconds of *What Sleeps Beneath* is primarily focused on establishing a sense of setting through the orchestration of several soundscape substrata. The first sounding behavior is the onset of the primary "Water" class texture [T1]. The intrinsic morphology of the source recording's tidal behavior is embellished further through the sculpting of the dynamic envelope and added spatial motion. This "tidal swell" behavior is given in isolation, as it acts as a thematic behavior that will be subsumed throughout the various soundscape layers. This characteristic dynamic swell is utilized throughout the introduction, as individual substrata "ebb" and "flow" from foregrounded to backgrounded states. As the density of the dynamic soundscape layer becomes more saturated, individual voices exemplify the "tidal swell" behavior as a way of masking the anterior onsets of new textures.

For example, note Figure 4.4 below. The dynamic peak of the opening "Water" class tidal behavior masks the entrance of Textures [T2] and [T3] ("Cricket" and "Bird" classes respectively). As the "Water" class comes down from its "swell" behavior, the "Cricket" class rises up in a "swell" behavior of its own, foregrounding itself in the global context while the "Water" class [T1] texture recedes to the background. This terraced entrance process is carried out throughout the introduction, with texture [T1] passing energy throughout the soundscape layers until it eventually reaches the "Vocal" class texture [T6] whose arrival coincides with the "Match" class impulse [I1].

The order of introduction among dynamic soundscape substrata is also very telling. Among the 6 textural substrata, the iconic soundscape representations are given first, prior to the processed "Glass", "Bronze", and "Vocal" classes. This establishes a base connotative association with "nature" and defines a *Setting Class*. The following "Glass" and "Bronze" substrata are more remote in their iconicity due to the noticeable processing and applied resonance, which only serves to pull the listener farther from an iconic soundscape. In classifying these identities, I fully acknowledge that any connotative reference to "Glass" or "Bronze" likely won't reach the listener. As the work's composer, I am deeply familiar with the sound's procurement and treatment. Their typomorphological quality is deeply ingrained in my memory, and their identity was a salient characteristic to structuring the work. This makes it difficult to separate myself from their identity, or the identities to come. I will continue to use these identity descriptors throughout my analysis, though I will also concede that my interpretation represents a unique case.

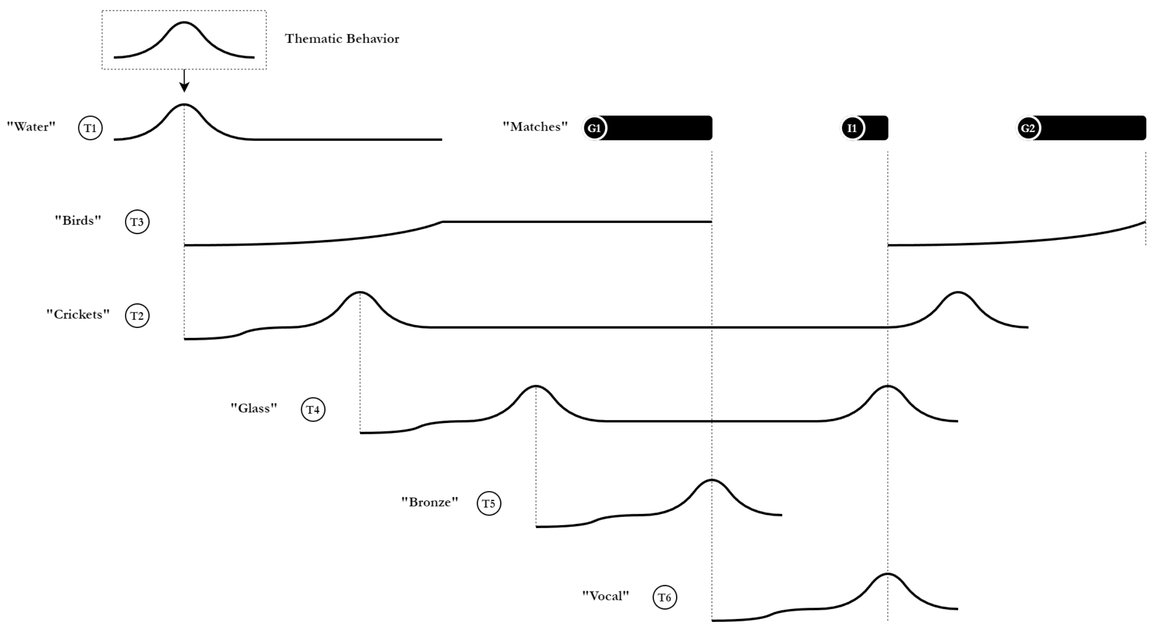


Figure 4.4 - Terraced entrances and masking processes in the Introduction's intermorphological stratum.

The introduction of the "Match" class gestures not only signal the onset of Section A, but they also upset the cyclical pattern of foregrounding and backgrounding established by the "Tidal Swell" behavior. The assertiveness of its behavioral agency is far more articulate and juxtaposes the softer *Onset Profile* of the "swell" soundscape layer. Each "swell" behavior *is* transitive in nature, by masking or spawning each new entrance. However, the cyclical shifts in foregrounded perception imply a unified dialogic interaction among all voices- a democratic application of transitive agency. Every voice in the section takes its turn at being the foregrounded identity and the initiator of causal interaction. The introduction of the "Match" class disrupts that statis quo, demands control of foregrounded perception, and signals the arrival of Section A.

4.2.2 Section A

Refer to (**Audio 4.3** 🔈) *What Sleeps Beneath* - [0:25 - 2:23]

Compared to sections to come, the transition from the Introduction to Section A is far less articulated. The remaining sectional events all exhibit more dramatic changes to the salient features selection, but the event signally the arrival of Section A is only defined by the introduction of the "Match" class gesture sequence. It quickly establishes itself as a foregrounded character, altering the dialogic ecosystem into a more structurally delimited hierarchy. Any patterns established in the opening intermorphological stratum are disrupted and what was previously a democratic application of transitive agency is now strictly under the influence of the "Match" class and its gestural content. This persists from its onset at [0:32] to the conclusion of Section A at [2:16].

The developing gesture sequence is the most structurally motivated element in the entire work. It is far more causally deterministic than other texturally carried sections, which only serves to differentiate it as the proverbial outlier - some nonconforming entity that is at odds with the code of conduct established by the surrounding landscape. However, in being causally deterministic and structurally delimited, the "Match" class gesture sequence also has a unique subset of aural features worth exploring. Various spectromorphological features are incorporated into intermorphological processes that develop over the duration. This not only adds musical interest but also offers further evidence of the narratological context.

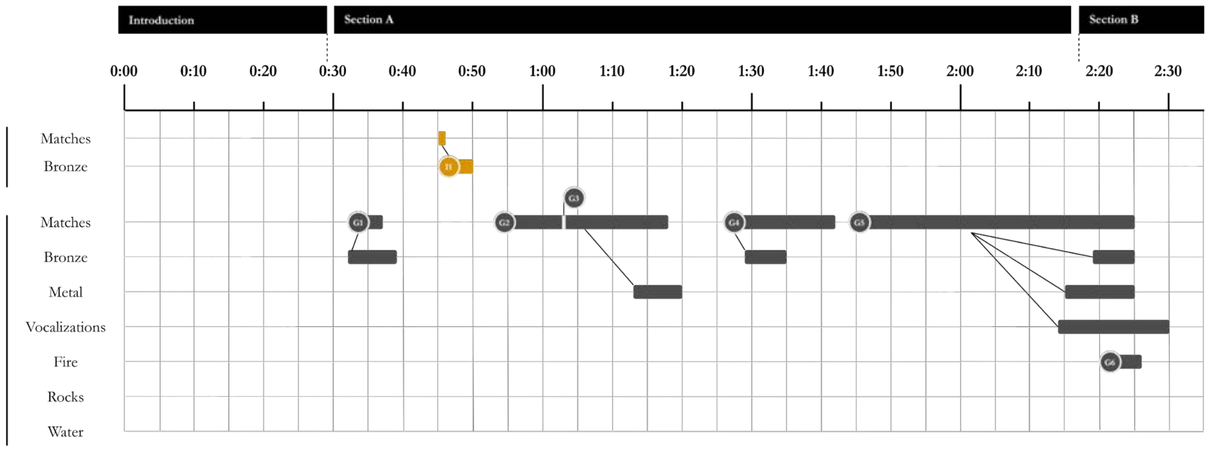


Figure 4.5 - Paradigmatic representation of identities in Section A gesture sequence.

The structural progression of the "Match" class gesture sequence is best framed through the use of agency description. *Behavior Classes* not only carry connotative references related to the narrative, but they also assume intra-musical roles by binding themselves with spectromorphological functions. The [Onset, Continuation, Termination] formula becomes analogous to the striking of a match. In this analogy, onsets become transitive initiators which trigger an "ignition" state, the continuation functions are the "ignited" states, and the termination functions are "extinguishing" states. These states are reaffirmed through the use of iconic match sounds exhibiting archetypal actions. Some recognizable *Behavior Classes* include a 'match strike', a 'failed match strike', 'matchbox shaking', 'dropping matches', 'blowing out a match', etc. Any actions that would create or cease an ignition state in a real-world setting are initiators of transitive functions, while auxiliary behaviors like 'dropping matches' are intransitive. By classifying the *Behavior Class* of each spectromorphological function in the sequence from [0:32 - 2:16] we can see a clear progression of allegorical significance. The sequence of agency descriptors can be seen in Table 4.3 below, and the gesture sequence can be heard in isolation in **Audio 4.4** 🔈.

Structure	Timestamp	Agency Descriptors	Agency Type
Gesture 1 (G1)	[0:32 – 0:39]	• Match is struck.	• Transitive
Impulse 1 (I1)	[0:45 – 0:50]	• Match is blown out.	• Transitive
Gesture 2 (G2)	[0:54 – 1:03]	• Shaking matchbox / Searching for matches.	• Intransitive
		• Dropping matches.	• Intransitive
Gesture 3 (G3)	[1:03 – 1:20]	• Fail to strike match.	• Intransitive
		• Fail to strike match again.	• Intransitive
		• Successfully strike match.	• Transitive
		• Dropping matches.	• Intransitive
		• Second match strike triggers texture.	• Transitive
Gesture 4 (G4)	[1:27 – 1:42]	• Successfully strike match.	• Transitive
		o Match strike triggers texture.	• Transitive
		• Texture is snuffed out.	• Transitive
Gesture 5 (G5)	[1:45 – 2:16+]	• Fail to strike match.	• Intransitive
		• Fail to strike match again.	• Intransitive
		• Successfully strike match.	• Transitive
		o Match strike triggers texture.	
		• Fumbling with matches while texture persists.	• Intransitive
		o Shaking matchbox and dropping matches.	
		• Build to climax – triggering section B (Fire texture).	• Transitive

Table 4.3 - Agency descriptors in gesture sequence in section A of "What Sleeps Beneath".

Additionally, we begin to notice a developing intermorphological pattern in continuant ("ignited") phases when we observe their duration and density (see Figure 4.6 below). Gesture [G1] is a unique case in that is an onset/termination gesture of short duration. It offers little in the way of transitive energy and does not causally lead to a continuant function. It is ignited with little consequence, and it is only after impulse [I1] that we receive a corresponding "extinguishing" action. From then on, all gestures include a continuant phase that is causally initiated by the onset 'ignition' state. Over time, we begin to see a noticeable increase in *Continuant Duration* and *Continuant Unit Density*. Narratively, this process suggests that repeated 'ignitions' are leading to 'ignited' states of exponentially increasing complexity. Most are still terminated with an 'extinguishing' behavior, but the lack of one at the conclusion of the gesture sequence is quite telling, considering the outcome we reach at the onset of Section B.

Figure 4.6 - Continuant Development in "Match" class gesture sequence.

Evidence gathered from the event classification and feature reduction suggested that these developments extended to their higher-level spectromorphological structures, making them salient in themselves. However, the intermorphological progression intentionally targets the development of the continuant function. The density and duration of their superior structures merely mirror that process as a latent byproduct. The data for *Structure Duration* and *Structure Unit Density* can be seen below in Figure 4.7 and Figure 4.8 respectively.

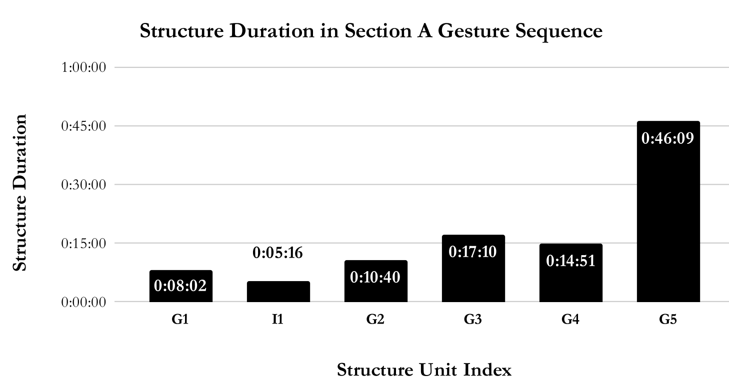


Figure 4.7 - Structure Duration in Section A Gesture Sequence

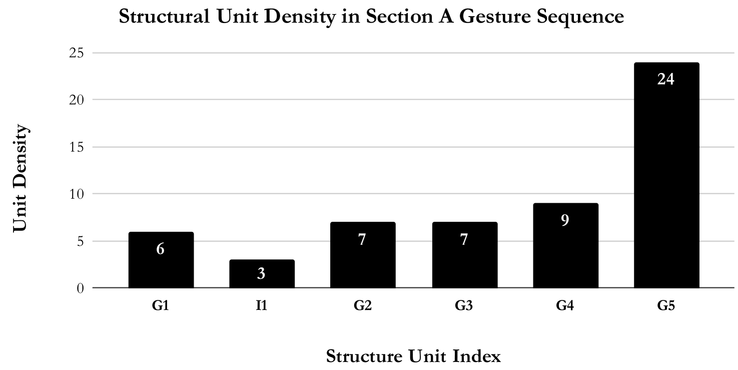


Figure 4.8 - Structural Unit Density in Section A Gesture Sequence

Considering where we end up at the onset of Section B, the generative processes and orchestration within the continuant functions are also very telling. The 'ignited' states are the precursor to the calamitous forest fire that is soon to follow, and we begin to see foreshadowing of that in their typomorphological quality. Early continuant phases have a greater degree of *Identity Iconicity* and *Gestural Surrogacy*, and their *Energy Articulation* is probably best described as a composite with a slow, irregular emission rate. However, as we begin to reach the end of the sequence, we begin to see an increase in sound units transformed by generative processes. These generative sound units display a quicker emission rate and an expanded *Sound Spectrum* that begins to sound reminiscent of the incoming "Fire" class texture. The increased *Continuant Unit Density* also adds to this illusion by creating a denser composite *Energy Articulation* throughout the function. A before and after comparison of the continuants can be heard in **Audio 4.5** 🔈.

Shifting from sequential intermorphology to the stratified context, we can also make note of the functional relationships between the gesture sequence and the established texture ecosystem. We've already mentioned how the gesture sequence maintains the transitive role, however the effect of that transitive energy upon its receptors also bears some allegorical significance. For example, the transitive actions of the "Match" class have the most profound effect upon the sound units establishing the *Setting Class* – i.e., the "Cricket" and "Bird" classes. You may have noticed back in Figure 4.4 that the 'ignition' states of gestures [G1] and [G2] terminate the static "Bird" class texture. It is only after the 'extinguishing' state of impulse [I1] that it is brought it back into existence. This creates an association by which the "Bird" class is only allowed to persist so long as the "Match" class sequence is not in an 'ignited' state. With the increasing frequency of "Match" class gestures, the static "Bird" class texture is removed early and does not make a reappearance until the re-establishment of the *Setting Class* at the onset of the Outro. The removal of the "Bird" class is made even more stark by the sculpting its *Onset Profile* and *Termination Profile*. The previously established soft "swells" are altered become abrupt and unceremonious terminations (**Audio 4.6** 🔈).

The "Cricket" class is similarly impacted by the transitive energy. Upon the termination of a "Match" class structure, the "Cricket" class performs a "swell" to a foreground position while carrying out an additional, intra-musically defined behavior. This behavior is defined by its use of generative transformation and a characteristic parabolic *Growth Process Type* applied to its emission rate. The "Crickets" typically maintain a dense, accumulated *Energy Articulation* with a finer degree of *Granularity.* However, the actions of the "Match" class deteriorates it to the point of becoming coarse and unrecognizable. The sustained *Energy Articulation* becomes a series of iterative pulses at a regular, thought variable, rate (**Audio 4.7** 🔈). Through the transitive actions of the "Match" class, both "Cricket" and "Bird" classes have their typomorphological character transformed to the point of destabilizing the iconicity of the setting. Over time the they are transformed through their association with the gesture sequence and take on some of its typomorphological quality.

The remaining “Bronze”, “Glass”, and “Vocal” classes have little iconicity of their own and are less reactive, but they do still respond to the transitive action. However, rather than act as receptors of transitive energy they perform a dialogic function in coincidence with the sequence’s ‘extinguishing’ states. From a stratified perspective, the texture ecosystem is more supportive of the gesture sequence in the moments when it concludes a gesture. This can be heard at impulse [I1] at [0:41] and the terminations of gestures [G1] at [0:31], [G3] at [1:12], and [G5] at [2:16].

Finally, throughout Section A, an intermorphological process operating on resonance filtering has been introduced. The texture ecosystem established a divide between sound sources of greater iconicity (“Water”, “Cricket”, and “Bird” classes) and those with more remote iconicity (“Bronze”, “Glass”, and “Vocal” classes). The less iconic sources maintain a sustained *Energy Articulation* and exhibit a resonance processing which at times can be perceived as pitched with an ambiguous sonority. This creates a precedent where ‘known’ sounds are presented as iconic with primal surrogacy, and ‘unknown’ sounds are bound to a characteristic typomorphological profile. Over the course of Section A (and later in work) an interpolation between iconic and resonant states could be heard a thematic process which calls back to the destabilization of the original ecosystem, and signals a departure from ‘stability’ itself. In Section A, we can hear this process at work on the emission rate behavior of the “Cricket” class at [0:47] and in aspects of the “Match” class gesture sequence, particularly in gesture [G5] starting at [1:42] (**Audio 4.8** 🔈). This thematic descent into resonance will reappear throughout the work, and will be a feature which binds the sound world of Section C to the events of Section A.

4.2.3 Section B

Refer to (**Audio 4.9** 🔈) *What Sleeps Beneath* - [2:12 - 3:31]

Section B inverts the precedent set in Section A. Previously, the foregrounded "Match" class gesture sequence assumed the majority of the transitive responsibilities, which included bringing about the termination of the section and the onset of the next. Gestural content primarily acted as initiators of causality, though occasionally supported by other dialogic actions. However, they rarely acted as receptors of causal action. These roles reverse in Section B. The resulting "Fire" class texture takes on the foregrounded, transitive role for the first ~20 seconds, which shifts the global context from a gesturally carried landscape to one that is texturally carried. Following the event of Section A, this change is quite striking. The lack of a gestural impetus and *Behavior Class* sequence suggests that whatever active personage was influencing the surrounding landscape is no longer present. Behaviors were initiated, and now we are left with a new stable norm.

Any perceived gesture or impulse structures are spawned from dynamic irregularities that are intrinsic to the source recording of fire. As the section progresses, a newly established "Rock" *Identity Class* begins to precede the spawned impulses, acting as an anterior onset. Initially, these "Rock" class anterior motions are presented iconically, which juxtaposes the processed sound units that comprise the posterior termination. Following the onset termination, spawned sounds exhibit 'delay' and 'resonance' *Processing s*. Thus, early gestural content follows a transformative process whereby the structure becomes further removed from iconicity. This effect is compounded throughout the section as the "Rock" class anterior onsets begin to take on a 'resonant' quality as well. As the "Fire" class texture diminishes, more of the sounding voices begin to deviate from iconicity. It is only on the final [G10] gesture that the "Rock" class returns to iconicity in its final moments. This is to create an allegorical link to the newly introduced [T15] “Sand” class texture that arrives at the onset of Section C.

The manipulation of iconicity is meant to highlight the narratological context and is further supported by changes in the landscape of *Identity Classes.* The near iconic representation of “Cricket” and “Bird” classes helped to establish the *Setting Class*. However, they are both terminated with Section A. Additionally, the onset of Section B signals a diminishing trend in the *Identity Iconicity* of the “Water” class texture. Its spectral content begins to shift and take on a ‘resonant’ quality that matches the “Bronze” and “Glass” classes (**Audio 4.10** 🔈), further solidifying the thematic resonance transformation. Thus, every identity that served to establish the previous setting is transformed or removed, leaving the “Fire” and “Rock” classes as the only signifiers. By extension, the *Setting Class* can be considered to be transformed or removed as well, which is in keeping with the source material. As the “Fire” class diminishes, and the “Rock” class’s *Identity Iconicity* is distorted, any connection to setting becomes tenuous.

The final dimension worth noting is the global frequency spectrum, which exhibits a subtle narrowing of *Spectral Width* in all non-foregrounded sound characters. The global stratum is quite saturated initially, but still displays considerable low frequency energy from approximately 40hz to 400hz. Over time, all textural units begin to narrow their *Spectral Widths* to isolate this low frequency band. The *Spectral Brightness* of backgrounded voices also begins to decrease as a byproduct of this transformation. The process is masked by the saturated, complex *Sound Spectrum* of the [T12] “Fire” class texture, but over time, the gestural content of the “Fire” and “Rock” classes begin to sound more distinct against the darker, backgrounded voices. This process continues to develop throughout the Transition and Section C, but it begins to create a connotative implication of a ‘decent’- moving downwards in some dimension.

4.2.4 Transition

Refer to (**Audio 4.11** 🔈) *What Sleeps Beneath* – [3:21 - 4:33]

Throughout the transition, global changes to *Spectral Width* continue to occur, creating a convergence on the aforementioned low frequency band (see Figure 4.9). The frequency spectrum of Section B was saturated due to the noisy character of the "Fire" class texture, but on the onset of the transition section at [3:26], much of the energy in the 1000-3000hz range is removed immediately. Two frequency bands at ~300-1100hz and 2500-20,000hz are also attenuated, though slowly over the course of 1 minute. The newly introduced "Sand" class texture lingers as the posterior termination to Section B and comprises much of the higher frequency band. The lower-mid range frequency band represents the attenuation of frequency content from the lingering "Bronze" and "Water" class textures, which serve as the main initiators of the convergence.

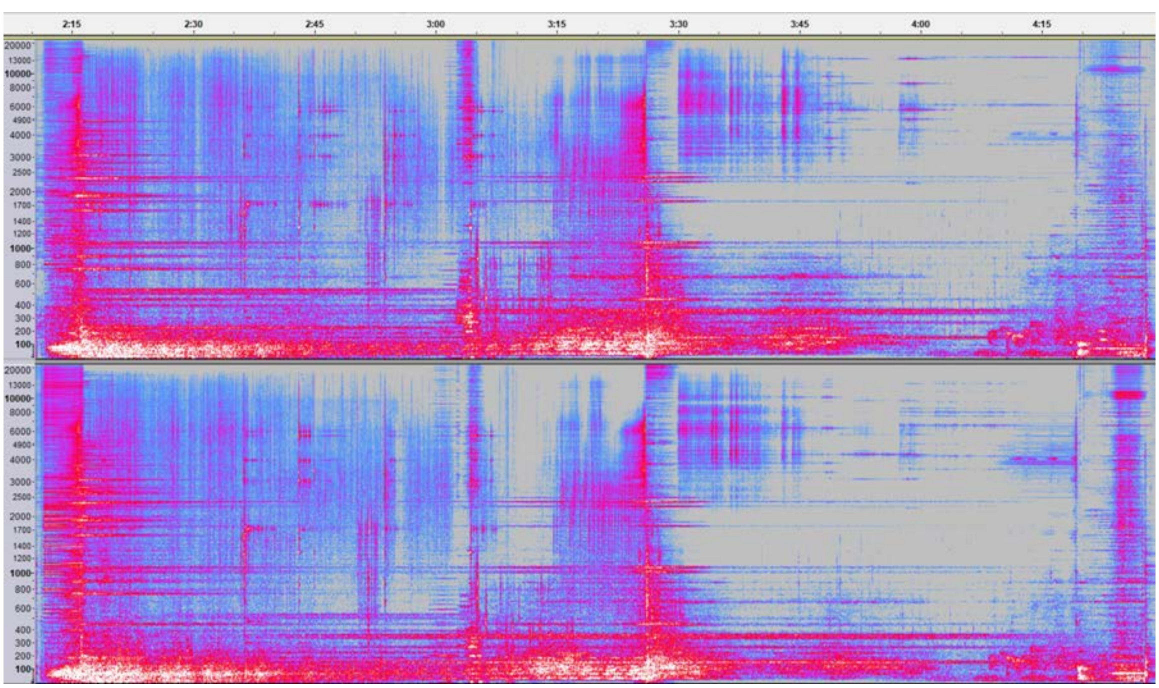


Figure 4.9 - Spectrogram for Section B and the Transition in "What Sleeps Beneath."

During the convergence process, an iconic representation of a "Splash" or "Swim" behavior slowly emerges from the texture until reaching a foregrounded position. At the same time, the thematic resonance process is slowly being applied to the "Sand" class texture. In this moment, only the "Splash" behavior and the "Sand" class texture are left to signify a sense of setting. By diminishing the iconicity of the "Sand" class texture, we also dissolve our connection to setting. Allegorically, this implies that whatever agent is creating the "Splash" behavior is left alone in a sound world that is growing increasingly foreign. Initially, the onset rate of the "Splash" behavior is slow and variable, exhibiting primal surrogacy. However, at around [4:00] the "Splash" behavior increases its rate to coincide with the near full attenuation of frequency content in the mid and high range. At [4:08] we are introduced to a new identity in the sub/low frequency range. Its arrival signals the termination of the "Splash" behavior, which is slowly attenuated and recedes back into the background, being overtaken by low frequency content.

The removal of the "Fire" class texture, the introduction of the "Splash" behavior, the transformation of the "Sand" class texture, the descending convergence motion towards a lower frequency band, and the appearance of a new sub/low frequency identity are all evidence of the narratological context. If previous sections functioned as an established setting, an initiator of conflict, and the conflict itself, then the transition section is an allegory for the "swimming" and "drowning" of the bear cubs. Various features facilitate our departure from the conflict and our arrival in "the deep", where our sense of setting has been compromised and we will interact with new, mystical identity archetypes.

4.2.5 Section C

Refer to (**Audio 4.12** 🔈) *What Sleeps* Beneath - [4:23 - 6:05]

The onset of Section C follows the termination of gesture [G11]. Upon its onset, the *Spectral Brightness* of the global frequency spectrum is immediately inverted. Spectral operations in Section B and the Transition were intent on achieving a convergence upon a static low frequency band, while attenuating high frequency content. However, immediately upon arrival, the "Bronze", "Vocal", "Sand", and "Water" classes are terminated and the static background shifts to a very high frequency band. This new static texture juxtaposes the previously backgrounded substrata in several respects. The previous substrata exhibited 'sustained' *Energy Articulations* and mixed iconicity, while the new texture's *Energy Articulation* is an irregular 'accumulation' with remote iconicity. The only point of familiarity we have with the new static texture is in its' morphological resemblance to the "Fire" class texture from Section B and the "Match" class continuant phases from Section A. This persists from the onset of Section C at [4:27] to the prominent event at [5:27].

The *Spectral Brightness* and pitch level of foregrounded content has also been inverted (see Figure 4.10 below). In Section B and the transition, gestural content occupied high frequency ranges from 1600-6000hz and 3000-10,000hz respectively. With the reallocation of the backgrounded layer to a high frequency range, the newly introduced "Deep" class is left with a sizeable low to mid frequency band in which to act. Thus, the convergence operation that has been developing over the last several sections is rewarded with a new level of dynamism. The low frequency range has rarely contributed to transitive or gestural activities and was instead a foundational layer that supported the textural ecosystem through simple accentuation. However, now that we have 'descended' to an unfamiliar sound world, there is a low frequency identity that is acting with more implicit agency. Considering the remote *Identity Iconicity* of the "Deep" class, this action is meant to support the spiritualistic elements present in the source mythology. With our arrival at Section C, we are discovering "*what sleeps beneath"*. However, the "Deep" class is not completely composed of low frequency gestural content, though it may appear that way. In fact, the "Deep" class occupies one continuous texture, but has intermittent statements in the low frequency range which are perceived as gestural content. In reality, the "Deep" class contains high frequency content which is masked by the backgrounded textural layer. Whenever the "Deep" class moves towards a low frequency statement, it "swells" to a more prominent foregrounded position from a backgrounded higher frequency range where is offers subtler accentuations.

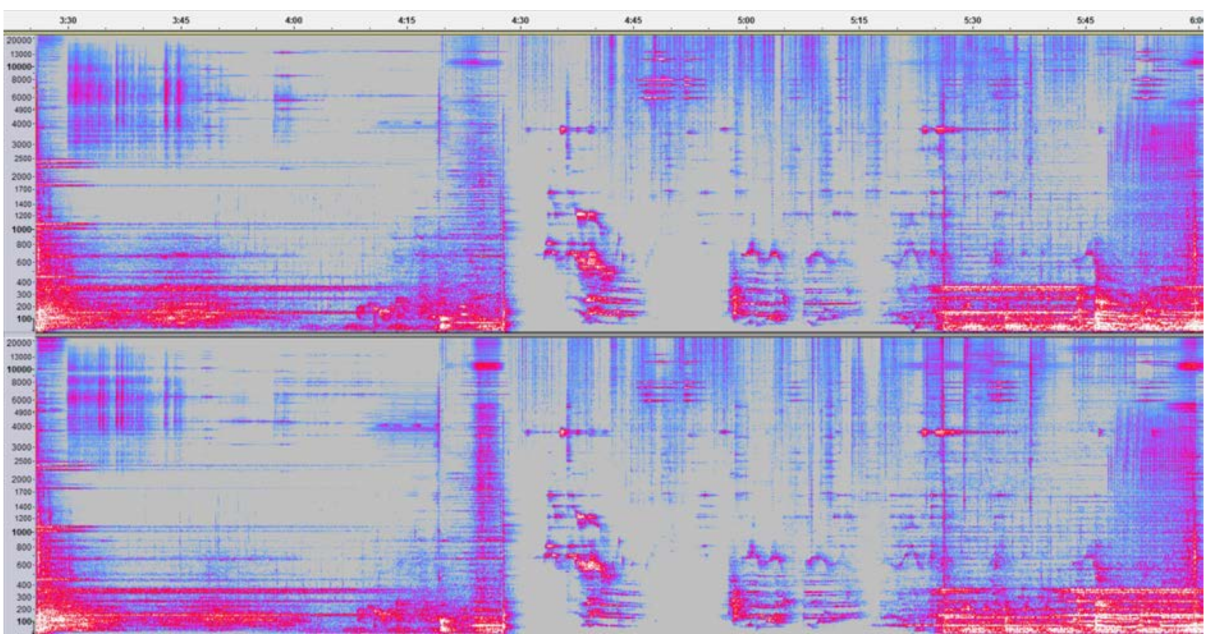


Figure 4.10 - Spectrogram of the transition and Section C of "What Sleeps Beneath."

Additionally, with the removal of so many voices, the density of *Identity Classes* is at its lowest point since the first 15 seconds of the work (at 2 voices). This is also reflected in the *Spectral Density*. Much of the global spectrum from 0-3000hz is left completely vacant, and only occasional "Deep" class content fills the space. Between the dramatic reallocation of sources across the global frequency spectrum and the stark change in density, we are transported to the most scarce and vacant sound world yet.

This vacancy is also supported by the spatial projection of the remaining voices. Spatiomorphology has been a rather unremarkable area thus far. Most spatial motions have maintained a uniform archetype for gestural, textural, and generative structures, and reverberation processing has largely remained static. However, throughout the previous sections, there have been several reverberation states happening in tandem, which create a depth of field in the sonic landscape. Structural content initiated by the "Match", "Fire", "Rock", and "Sand" classes were rather forward in their spatial projection. They exhibit a *Proximal Depth* that is perceived to be closer to the listener. Meanwhile, *Identity Classes* which solidified the *Setting Class* occupied a medium proximal location, and the remote static textures occupied a distant proximal location. Thus, over the entire global stratum, there was variation in reverberation and *Proximal Depth*. However, at the beginning of Section C, the foregrounded "Deep" class and static backgrounded content occupy distant and mid-range *Proximal Depths* respectively. So, the depth of field has also diminished is size, converging on a 'distant' location.

Furthermore, Section C exhibits a unique approach to structural organization, foregrounded-ness, and causality. In previous sections, despite whether the macro-level archetype was gestural-carried or texturally-carried, some structures exhibited transitive behaviors and causal interactions. The first minute of Section C, however, has no transitive implications at all. Only two voices remain, and they have no effect on one another. They persist in perpetuity, coming in and out of foregrounded states dialogically. This change to dialogic action is reminiscent of the democratic relationships we saw in the Introduction. Sections A and B maintained a single foregrounded sound character while all others were subordinate. Beginning in Section C we begin to see the ecosystem return to a previous state.

The becomes only more prominent at [5:27], when a substantial event coinciding with gesture [G12] reactivates much of the global context. The "Splash" behavior and the "Bronze", "Vocal", and "Metal" class textures are immediately brought back to life to reinvigorate the global *Spectral Density.* In doing so, the static low frequency band that was removed at the beginning of the section is also brought back. This leaves the "Deep" class a mid-range frequency band above ~400hz in which to act (as seen in the spectrogram in Figure 4.10 above). Like the Introduction, the newly reactivated *Identity Classes* constantly shift to foregrounded states, which can be better seen in Figure 4.11 below. Areas which exhibit an equal dialogic relationship to foregrounded predominance are labeled in red (A), and sections where a singular foregrounded voice maintains control are in blue (B). The areas in blue maintained a clear foregrounded focus and were structured around a human-activated gestural surrogacy, or the fall out of said gestures. If the Introduction was meant to establish a sense of setting, then the change to foregrounded-ness and *Substratum Indexes* in Section C implies that the ecosystem is regaining a sense of autonomy.

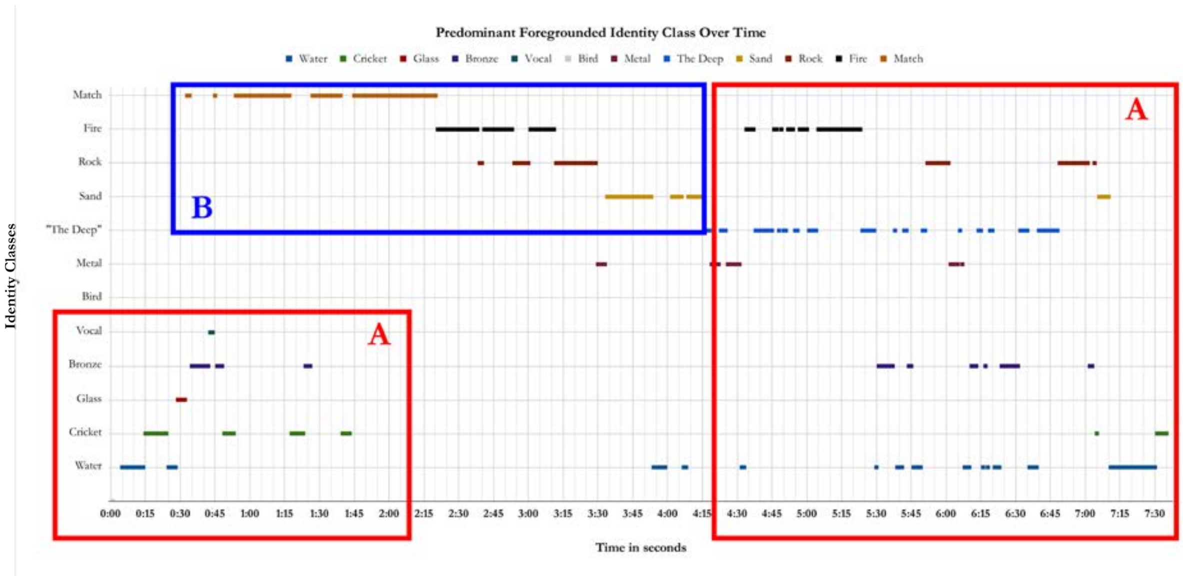


Figure 4.11 - An annotated example showing two different foregrounded predominance schemes.

Though the global spectrum has been reactivated and the density has increased dramatically, there is still a lack of transitive agency throughout. Identities pop in and out of the texture, but there is no implied order or causality. The reintroduction of remote-iconicity sound characters creates a sonorous foundation that persists, and the listener is left to bathe in the dense texture. Causal implications aren't reintroduced until [5:47] when a prominent "Deep" class impulse emerges prominently from the texture and triggers gesture [G13]. Gesture [G13] brings back the "Rock" class texture with its intrinsic *Proximal Depth,* thus expanding the global depth of field to its original state. To support [G13], all *Identity Classes* rise up in a uniform "Swell" behavior to support its termination, and with the termination of [G13], Section C is also terminated.

4.2.6 Retransition

Refer to (**Audio 4.13** 🔈) *What Sleeps Beneath* - [6:00 - 6:58]

Following the termination of gesture [G13] the listener experiences another abrupt change in the global spectrum. All voices had dialogically built up to the termination of the section, and most recede to posterior termination points thereafter. This includes Section C's high frequency content as well as the "Bronze", "Vocal", and "Metal" class textures. However, their posterior terminations are masked by the reintroduction of the "Cricket" and "Sand" classes as well as the prominent "Bronze" class impulses at [6:10] and [6:16]. It should be noted that the terminated *Identity Classes* are those that exhibit remote *Identity Iconicity*, while the identities which comprise the *Setting Class* mask them. Thus, through the termination of Section C, we also terminate the prevailing resonant texture that persisted below 400hz. Instead, we are treated to the more iconic sounds of nature juxtaposed against the lingering influence of the "Deep" class.

By removing the remote iconicity identities, the low frequency range is left less congested for the "Deep" class texture and "Bronze" class impulses, thereby allowing them to reach a more prominent foregrounded position. The "Bronze" class impulses serve a transitive function, terminating old voices and triggering new ones, but they also create a larger transitive sequence between themselves ([I2] and [I3]) and gesture [G14]. The behavior of this sequence mimics the emission rate process carried out by the "Cricket" class in Section A. Though, in this case, it begins from a very slow, sparse inter-onset rate rather than a dense accumulation that decelerates. The arc of the "Cricket" class's emission rate behavior followed a parabolic growth process, whereas the "Bronze" class sequence follows an exponential trajectory towards its' point of termination. Furthermore, when the "Cricket" class established this behavior initially, it was under the transitive influence of the "Match class- it was reactionary. However, in this case, the behavior is subsumed and reutilized as an initiator of transitive agency- not a receptor. Its' emission rate quickly accelerates and is dialogically supported by several voices. A "Swell" behavior occurs in the "Deep" and "Water" classes, and the "Cricket" can be heard carrying out its original emission rate behavior subtly in the background. Additionally, at the beginning of the sequence the "Deep" class adds high frequency insertions between impulses, creating a 'call' and 'response' relationship between itself and the "Bronze" class.

Following the termination of gesture [G14], we begin to hear the *Setting Class* compliant identities undergo transformation. The "Water" class texture begins regaining some of the high frequency content it lost during the transition into Section C. Previously, the attenuation of high frequency content was used as a way to simulate a descent into a foreign sound world. By inverting that process, the listener might be led to perceive an 'ascent' or 'reemergence' from the foreign sound world to the familiar world above. Additionally, the iconicity of the "Cricket" class begins to diminish as it follows the thematic resonant process. Now that the "Bronze", "Vocal", and "Metal" class textures have been terminated, the transformed "Cricket" class is the only static texture left that calls back to the sound world we are departing. From here on, it is only through the typomorphological quality of the "Cricket" and "Deep" classes that the mystic elements of the narrative are signified. The "Deep" class continues to maintain the Section C sound world though its' high frequency insertions, but its low frequency content is absent after the termination of [G14]. And due to its distant *Proximal Depth* and reverberation processing, it fades more into the background over time.

The "Deep" class's last influential act is to support the anterior motion of gesture [G15], whose termination serves as the arrival point into the Outro. It reintroduces minimal low frequency content in coincidence with the anterior onset of the "Rock" class. The trajectory of gesture [G15]'s "Rock" class anterior motion is identical to that of gestures [G7], [G9], and [G13]. However, the duration of [G15]'s onset phase is noticeably longer than its previous iterations. The behavior of the "Rock" class is far more drawn out, and in doing so, it achieves a similar trajectory to that of the "Bronze" and "Cricket" classes' emission rate behavior. The pulse rate of its intrinsic "rock rolling" morphology begins to decelerate into the termination and emphasizes the last "gasp" of the "Deep" class "Swell" behavior. Additionally, throughout [G15]'s onset phase, the rate at which the "Water" class regains its high frequency content and the rate at which the "Cricket" class diminishes in iconicity, only quickens. The gesture is labored and prolonged, which serves to signify the final push to the surface. From the background, the original "Bird" class soundscape can also be heard reemerging for the first time since the introduction of the "Match" class in Section A.

4.2.7 Outro

Refer to (**Audio 4.14** 🔈) *What Sleeps Beneath* [6:53" – 7:34"]

The Outro is mostly static with little in the way of transitive implications. Having emerged at the surface with the onset/termination of gesture [G15], the Outro's only objective is to reestablish a new, stable textural ecosystem. The *Setting Class* is reestablished and then the listener is left to live in that space for a time. Its' global texture parallels the introduction, though in reverse. As we near the final moments, only the "Water", "Bird", "Cricket", and "Sand" classes remain, establishing a new variation of the original *Setting Class*. The only identity class that acts uncharacteristically is the "Cricket" class. The resonant transformation that occurred in Retransition is still in effect, and it does not revert to its iconic representation. Rather, it persists till its final point of termination. The "Sand" class also undergoes resonance transformation, but this is in keeping with its normal behavior. The "Sand" class continues to act as the posterior termination of larger sectional boundaries, much like it did at the termination of Sections B and C. In each case, the "Sand" class's iconicity moved from an iconic to a remote state or vice versa. However, its' final iteration is attenuated before we can fully perceive its' transformation. It is removed from the texture in a partially resonant state. Ultimately, though the ecosystem is returning to a familiar point of stability, the influence of mystical forces still lingers ambiguously.

To conclude the work, the "Water" class engages in one final "Swell" motion, much like it did at the very beginning. Though, in contrast, the final point of termination is dialogically supported by the transformed "Cricket" class texture. The portrayal of the tidal motion is completed, but the resonance of the "Cricket" class takes a foregrounded position. The "Water" class reaches a posterior termination quicker, while the resonance of the "Cricket" class is prolonged. This difference in *Termination Duration* gives more prominence to the "Cricket" class and draws the listeners attention to it and its' resonant qualities. Allegorically this suggests that while we may have arrived at a familiar point of stability, the sound world has been fundamentally changed and the powers of mystical entities still persist. Though, despite the new normal, the Outro offers a return to nature, which gives the macro-level structure of the work the impression of being a cyclical form.

Chapter 5

Future Work

When discussing additional research, a distinction will have to be made between interests related to the electroacoustic aural space (a musicological enterprise), and my own analytical and archival methodologies (a personal and pedagogical practice). As stated, the former represents a tool suitable for pedagogical and research application, while the latter is my utilization of said tool in practice. That same tool has several compositional applications and will be immensely helpful as I move forward as a composer, but as the subject of this dissertation is centered around the analysis of sound-based works, I'll reserve comments about composition for another time. In this instance we will just discuss the space and my analysis methodologies.

5.1 The Electroacoustic Aural Space

For the electroacoustic space, the "next step" will forever remain the same- consult additional sources for new dimensions of compositional practice. Any new findings will be parameterized and sorted for inclusion in the space. The sources contained within this iteration represent the more well known and more frequently studied sources, but that hardly represents a diverse perspective. In conducting this case study, I have been limited in both time and linguistic skills, so future investigations into lesser-known sources, anecdotal articles like those mentioned in chapter 1, as well as texts outside the commonly used English and French will be all be required at a later date.

The ideal form of the electroacoustic space is that of a vehicle for discovery, where the student, artist, or researcher can expand their own compositional knowledge beyond their technological aptitude or their idiosyncratic practice. Thus, the drive for diversification in aesthetic perspectives will be paramount. The electroacoustic space I envision is a communal repository of abstract knowledge. Its idealized form should be regarded as a parametric representation of the entire electroacoustic community's compositional habits. For it to be the most comprehensive resource it can be it must indulge in a strong community presence that actively engages in curation.

To accommodate this diversification of the space, I would need to meet several goals. First, I must make the space available in an accessible, public format. In several respects, I would want the resource to provide similar functionality to that of Atkinson and Landy's EARS Project [1]. Their interactive HTML interface seems sufficient for comprehensibility and usability, so I imagine a similar approach could suit this application just as well. Our glossary of compositional features could be formatted in a searchable index and could be supported by bibliographic cross-references and audio examples. Though, like the EARS Project, functionality on that level would require a collaborative research initiative on a grander scale.

That scale introduces additional goals. I must begin developing collaborative relationships with an international cohort of composers and musicologists with diverse aesthetic and research perspectives. My compositional and musicological competency can only extend so far, so engaging in peer review and consulting colleagues will be pivotal to fleshing out the dimensionality of the space. Furthermore, like the EARS Project, the public facing website should also include a public webform where any end-user can suggest new features for inclusion in the space. These user-defined features could stem from any number of international electroacoustic communities or subgenres. Having a consortium of curators would make processing such features more plausible, leading to a public resource that can be updated more frequently and can more faithfully represent the communal electroacoustic aesthetic. This is yet another precedent set by Atkinson and Landy. The EARS Project's core curation team consisted of Rosemary Mountain, Marc Battier, Joel Chadabe, Martin Supper, and Kenneth Fields in consortium with various translators including Pierre Couprie (French), Ricardo Dal Farra (Spanish), Laura Zattra (Italian), and Martin Supper (German) [62].

The structure of this case study and the resultant space has been focused solely on aural analysis methodologies, with the expressed goal of creating an organized, abstract repository that stands separate from a technological discourse. In doing so, we passed over a plethora of audio analysis practices that are currently at the forefront of research today. While aural analysis will continue to be my research focus for the foreseeable future, a separate audio analysis space should still be formulated. Considering the ongoing trends in machine assisted analysis and composition, obtaining a thorough definition of both aural and audio spaces would be to our benefit. Audio analysis strategies can leverage the specificity of quantitative data gathered from machine listening, and aural analysis strategies can represent the human conception of compositional processes. By using those two adjacent spaces in tandem we might achieve more substantive analytical results that satisfies Park and his issues [37]. Furthermore, the thorough documentation of audio analysis practices would be necessary to account for creative applications of Music Information Retrieval and Machine Listening. The work of Panayiotis Kokoras [27] and Leah Reid would be examples of such cases [41][42][43].

Theres's potential for the electroacoustic feature glossary to further inspire or contextualize a ground truth. This would likely only be possible for features in the perceptual domain, as nebulous autobiographical or cultural data in the conceptual domain would be less flexible as training data. However, by marrying quantitative audio analysis with a well-documented catalogue of perceptual aural features, we may make progress towards the simulation of human conception in electroacoustic composition.

This same modular parametrization, or a parametrization of non-aural features, could apply to numerous collaborative fields. We could apply the same logic to established note-based music theories, mathematics, quantum physics, or machine assisted computational models. The expanded electroacoustic glossary could then be redefined as an interconnected network of niche parametric spaces. This paradigm would then imply that the electroacoustic composition practice is one where composers are free to construct unique feature selections from any number of diverse sonic, intellectual, or cultural spaces. I believe this to be the most accurate definition of electroacoustic music composition. From a pedagogical standpoint, defining its sub-disciplines as taxonomies of low-level features would create a model where the next generation of composers are given an infinite, *well-charted* sandbox of possibilities, rather than a standardized formula. Though, that is all contingent upon whether the spaces can persist without the imposition of intellectual bias. If that stipulation can be met, then all that remains is the laborious process of defining and navigating said parametric network.

5.2 My Analysis Methodology

Redefining my analytical strategies through the lens of the electroacoustic space has provided a wellspring of actionable insight into the works of my peers and mentors. Though, while it offers a convenient means of communicating *my* interpretation, it requires further refinement to be useful for others or viable as a pedagogical model. A broader corpus of works will need to be consulted and tested, data handling tools will need to be created, and novel approaches to visual representation will need to be discovered.

5.2.1 Practical Application and Refinement

Obviously, to facilitate its growth, I must apply my analytical methods to a more diverse collection of pieces. At present, much of the process hinges on the event onset analysis coupled with the perceptibility and digestibility of microvariations in the musical discourse. However, that premise must be tested against pieces with varying degrees of onset density. This will ultimately confirm or deny the method's viability and allow me to define statistical operations upon event onset data more accurately.

Initially, I began several analyses to supply additional evidence to that end, but time ultimately prohibited their inclusion. They did, however, help derive variables for Windowed Event Onset operations. Originally, I arrived at those specific numbers by comparing *What Sleeps Beneath* to Natasha Barrett's *Untitled Two* (2010), Horacio Vaggione's *Schall* (1994), and early sketches of Jon Fielder's *InterObtrusion* (2022). The Barrett and Vaggione were chosen because their works are approximately the same duration as *What Sleeps Beneath* but comprised different aesthetic perspectives. Observations of *InterObtrusion*, however, stemmed from artistic dialogues with long-time friend and collaborator Jon Fielder during his compositional process. Though these analyses couldn't be completed in their entirety, initial listening and data gathering has already begun. Thus, they would be prime candidates for future analyses.

Thus far, the success of my analytical process in regard to these pieces has been mixed and proved that further refinement was going to be necessary. The Barrett and Fielder were fairly digestible given the current method. The Vaggione, however, proved more complicated. *Schall* demonstrates a greater degree of algorithmically computer-generated sources and processes, which permits a greater onset density by comparison. Additionally, at multiple stages in the piece, Vaggione seems to employ a stratified intermorphological process where discernable strata converge and separate by way of spatialization across the stereophonic field (see [~1:30] and [~5:00]). Yet, to my ears, each hard-panned stratum alludes to its own, *separate* event onset stream and causality. Decoupling and simultaneously recording multiple computer-initiated onset streams in real-time is a bit beyond my mortal capacity. In such cases, I may need to utilize different techniques. A deinterleaved event onset analysis could be necessary, or I may need to utilize Park's time dilation techniques[10] to bring the event inter-onset rate within the realm of human (or specifically *my)* perceptibility.

Ultimately, the comparison of these pieces suggests to me that my methodology, in its current state, may have a higher degree of viability when observing pieces aligned with a post-Schaefferian acousmatic tradition as opposed to pieces utilizing complex algorithmic or computer music techniques. Or, conversely, this could just imply that *my* intuitive perceptibility is more innately tuned to salient features that are under the influence of an intuited *human* control, while a machine-assisted control rate alludes me. If it were the latter, then competency can be obtained through practice and repetitive listening. If not, then I will have to reexamine the process to compensate for increased levels of onset density. Only time and further testing

[10] Tae Hong Park describes the use of time dilation and compression techniques in observation of both the frequency and time domain [38]. By resampling and time stretching, latent features are brought into the realm of human perceptibility. For example: time dilation as a means of pitch shifting near-imperceivable, latent high-frequency content to the more audible mid-frequency range for observation.

will tell. However, this demonstrates that idiosyncratic composition methods will continue to demand idiosyncratic analysis. As I listen, my strategies will have to adapt to new situations.

5.2.2 Software Tools and VST Classification Handling

Any parametric approach to a mass information system is bound to be complicated unless there is a practical way of handling large sums of data. This is definitely the case for my method in its current state. As mentioned in chapter 1, the only way to apply a parametric approach universally is to observe a work through the lens of every documented feature. This would entail an absurd amount of human classification that would rarely be necessary, but even compact salient feature selections could amount to numerous dense data streams. I can confirm from experience that handling those data streams ad hoc in a "pen a paper" fashion is a quick path to a headache.

To rectify that issue, one of my first priorities will be the development of a software tool to manage data collection and handling. I've begun prototyping a VST classification plugin in Cycling 74's RNBO library in the Max visual programming language[11]. The utility of such a plugin will be expanded further by leveraging Reaper's scripting language and the JUCE framework[12]. Early tests show that a RNBO prototype can be quickly developed, though it is only suited for handling quantitative or ordinal features natively. Categorical features will need to be implemented in the more robust JUCE framework.

For further clarification, refer back to section 3.2 on pre-processing. During this step, project stems are processed down to manageable audio fragments. In practice, the classification VST will be applied to each audio fragment in the analysis project. The plugin will then house a

[11] RNBO Library by Cycling 74 | [https://cycling74.com/products/rnbo]
[12] JUCE audio application framework | [https://juce.com/]

user interface that contains all documented features separated by taxonomic family. The analyst will then "activate" certain feature variables depending on what they find salient in the musical discourse, while every non-activated variable will receive a null value. Any audio input passed into the VST will simply be passed to the output without processing. Thus, the VST itself essentially functions as a container to hold various feature values related to a single, isolated sound unit. Once each sound unit has been classified, a Reaper script can be called to pull data from every instance of the classification plugin. All feature values are then concatenated into one global Comma Separated Values (CSV) file (or perhaps an Extensible Markup Language (XML) file) along with various intrinsic datapoints, such as start and stop timestamps, durations, source filenames, sampling rates, etc. Some early versions of these scripts already exist, and some of the resultant CSV output can be seen formatted in the Source Unit Catalogue in Appendix A.5.

Developing such a tool wouldn't cut down on the amount of human classification necessitated by this analysis method, but by using a VST tool and scripts, the majority of the data handling process can be automated, making aural analysis more intuitive and approachable for analysts of various skill levels. Implementing this method inside the DAW would create a static analysis document that can be shared between users for review, offered as pedagogical examples, revised at later dates, or archived for posterity. The output CSV file, however, could be used for in-depth research suitable for published, peer-reviewed articles or used as input data in visual representation platforms.

5.2.3 Idiomatic Visual Representation Strategies

The visual representation of sound-based works is a subject I am particularly interested in, as it is a tricky obstacle to overcome. Analyzing electroacoustic works parametrically results in a wealth of information but absorbing that information through raw data is hardly intuitive. A visual medium should be used to provide a level of digestibility to the salient feature selection. Many robust scoring options do exist, such as the Acousmographe [21], Pierre Couprie's EAnlysis [17] and related work [16], or Lasse Thoresen's symbolic language and Sonova font [56] (as seen below in Figure 5.1, Figure 5.2 ,and Figure 5.3 respectively). Yet, most aren't an ideal fit for the type of parametric analysis I am advocating for.

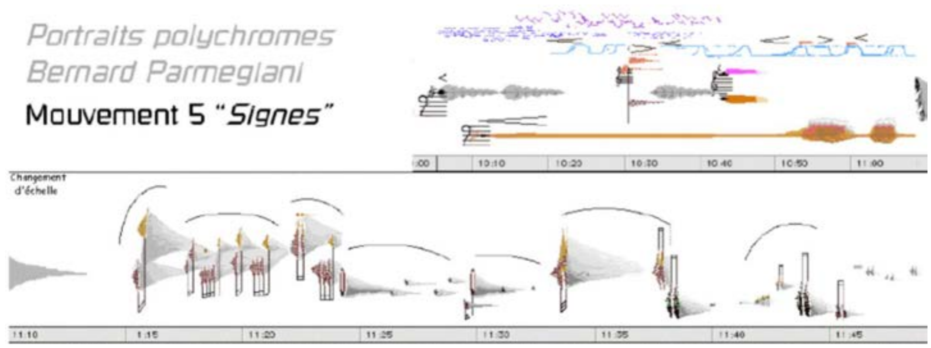


Figure 5.1 - Acousmographe Example: P. Mion's Transcription of Parmegiani "L'Oeil Écoute" [21]

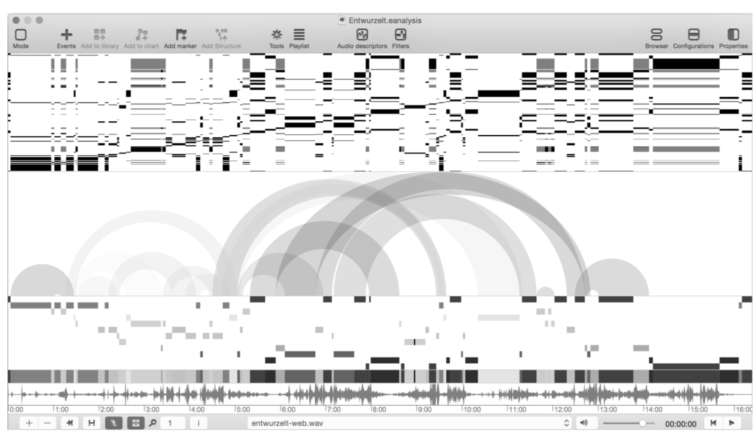


Figure 5.2 - EAnalysis Example: Various Structure Representations [17]

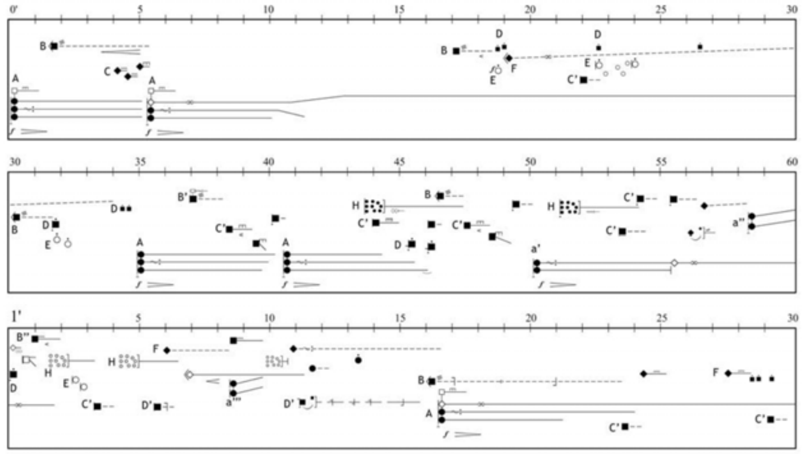


Figure 5.3 - Sonova Example: Thoresen's transcription of Parmerud "Les objects obscurs", III [54]

I have asserted that the salient feature selection should be the first priority in any analytical strategy. It should stand to reason then, that when we visually represent our findings, the representation should be ideally suited for the communication of *that* feature selection. We have also advocated for neutrality in our feature space, where all features are equal, and none are compulsory. However, when viewing prominent visualization platforms, most represent *all* works through the same reductive 2-dimensional representation utilizing the same two compulsory parameters- frequency over time.

Time I can accept as the ubiquitous X dimension, for even in non-linear works or sound art installations, the observation window of our human perception is still delineated through a linear passage of time. Frequency, however, is an instantiation of bias that I am not particularly fond of. You could argue for frequency representation, as all perceived sounds resonate at some audible frequency within the finite spectrum of human hearing, but by asserting its primacy as the Y dimension in *all* applications, we impose a convenient observation bias that might not represent the salient features of the musical discourse. There are no guarantees that a frequency parameter is pivotal to the internal logic of the work, and I find relying on it more often dilutes the analytical result than enhances it. Similarly, while it may be ubiquitous in audio analysis, I find that any visual representation strategy that subsists off the sole use of spectrograms to be counterintuitive to my goals as well. Moving forward, I will have to commit to the discovery of a more flexible and idiomatic visual paradigm that can accommodate the representation of any feature selection.

As there are no prerequisites imposed upon the composer, there are no intrinsic limits on how many parameters may determine the musical discourse. The amount of data streams could be numerous, leaving us with few viable paths. We could attempt to plot several conflicting quantitative, ordinal, and categorical data streams within the same representation and experience diminishing returns when it comes to human readability. Or we could just plot the data which can *conveniently* coexist in the same representation at the expense of the rest of the salient feature selection. Neither of these options suit my vision for an accessible, neutral, or thorough representation. We will have to begin by abandoning the single, 2-dimensional representation. The most prudent option would be to leverage our technological proclivities to create a dynamic, interactive visual representation that can be navigated by an end-user, encompass multiple visual archetypes, and be preserved, accessed, and circulated easily.

The most successful examples of this are the previously mentioned *i*AA*ls* case studies created by Michael Clarke, Frédéric Dufeu, and Peter Manning from the TaCEM Project at the University of Huddersfield [11] [12]. Their approach encapsulates both analytical and archival domains, presented a format that not only permits the *consumption* of the analytical result, but the free *exploration* of it as well. Multiple views present findings in structural, paradigmatic, rhetorical, technological, and spectrographic representations in a single application. End-users can isolate unique sound sources, experiment with the composer's transformational or processing techniques, or view anecdotal artifacts such as interviews or composer notes. I find this model to be the most thorough and accessible thus far. It strikes a balance between analytical rigor and a compositional time capsule. It consults the conventions of the field and the intentions of the composer. Most of all, each application appears to be designed idiosyncratically on a case-by-case basis to suit the individual piece. A modular toolbox might be utilized to expediate the visualization of common features, but one analysis application does not appear to be a carbon copy of another. Such a resource would be ideal in the classroom.

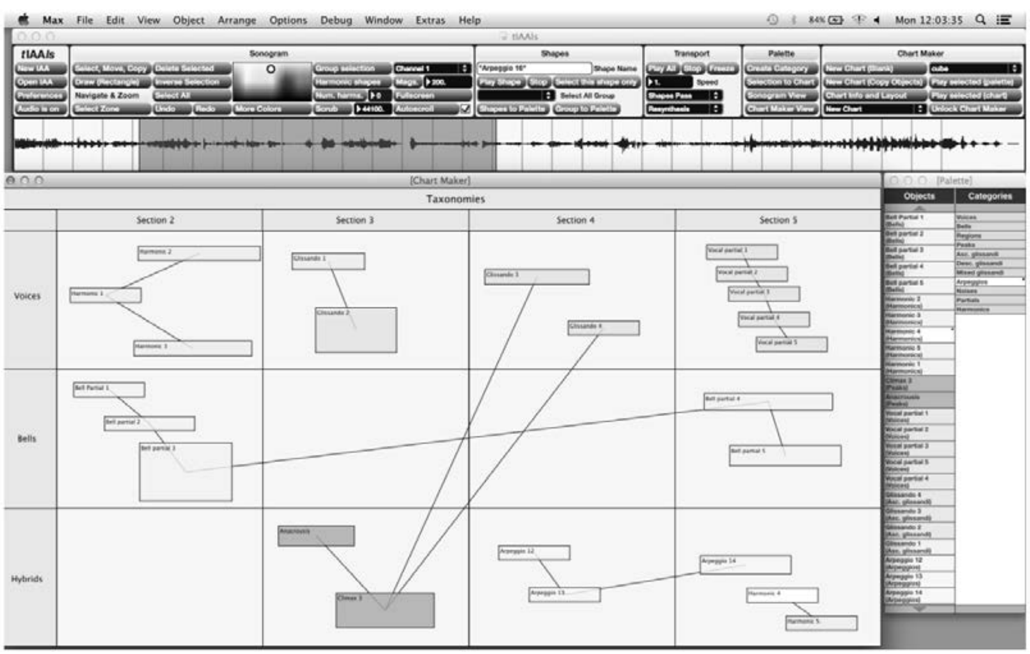


Figure 5.4 - Example of TaCEM Project's tIALLs software. Multimodal interactive representation. [12]

The *t*IAA*ls* software's only downfall is its use of Cycling 74's Max[13]. Max's use pervades much of the electroacoustic community, but it is still a consumer product. Its price per license makes it less accessible for all audiences. The more equitable option would be to employ the

[13] https://cycling74.com/ - Cycling 74's Max.

same interactive design philosophies in an application intended for the web browser. Obviously, an internet webpage shouldn't be considered *completely* accessible, but a browser-based application could at least be free to those who can access it, thus being more widely accessible than a niche programming platform.

This is likely the avenue that my research will take. We've laid the groundwork for an analytical methodology and established the aural space that will inform it. The VST data handling plugin mentioned previously would make such a process far more convenient, but also, the CSV or XML file created by the plugin can be used as source data for a generative visualization in the web browser. Ideally, I'd like to have an open-source web application where end users can input a rendered analysis file to generate a visualization, and then tailor the results to their needs with other web and graphics tools. The original audio stems from their analysis file could also be bounced and referenced in the visualization to create an interactive representation of the DAW. The final result could then be abstracted and embedded on their own websites or preserved in an archive. These idiosyncratic representations could be shared freely with others, used as classroom resources, or used as appendices in published research.

5.3 A Self-Imposed Precedent for Analysis and Archival

Throughout this document I have stressed the importance of establishing a vocabulary. Our ability to communicate the idiosyncrasies of a sound-based musical discourse is overshadowed by our preoccupation with compositional technologies. These preoccupations aren't without value, but our academic institutions are saturated with curricula that solidify their predominance. I don't take this as a sign of bias or malice, but find it necessitated by a lack of conveniently compiled resources.

Compiling a vocabulary was meant, in part, to refine my own conceptualization of the composition process. However, I am just as hopeful that its creation might bring the musical discourse into a more prominent spotlight in the conversation. I look forward to future pedagogical interactions where we can discuss the "*why's*" without regard for the "*how's*". In understanding our own compositional processes, and those of our peers, we might gain greater insight into the breadth of electroacoustic composition and truly iterate on the genre further. Not iterating upon our tools, but upon our ideas.

However, while I can read copious amounts of published literature, take extensive notes, and handle obscene amounts of data, convincing others to adopt a vocabulary is not a superpower I possess. The best I can do is to lead by example and portray my future compositional and analytical work in a manner which befits the space and methodologies defined here. Moving forward, each work will require the same level of attention that *What Sleeps Beneath* received. Though, even this analysis is incomplete. So, in fact, they will need *even more* attention.

As a composer, analytical and archival practices will have to hold some place of prominence in my compositional workflow. The work itself will remain *the* priority, but analysis and archival will still be prioritized. Various metadatas, influences, and though processes will be recorded and quantified via the space and offered as a subject for discussion. As a researcher and pedagogue, I must then continue to commit to initiating those discussions. I will have to expand upon the glossary established here and create robust tools that encourage its exploration and use.

Moving forward, electroacoustic composition pedagogy should endeavor to extend further than just listening or sharpening our tools. We should push for meaningful discussions and interpretations of our works and the works of others. We must thoroughly document our compositional practices and communicate their idiosyncrasies. As electroacoustic composers, we no longer obey the demands of a prescriptive system. The sound worlds we create are singular entities, and our thought processes are novel. Personally, I find it a shame to let a collection of audio stems stand as the only evidence of that ingenuity. There is so much more that we can offer our peers and future generations by creating a framework for discussion. With any luck, the glossary established here will open the door for more gratifying and engaging conversations.

Bibliography

[1] **Atkinson, Simon, and Leigh Landy.** "The ElectroAcoustic Resource Site (EARS): philosophy, foundation and aspirations." *Organised Sound* 9.1 (2004): 79-85.

[2] **Atkinson, Simon.** "Interpretation and musical signification in acousmatic listening." *Organised Sound* 12.2 (2007): 113-122

[3] **Barlow, Clarence**. *AUTOBUSK Manual.* Report No.44 of the Musicological Institute/ Musikinformatik & Medientechnik of the University of Mainz, Germany, ISSN 0941-0309 (2001).

[4] **Barlow, Klarenz**. *On Musiquantics: Von der Musiquantenlehre translated*. Bereich Musikinformatik, Musikwissenschaftliches Institut Johannes Gutenberg-Universität Mainz, 2012.

[5] **Bayle, François**. "Image-of-sound, or i-sound: Metaphor/metaform." *Contemporary music review* 4.1 (1989): 165-170

[6] **Blackburn, Manuella**. "The Visual Sound-Shapes of Spectromorphology: An Illustrative Guide to Composition." Organised Sound 16.1 (2011): 5-13. Web.

[7] **Bregman, Albert S.** *Auditory scene analysis: The perceptual organization of sound*. MIT press, 1994.

[8] **Camilleri, Lelio, and Denis Smalley.** "The analysis of electroacoustic music: Introduction." *Journal of New Music Research* 27.1-2 (1998): 3-12.

[9] **Carpentier, Thibaut, Markus Noisternig, and Olivier Warusfel.** "Twenty years of Ircam Spat: looking back, looking forward." *41st International Computer Music Conference (ICMC)*. 2015.

[10] **Clarke, Michael.** "Extending Interactive Aural Analysis: Acousmatic Music." (2009).

[11] **Clarke, Michael**. "Analysing electroacoustic music: An interactive aural approach." *Music Analysis* 31.3 (2012): 347-380.

[12] **Clarke, Michael, Frédéric Dufeu, and Peter Manning**. "Introducing TaCEM and the TIAALS software." (2013).

[13] **Clarke, Michael, and Peter Manning.** *Inside Computer Music.* Oxford University Press, USA, 2020.

[14] **Chion, Michel**. "Guide to sound objects: Pierre Schaeffer and musical research." *English translation by John Dack and Christine North* (2009).

[15] **Couperie, Pierre**. *The musical analysis and analytical representation of acousmatic music*. Diss. Paris-Sorbonne University, 2015.

[16] **Couprie, Pierre**. "Prologomena to the Analytical Representation of Electroacoustic Music." *Circuit: Musiques Contemporaines* 25.1 (2015).

[17] **Couprie, Pierre**. "EAnalysis: developing a sound-based music analytical tool." (2016): 170-194.

[18] **Dhomont, Francis.** "*Abstraction and figuration in my music"* Corwin Chair Lecture Series, 12 March. 2021, University of California Santa Barbara. Lecture.

[19] **Emmerson, Simon.** "The relation of language to materials." *The language of electroacoustic music*. Palgrave Macmillan, London, 1986. 17-39.

[20] **Fletcher, Harvey, and Wilden A. Munson.** "Loudness, its definition, measurement and calculation." *Bell System Technical Journal* 12.4 (1933): 377-430.

[21] **Geslin, Yann, and Adrien Lefevre.** "Sound and musical representation: the Acousmographe software." *ICMC*. Vol. 4. 2004.

[22] **Gorne, Annette Vande**. "Species of Spaces: The four main spatial categories."

[23] **Harrison, Jonty.** "Imaginary Space–Spaces in the Imagination: Australasian Computer Music Conference 1999 Keynote Address." (2000).

[24] **Hirst, David**. "An Analytical Methodology for Acousmatic Music." *ISMIR*. 2004.

[25] **Julian, David**. *Designing machine learning systems with Python*. Packt Publishing Ltd, 2016.

[26] **Kennedy, Michael, and Joyce Kennedy.** *The Oxford dictionary of music*. Oxford University Press, 2013.

[27] **Kokoras, Panayiotis.** "*Composing Sound: An overview of composition techniques used in Kokoras' recent works."* Corwin Chair Lecture Series, 6 November. 2020, University of California Santa Barbara. Lecture.

[28] **Kuchera-Morin, JoAnn, et al.** "Immersive full-surround multi-user system design." *Computers & Graphics* 40 (2014): 10-21.

[29] **Landy, Leigh**. *Understanding the art of sound organization*. Mit Press, 2007.

[30] **Moore, Adrian.** *Sonic Art: An introduction to electroacoustic music composition*. Routledge, 2016.

[31] **Neisser, Ulric.** *Cognitive psychology: Classic edition*. Psychology press, 2014.

[32] **Normandeau, Robert.** "… et vers un cinéma pour l'oreille." *Circuit* 4.1 (1993): 113-126.

[33] Normandeau, Robert. Personal e-mail communication. April 10th, 2023.

[34] Norris, Michael. "Reinstating Interpretation: the status of analysis in an electroacoustic context." *Proc. of the 1999 Australasian Computer Music Conf. University of Wellington*. 1999.

[35] Oliveira, João Pedro. "Building a Listening Proposal for Acousmatic and Electroacoustic Music." *The Acousmatic Musical Experience.* Editorial Universidad Diego Portales. Santiago de Chile. p. 203-253. 2019

[36] Oliveros, Pauline. *Deep listening: A composer's sound practice*. IUniverse, 2005.

[37] Park, Tae Hong. "Exploiting computational paradigms for electroacoustic music analysis." *Expanding the Horizon of Electroacoustic Music Analysis*. Cambridge University Press, 2016. 123-147.

[38] Park, Tae Hong. "The Electro-Acoustic Music Mine Project (EAMM): Collecting, Archiving, Sharing, and Exploring." *array.* (2020): 21-30.

[39] Pennycook, Bruce. "Language and Resources: a new paradox." *The Language of Electroacoustic Music*. Palgrave Macmillan, London, 1986. 119-137.

[40] Pope, Stephen Travis. "A taxonomy of computer music." *Contemporary Music Review* 13.2 (1996): 137-145.

[41] Reid, Leah Christinne. *Composing Timbre Spaces, Composing Timbre in Space: An Exploration of the Possibilities of Multidimensional Timbre Representations and Their Compositional Applications*. Stanford University, 2013.

[42] Reid, Leah. *"Multidimensional Timbre Representations and Current Work"*. Corwin Chair Lecture Series, 22 October. 2021, University of California Santa Barbara. Lecture.

[43] Reid, Leah. "Composing with Multidimensional Timbre Representations." *Leonardo* 54.3 (2021): 337-343.

[44] Roads, Curtis. *The computer music tutorial.* MIT press, 1996.

[45] Roads, Curtis. *Microsound*. The MIT Press, 2004.

[46] Roads, Curtis. *Composing electronic music: a new aesthetic*. Oxford University Press, USA, 2015.

[47] Roy, Stephane. "Analysis of acousmatic works: some foundations and proposal of a method." *Circuit: contemporary music* 4.1-2 (1993): 67-92.

[48] Schaeffer, P., and Reibel, G. 1966b. *Solfège de l'objet sonore*. New editions: 1988, 2005.

[49] **Schaeffer, Pierre**. *Treatise on musical objects: An essay across disciplines*. Vol. 20. Univ of California Press, 2017.

[50] **Schafer, R. Murray**. *The soundscape: Our sonic environment and the tuning of the world*. Simon and Schuster, 1993.

[51] **Smalley, Denis.** "Spectro-morphology and structuring processes." *The language of electroacoustic music*. Palgrave Macmillan, London, 1986. 61-93.

[52] **Smalley, Denis**. "Spectromorphology: explaining sound-shapes." *Organised sound* 2.2 (1997): 107-126.

[53] **Thompson, John, et al.** "The allobrain: An interactive, stereographic, 3d audio, immersive virtual world." *International Journal of Human-Computer Studies* 67.11 (2009): 934-946.

[54] **Thoresen, Lasse**. "Sound-objects, Values and Characters in Åke Parmerud's Les objets obscurs, 3rd Section." *Organised sound* 14.3 (2009): 310-320.

[55] **Thoresen, Lasse**. "Form-building patterns and metaphorical meaning." *Organised Sound* 15.2 (2010): 82-95.

[56] **Thoresen, Lasse, and Andreas Hedman**. "Spectromorphological Analysis of Sound Objects: An Adaptation of Pierre Schaeffer's Typomorphology." *Organised Sound* 12.2 (2007): 129-41. *ProQuest*. Web. 9 Apr. 2021.

[57] **Tolkien, J. R. R.** *The Fellowship of the Ring*. HarperCollins, 1991.

[58] **Turner, Phil, et al**. "Evaluating soundscapes as a means of creating a sense of place." Georgia Institute of Technology, 2003.

[59] **Wishart, Trevor.** "Sound symbols and landscapes." *The language of electroacoustic music*. Palgrave Macmillan, London, 1986. 41-60.

[60] **Wishart, Trevor., and Simon Emmerson**. *On Sonic Art*. New and Rev. Ed. / Edited by Simon Emmerson. ed. Amsterdam: Harwood Academic, 1996. Print. Contemporary Music Studies; v. 12.

[61] **Vaggione, Horacio**. "Some ontological remarks about music composition processes." *Computer Music Journal* 25.1 (2001): 54-61.

[62] "About the ElectroAcoustic Resource Site." *ElectroAcoustic Resource Site*, 2020, http://ears.huma-num.fr/

[63] "Handbook for Acoustic Ecology." Cambridge Street Publishing, 1999, http://www.sfu.ca/sonic-studio-webdav/handbook/index.html

List of Works Referenced

Appendices

A.1 | Aural Analysis Space: Feature Glossary

The structure of this resource follows the taxonomic structure as defined in Chapter 2, beginning with Typomorphology in the Perceptual Domain, and ending with Rhetorical Structure in the Conceptual Domain. Every entry in each taxonomic family will cite its original author and be alphabetically ordered, unless a given feature is a superior feature to a subset of dependent features. In such cases the superior feature will be given first and its dependents will follow alphabetically. Unless the feature entry is original to myself, any comments added by me to clarify or expound upon such citations will be given in italics.

Several sources were consulted for inclusion in the feature glossary, however, the contents as listed here don't represent all of the possible abstracted parameters suggested. Each published work still has lingering insights that can be consulted at a later time. For this iteration, special attention was paid to those features whose inclusion was necessitated by our analysis of What Sleeps Beneath in Chapter 4.

I. Perceptual Domain

I.I Typomorphology

Frequency Varying Features

Pitch

per the Oxford Dictionary [26]: "The location of a sound in the scale, depending on the speed of vibrations from the source of the sound…"

Compared to Frequency, which is a measurement of the rate of sound vibrations, the use of pitch classification implies relationship to a governing pitch system, which in an electroacoustic context could apply to any local or global context depending on the circumstance. Numerous scales exist to quantify this parameter. The most idiomatic quantitative scale will depend on the surrounding context. A single classification could be annotated by frequency, MIDI integers, or pitch classes integers in any tuning system.

Note: this feature was included to support the Pitch Gait Deviation and Velocity features, which are structured features dependent on pitch. The inclusion of pitch also warrants the parametric definitions of various tunning systems and harmonic operations, but that is outside our purview for now.

Quantitative: Scale: Frequency in Hz (as an *int*)
MIDI note numbers or pitch classes (as an *int*)

Pitch Gait Deviation

per L. Thoresen [56]: "…the undulating movement or characteristic fluctuation that often can be found in sustained parts of sound objects."

We catalogue Thoresen's Gait parameters here, though by definition, we could apply a similar definition to many parameters- making Thoresen's Gait a structured feature. A growth process is applied to the Pitch parameter in this case, where Deviation is the degree of change from the parameter's stable, baseline value. This would not be dissimilar to a modulation depth in a Frequency Modulation application.

Ordinal: Order: [Small, Moderate, Large]

Pitch Gait Velocity

per L. Thoresen [56]: "…the undulating movement or characteristic fluctuation that often can be found in sustained part of sound objects."

We catalogue Thoresen's Gait parameters here, though by definition, we could apply a similar definition to many parameters- making Thoresen's Gait a structured feature. A growth process is applied to the Pitch parameter in this case, where Velocity is the rate at which the parameter's stable, baseline value is changed. This would not be dissimilar to the modulating frequency in a Frequency Modulation application.

Ordinal: Order: [Slow, Middle, Fast]

Sound Spectrum

per L. Thoresen [56]: "a definition of that aspect of a sound in which the perception of pitch and pitch content can be found." "[Ordered from] sounds with a clearly perceivable pitch [to] no perceivable fundamental."

Ordinal: [Pitched, Dystonic, Complex]

Alias per: P. Schaeffer, M. Chion*: Order: [Sons Toniques, Sons Cannelé*, Sons Complexes]

Spectral Brightness

per L. Thoresen [56]: "An analysis of this dimension is actually not included in Schaeffer's typomorphology. The phenomenon is, however, well known from linguistics: the vowel sound [i] is considered brighter than [u] and intermediary cases can easily be conceived. A similar scale can be made for the complex impulse sounds of language: [t] is, for example, brighter than [d] or [g]. The characterisation of spectral brightness may, for instance, be important for discerning the colour difference between different instruments that all produce pitched sound objects.

Ordinal: Order: [Dark, Trending Dark, Neutral, Trending Bright, Bright]

The order of parametric states is not explicitly defined by Thoresen. It is only defined as a continuum from 'Dark' to 'Bright'. However, based on his symbolic language, it appears Thoresen defines the continuum as five graduated orders in practice.

Spectral Density

per D. Smalley [52]: *In regard to spectral space (or Spectral Width)…*

"[*Spectral Density* defines] whether [spectral] space is extensively covered and filled, or whether spectromorphologies occupy smaller areas, creating large gaps, giving an impression of emptiness and perhaps spectral isolation"

Smalley defines this as a component of Spectral Density which he labels as 'Emptiness-plentitude'. In observation of Spectral Width, the Spectral Density essentially describes the degree of saturation within a finite frequency range.

Thoresen's Spectral Width implied a similar relationship but was terminologically more ambiguous [56]. *That said, the levels of classification can still be used here for they are less arbitrary than a scale from empty to full per Smalley. Thus, Spectral Density can be thought of as a continuum from isolated sinusoids to white noise occupying the entirety of the Spectral Width.*

Ordinal: Order: [Sin Tone, Pitched Sound, Saturated Pitch Sound, Dystonic Sound, Saturated Dystonic Sound, Complex Sound, Saturated Complex Sound, White Noise]

Spectral Diffusion

per D. Smalley [52]: *In regard to Spectral Density…*

"[*Spectral Diffusion* describes] whether the sound is spread or dispersed throughout spectral space or whether it is concentrated or fused in regions."

Smalley's 'Diffuseness' parameter accounts for situations in which a spectrum may present with a generous Spectral Width and a greater level of Spectral Density, but the distribution of spectral energy may not be even across the entire width.

Ordinal: Possible Order: [Highly Concentrated, Diffused, Even Dispersal]

Spectral Gait Deviation

per L. Thoresen [56]: "…the undulating movement or characteristic fluctuation that often can be found in sustained part of sound objects."

We catalog Thoresen's Gait parameters here, though by definition, we could apply a similar definition to many parameters- making Thoresen's Gait a structured feature. A growth process is applied to the Sound Spectrum parameter in this case, where Deviation is the degree of change from the parameter's stable, baseline value. An example of this case would be a sound that fluctuates between a stable pitch and a noisier timbre.

Ordinal: Order: [Small, Moderate, Large]

Spectral Gait Velocity

per L. Thoresen [56]: "…the undulating movement or characteristic fluctuation that often can be found in sustained part of sound objects."

We catalog Thoresen's Gait parameters here, though by definition, we could apply a similar definition to many parameters- making Thoresen's Gait a structured feature. A growth process is applied to the Sound Spectrum parameter in this case, where Velocity is the rate at which the parameter's stable, baseline value is changed. An example of this case would be the rate at which a sound fluctuates between a stable pitch and a noisier timbre.

Ordinal: Order: [Slow, Middle, Fast]

Spectral Profile

per L. Thoresen [56]: "Spectral Profile will be the term used for the trajectory of internal variations in the width of the sound spectrum of the sound…" [See *Spectral Width*]

Provided the spectral width of the observed sound object is variable, is its Spectral Width moving in archetypal fashion?

Thoresen's Spectral Profile would be more apt in the Abstract Transformation category of Growth Processes. However, Spectral Profile shares similar ground with the Dynamic Profile, which is Attack-Time Varying. In this case, we'll make note of the Spectral Profile here, but also in the classifications for the Multidirectional Growth Type aural feature.

Categorical: States: [Expanding, Convex, Concave, Receding]

Spectral Stream Density

per D. Smalley [52]: *In regard to Spectral Density…*

"[*Spectral Stream Density* describes] the layering of spectral space into narrow of broad stream separated by intervening space."

Spectral Stream Density is a term I am using to describe Smalley's 'Stream-interstices' parameter. Though, it is still questionable whether the perception of spectral 'streams' has more utility which defining their quantity, their widths (taken as subsets of Spectral Width), or some combination of the two.

Statistical Quantitative Scale: *N*-number of parsable frequency bands in a spectrum.
An array of *Spectral Widths* for each frequency band.

Spectral Width

per L. Thoresen [56]: "The Width of the spectrum is defined in relationship to the extremities of sinusoidal sounds and white noise."

The term Spectral Width is actually owed to Thoresen, whose Spectral Width parameter implied the existence of a statistical width feature and a Spectral Density [56]. However, width is ill suited to describe density, so the two concepts have been decoupled. Rather, Spectral Width in this case will be a statistical feature which quantifies the lower and upper limits of an observable spectrum. It can be represented as a pair of frequencies (minimum and maximum) or a distance between two frequencies in Hertz.

Statistical Quantitative: Scale: A pair of frequencies (minimum and maximum in Hertz).
A distance between two frequencies (in Hertz).

I.I.II Attack-Time Varying Features

Chronological Index

per K. Elwell: Following pre-analytical processing, all unclassified sound units are indexed by their chronological order of emission based on the starting timestamp in the digital audio workstation. Indexes are sequential integers beginning from 1.

Quantitative: Scale: Chronological order of appearance (as an *int*)

Duration

per K. Elwell: Following pre-analytical processing, all unclassified sound units are classified by their duration in milliseconds.

Quantitative: Scale: Duration in milliseconds. (Cast as an *int*)

Duration Archetype

per L. Thoresen [56]: "As the consideration of duration was removed from Schaeffer's original design, and the concept of a gradual transition between different degrees of regularity was introduced into the intermediary categories, some additional signs and definitions will be needed. I have earlier worked out an analysis of 'types of velocities', features of which will now be selected for inclusion in the spectromorphological analysis."

Thoresen defines a set of primitive archetypes for velocity durations which ranges from a 'Flutter' ("When elements in a string of events run so fast that they tend to integrate or become blurred") to 'Ambient' ("very long/slow durations belong those sounds whose duration is so long that their sustained part dominates the opening and ending phases disproportionately")

Ordinal: Order: [Flutter, Ripple, Gesture, Ambient]

Dynamic Gait Deviation

per L. Thoresen [56]: "…the undulating movement or characteristic fluctuation that often can be found in sustained part of sound objects."

We catalog Thoresen's Gait parameters here, though by definition, we could apply a similar definition to many parameters- making Thoresen's Gait a structured feature. A growth process is applied to the Dynamic Level parameter in this case, where Deviation is the degree of change from the parameter's stable, baseline value. For instance, the amount of amplitudinal change in a vibrato action could constitute a dynamic gait deviation.

Ordinal: Order: [Small, Moderate, Large]

Dynamic Gait Velocity

per L. Thoresen [56]: "…the undulating movement or characteristic fluctuation that often can be found in sustained part of sound objects."

We catalog Thoresen's Gait parameters here, though by definition, we could apply a similar definition to many parameters- making Thoresen's Gait a structured feature. A growth process is applied to the Dynamic Level parameter in this case, where Velocity is the rate at which the parameter's stable, baseline value is changed. For instance, the rate of a vibrato action could constitute a dynamic gait velocity.

Ordinal: Order: [Slow, Middle, Fast]

Dynamic Level

per K. Elwell: Given a particular sound object, the *Dynamic Level* is a generalized statistical average amplitudinal value registered in dBFS. Or, alternatively, more ubiquitous dynamic indications could be offered as an ordinal classification – i.e., *piano, mezzo-forte, forte, etc.*

Statistical Quantitative: Scale: Average Dynamic level in dBFS (as a *float*)

Ordinal: Order: [pianissimo, piano, mezzo-piano, mezzo-forte, forte, fortissimo]

Dynamic Peak

per K. Elwell: Given a particular sound object, the dynamic peak is the statistic maximum amplitudinal value registered in dBFS. The Dynamic Peak can be taken as the maximum of the sound object's whole lifespan, or within a localized subsection dictated by sectional boundaries or a predefined window size.

Statistical Quantitative: Scale: Maximum amplitudinal value in dBFS (as a *float*)

Dynamic Profile

per L. Thoresen [56]: "The *Dynamic Profile* of a sound object is intimately connected to its *Energy Articulation* … The attack or onset phase determines … the character and duration of the resonant phase of the sound. … The information in the onset phase can be conceived of as a bundle containing a certain characteristic duration, articulation, and sound spectrum."

This is essentially a categorization of Schaeffer's attack-onset archetypes. It ranges from longer, static onsets to accumulation-like emissions. See also [*Onset Profile*]

Categorical: per P. Schaeffer — States: [No dynamic profile, Weak Profile, Formed Profile, Impulse-like Profile, Cycle Profile, Vacillating Profile, Accumulation-like Profile]

Energy Articulation

per L. Thoresen [56]: "…the horizontal axis, that of the *Energy Articulation*, is the logical line of moving from a short impulse, via medium durations with simple objects towards increasingly complex, ultimately unpredictable objects. In keeping with Schaeffer's original design*, this happens symmetrically from the middle [*centered around the impulse*].

** Schaeffer's French terminology for this parameter is* [*entretien*].

Ordinal: — Order: [Vacillating, Stratified, Sustained, Impulse, Iterated, Composite, Accumulation]

Granularity

per M. Chion [14]: "[Concerning the sustained quality of the] micro-structure of the matter of the sound… [and] …the overall perception of irregularities of detail ('grains') that affect the surface of the object."

Categorical: — State: [Course – Fine]

Onset Profile

per L. Thoresen [56]: "The information in the onset phase can be conceived of as a bundle containing a certain characteristic duration, articulation, and sound spectrum."

Ordinal: per M. Chion [14] — Order: [Brusque Onset, Sharp Onset Marked Onset, Flat Onset, Swelled Onset, Gradual Onset, Without Onset]

Pulse Rate Category

per L. Thoresen [56]: "Under pulse categories we will deal with phenomena such as regularity/irregularity, tendential changes of speed, etc. For the purpose of brevity, we shall confine this discussion to the main cases, all of which are first of all applicable to pulses of gesture time and ripple time. We discern three degrees of periodicity…"

Ordinal: Order: [Regular, Oblique, Irregular]

Termination Profile

per L. Thoresen [56]: "A typology of onset phases ought to be complemented by a corresponding set of typical ways of ending a sound. … There are, however, cases where the way a sound ends can have musical pertinence (e.g. when resonating sounds are contrasted with sounds whose resonance is suddenly interrupted). … It should also be pointed out that in the case of impulses, there will be no need to describe the ending phase at all. Thus, the genres below will only deal with prolonged sounds, either sustained or iterated."

Ordinal: Order: [Abrupt Termination, Sharp Termination, Marked Termination, Flat Termination, Soft Termination, Resonating Termination]

I.II Spectromorphology

Continuant Duration

per K. Elwell: Given that the observed work or section demonstrates the use of spectromorphological structures, and the observed structure exhibits development, the Continuant Duration describes the duration of the observed structure's Continuant Function in milliseconds.

Quantitative: If *Spectromorphological Structure Type* == [Gesture, Texture]

Scale: Duration of observed Continuant Function in milliseconds (cast as an *int*)

Continuant Unit Density

per K. Elwell: Given that the observed work or section demonstrates the use of spectromorphological structures, and the observed structure exhibits development, the *Continuant Unit Density* describes how many unique sound units comprise the observed structure's continuant function.

Quantitative: If *Spectromorphological Structure Type* == [Gesture, Texture]

Scale: Number of sound units in the observed structure's Continuant Function (as an *int*)

Alternative: The observed function represented as an array. The length of the array is equal to the *Continuant Unit Density* and each entry in the array is a cross reference to a component sound unit's *Chronological Index*. Thus, the structure is a representation of multiple sound units.

Onset Duration

per K. Elwell: Given that the observed work or section demonstrates the use of spectromorphological structures, and the observed structure exhibits development, the *Onset Duration* describes the duration of the observed structure's Onset Function in milliseconds.

Quantitative: If *Spectromorphological Structure Type* == [Gesture, Texture]

Scale: Duration of observed Onset function in milliseconds (cast as an *int*)

Onset Unit Density

per K. Elwell: Given that the observed work or section demonstrates the use of spectromorphological structures, and the observed structure exhibits a dynamic progression, the *Onset Unit Density* describes how many unique sound units comprise the observed structure's Onset Function.

Quantitative: If *Spectromorphological Structure Type* == [Gesture, Texture]

Scale: Number of sound units in the observed structure's Onset Function (as an *int*)

Alternative: The observed function represented as an array. The length of the array is equal to the *Onset Unit Density* and each entry in the array is a cross reference to a component sound unit's *Chronological Index*. Thus, the structure is a representation of multiple sound units.

Spectromorphological Structure Type

per D. Smalley [52]: "Gestural music, then, is governed by a sense of forward motion, of linearity, of narrativity. The energy-motion trajectory of gesture is therefore not only the history of an individual event but can also be an approach to the psychology of time.

If gestures are weak, if they become too stretched out in time, or if they become too slowly evolving, we lose the human physicality. We seem to cross a blurred border between events on a human scale and events on a more worldly, environmental scale. At the same time there is a change of listening focus – the slower the directed, gestural impetus, the more the ear seeks to concentrate on inner details (insofar as they exist). A music which is primarily textural, then, concentrates on internal activity at the expense of forward impetus."

per K. Elwell: Gesture and texture imply development via forward momentum. Impulse and pedal are their static surrogates. Unique entities but not developed.

Ordinal Order: [Impulse, Pedal, Gesture, Texture]

Spectromorphological Function Type

per D. Smalley [52]: "The note is the basic gesture-unit of instrumental music. Every note-gesture, however short, has a spectral history – the energy-motion trajectory of its spectromorphology. Every note must start in some way; some may be sustained or prolonged for a time and some may not; every note stops. These three linked temporal phases I refer to as *onset*, *continuant*, and *termination*. They are not distinctly separable: we cannot tell the very moment when an onset passes into a continuant phase, nor when a continuant passes into the terminal phase. Nor do all three phases have to be present in the note-gesture."

Dependent Ordinal: if *Spectromorphological Structure Type* == [Impulse, Pedal]
Order: [N/A]

if *Spectromorphological Structure Type* == [Gesture, Texture]
Order: [Onset, Continuation, Termination]

Spectromorphological Subfunction Type

per K Elwell: *"Spectromorphological Subfunction Types* are intended to elaborate on the context of each spectromorphological function, adding additional delimiters which distinguish between points of perception and points of causality. … In a goal-oriented event paradigm the point of emergence versus the point of arrival are two separate points. The time interval between those two points may still be perceived as one continuous motion representing the onset of a larger structure even if the limits on its duration are indeterminate. Subfunctions exist to quantify this interval." (See Section 2.2.2)

Dependent Ordinal: if *Spectromorphological Structure Type* == [Gesture, Texture] &&

if *Spectromorphological Function Type* == [Onset]
Order: [Anterior Onset, Onset]

if *Spectromorphological Function Type* == [Continuation]
Order: [Medial Peak, Medial Valley, Anterior Event, Medial Event]

if *Spectromorphological Function Type* == [Termination]
Order: [Anterior Terminus, Termination, Posterior Terminus]

Structure Duration

per K. Elwell: Given that the observed work or section demonstrates the use of spectromorphological structures, the *Structure Duration* describes the duration of the observed structure in milliseconds.

Quantitative: Scale: Duration of observed structure in milliseconds (cast as an *int*)

Structure Index

per K. Elwell: Following pre-analytical processing, all unclassified sound structures are indexed by their chronological order based on their starting timestamp in the digital audio workstation. Indexes are sequential integers beginning from 1.

Quantitative Scale: Sound structures indexed in chronological order in 1 based ordering (as an *int*)

Structure Unit Density

per K. Elwell: Given that the observed work or section demonstrates the use of spectromorphological structures, the *Structure Unit Density* describes how many unique sound units comprise the observed structure.

Quantitative: Scale: Number of sound units in the observed structure (as an *int*)

Alternative: The observed structure represented as an array. The length of the array is equal to the *Structure Unit Density* and each entry in the array is a cross reference to a component sound unit's *Chronological Index*. Thus, the structure is a representation of multiple sound units.

Subfunction Unit Index

per K. Elwell: For structural functions with a unit density [Onset Unit Denisty…] greater than 1, the *Subfunction Unit Index* is a sound unit's chronological order of emission in relation to other sounds in the same associated structure function in one-based ordering.

For example, three sounds compose an onset function. The first sound perceived is a clear tone exhibiting an exponential increase to dynamic level (index = 1). An interrupting sound intervenes with no causal impact upon the first sound (index = 2). The final sound is similar to the second, but is now a resonant reactivation- i.e., following its statement the clear tone expands to a harmonic sonority (index = 3).

My own archival practice utilizes Subfunction Unit Indices to reference specific structural members. For example, if I wanted to reference the fourth Onset unit in Gesture 3 the reference would be [G3 Onset.4].

Quantitative: Scale: Sound units indexed in chronological order in 1 based ordering (as an *int*)

Termination Duration

per K. Elwell: Given that the observed work or section demonstrates the use of spectromorphological structures, and the observed structure exhibits development, the *Termination Duration* describes the duration of the observed structure's Termination Function in milliseconds.

Quantitative: If *Spectromorphological Structure Type* == [Gesture, Texture]

Scale: Duration of observed Termination Function in milliseconds (cast as an *int*)

Termination Unit Density

per K. Elwell: Given that the observed work or section demonstrates the use of spectromorphological structures, and the observed structure exhibits development, the *Termination Unit Density* describes how many unique sound units comprise the observed structure's Termination function.

Quantitative: If *Spectromorphological Structure Type* == [Gesture, Texture]

Scale: Number of sound units in the observed structure's Termination Function (as an *int*)

Alternative: The observed function represented as an array. The length of the array is equal to the *Termination Unit Density* and each entry in the array is a cross reference to a component sound unit's *Chronological Index*. Thus, the structure is a representation of multiple sound units.

I.III Spatiomorphology

Cartesian Spatial Location (Vector)

per K. Elwell: Any spatiomorphological features that indicate perceived directionality or location are given with the anticipation of quantifying the abstract spatial environment and not the performance specific site (i.e., - specific speakers and their locations).

That said, when attributed a point of locality to a sound source within a Cartesian coordinate space, the *Cartesian Spatial Location* can be presented as a vector of three values corresponding to X, Y, and Z dimensions. This is a structured quantitative feature which incorporates all of the low-level spatial features.

Structured Quantitative: Scale: A vector of 3 floats [x, y, z]

Cartesian Spatial Coordinate (X)

per K. Elwell: When attributing a point of locality to a sound source within a Cartesian coordinate space, the *Cartesian Spatial Coordinate (X)* classifies the sound source's position in the left to right dimension. This is in respect to an abstract spatial field where the bounds of the left to right dimension are normalized between -1 and 1 and the listener's position is at 0.

Quantitative: Scale: [-1 to 1] - spanning the left to right dimension (as a *float*)

Cartesian Spatial Coordinate (Y)

per K. Elwell:	When attributing a point of locality to a sound source within a Cartesian coordinate space, the *Cartesian Spatial Coordinate (Y)* classifies the sound source's position in the front to rear dimension. This is in respect to an abstract spatial field where the bounds of the front to rear dimension are normalized between -1 and 1 and the listener's position is at 0.	
Quantitative:	Scale:	[-1 to 1] - spanning the front to rear dimension (as a *float*)

Cartesian Spatial Coordinate (Z)

per K. Elwell:	When attributing a point of locality to a sound source within a Cartesian coordinate space, the *Cartesian Spatial Coordinate (Z)* classifies the sound source's position in the vertical dimension. This is in respect to an abstract spatial field where the bounds of the vertical dimension are normalized between 0 and 1 and the listener's position is at 0. This assumes that the projection environment only includes loudspeakers at the elevation of the listener (floor), or above them (ceiling). In cases where a subterranean plane of loudspeakers exists (such as a near-360-degree dome installation RE: UC Santa Barbara's Allosphere installation [28]), the range would be extended from [0 to 1] to [-1 to 1].	
Quantitative:	Scale:	[0 (or -1) to 1] - spanning the vertical dimension (as a *float*)

Polar Spatial Location (Vector)

per K. Elwell:	Any spatiomorphological features that indicate perceived directionality or location are given with the anticipation of quantifying the abstract spatial environment and not the performance specific site (i.e., - specific speakers and their locations). That said, when attributed a point of locality to a sound source within a Polar coordinate space, the *Cartesian Spatial Location* can be presented as a vector of three values corresponding to the positions Azimuth, Radius, and Elevation. This is a structured quantitative feature which incorporates all of the low-level spatial features.	
Structured Quantitative:	Scale:	A vector of 3 floats [Azimuth, Radius, Elevation]

Polar Spatial Coordinate (Azimuth)

per K. Elwell: When attributing a point of locality to a sound source within a Polar coordinate space, the *Polar Spatial Coordinate (Azimuth)* classifies the azimuth of the perceived sound source. This is in respect to an abstract spatial field where the azimuth defines an angle in degrees (0 to 360) where 0 degrees corresponds to the listener's forward-facing direction.

Quantitative: Scale: [0 to 360 degrees] classifying the azimuth of the perceived sound source (as an int)

Polar Spatial Coordinate (Radius)

per K. Elwell: When attributing a point of locality to a sound source within a Polar coordinate space, the *Polar Spatial Coordinate (Radius)* classifies the sound source's radius from the listener. This is in respect to an abstract spatial field where the radius is normalized between 0 and 1 and the listener's position is at 0.

Quantitative: Scale: [0 to 1] classifying the radius from the listener (as a *float*)

Polar Spatial Coordinate (Elevation)

per K. Elwell: When attributing a point of locality to a sound source within a Polar coordinate space, the *Polar Spatial Coordinate (Elevation)* classifies the sound source's position in the vertical dimension. This is in respect to an abstract spatial field where the bounds of the vertical dimension are normalized between 0 and 1 and the listener's position is at 0.

This assumes that the projection environment only includes loudspeakers at the elevation of the listener (floor), or above them (ceiling). In cases where a subterranean plane of loudspeakers exists (such as a near-360-degree dome installation RE: UC Santa Barbara's Allosphere installation [28]), the range would be extended from [0 to 1] to [-1 to 1].

Quantitative: Scale: [0 (or -1) to 1] - spanning the vertical dimension (as a *float*)

Proximal Depth

per K. Elwell: Through the manipulation of spectral contents, the composer may alter the perception of a sound unit or structure's *Proximal Depth*. Sound may be presented as though it is retreating into the distance, or it could be right within reach. The *Proximal Depth* feature classifies the perceived distance the listener has to the sounding object or structure. It is graded on an ordinal scale of 'very close' to 'very distant'. Similar descriptors work just as well.

Ordinal: Order: [Very close, Close, Distant, Very Distant]

Reverberation Time

per K. Elwell: The use of reverberation is commonplace in electroacoustic music composition, and its various characteristics add to illusions to *Setting Classes* or *Volumetric Size*. Many of its variables would be sorted under abstract transformations, but the length of a resonance effect as suggested by reverberation is a trigger that facilitates our perception of space. In classifying it, we can either follow a quantitative approach were we list the approximate duration of the resonance in time, or we can follow an ordinal approach and grade it in order from "short" to "long."

Quantitative: Scale: Duration of resonance in milliseconds (as an int)
Duration of resonance in seconds (as an int)

Ordinal: Order: [Very Short, Short, Medium, Long, Very Long]

Spatial Contiguity

per D. Smalley [52]: "Spatial texture is concerned with how the spatial perspective is revealed through time. This is a question of contiguity. Space is contiguous when revealed for example, in continuous motion through space such as in a left–right gestural sweep), or when a spectromorphology occupies a spread setting (without spatial gaps). Non-contiguous space is revealed when spectromorphologies are presented in different spatial locations such that two successive events are not considered near neighbours: there is no sense that a spectromorphology occupies or moves through adjoining sectors of space."

Ordinal: Order: [Continuous Motion, Mixed Continuity Motion, Discontinuous Motion]

Diffusion Type

per A. Vande Gorne [22]:

"[Ambiophonic space] is a space in which we cannot determine where sounds come from, the auditor bathing in a diffused ambiance. It is its listening that achieves a "mixing" of all events given to hear. …

The divided space is part of the surround space because it is associated with a sound wrap (bath), in all dimensions, including height. However, the perception of the auditory space in height is almost as precise as the angular perception (the circle), at least in the first meters. …

[Pointillism space] pinpoints the source of the sound, … The movements and the spotting of the sound are what matter. … It involves placing sounds with attack transients marked enough to locate them even if they are very short. The composition then becomes a pointillist environment, playing with masses, the occasional phrasing and variations of densities. …

movement is also part of the source space, [an] audible trajectory [through perceived] space."

Vande Gorne alludes to several archetypal diffusion textures or 'source spaces', which describe how sound is projected in space.

Ordinal: States: [Ambiophonic, Divided, Pointillism, Motion]

Spatial Motion Rate

per K. Elwell:

Expanding upon Vande Gorne's 'Motion' *Diffusion Type* and Wishart's *Spatial Motion Trajectory*, we might also discuss the rate at which such motions happen. Do they traverse the abstract space at a quick rate, such as you might have for a pronounced Doppler effect, or do they rotate slowly; just quick enough to be perceived

**** A Spatial Delta feature could be offered as a quantitative alternative to this feature. However, a human-digestible ordinal feature strikes me as having more utility.*

Ordinal: Order: [Static, Slow, Moderate, Fast]

Spatial Motion Trajectory

per. T. Wishart:

"Considering both the perceptual limitations of the ear and the mathematics of curves it will be possible to describe all distinguishable types of motion in terms of straight line or circular motion, or some combination of these. We will also introduce the idea of random fluctuations in a motion."

Categorical: State: [Linear, Cyclical, Arc, Random]

Spatial Spread

per K. Elwell: The *Spatial Spread* pulls its inspiration from one of Roy's spatial functions (those labeled Accumulation and Dispersion), which "designate growths or decreases in material densities" [47]. However, rather than refer to these functions as "movements", I find additional utility in recontextualizing them to coincide with the *Spatialization Archetype* feature. If *Spatialization Archetype* defines whether a sound unit occupies the entire spatial projection or just a location in it, there must be a middle ground where a sound can occupy a fraction of space- as suggested by Vande Gorne's 'Divided' *Diffusion Type* [22]. Thus, *Spatial Spread* defines the amount of occupied space the sound encompasses. If the projection scenario utilizes a ring of speakers, the spread can be defined as an angle in degrees [0 to 360]. In stereo formats, the spread can be defined as a percentage or a *float* value from [0 to 1].

Quantitative: Scale: An angel from [0 to 360 degrees] (as an *int*) (Surround)
A percentage value from [0 to 1] (as a *float*) (Stereo)

Volumetric Size

per K. Elwell: Through the use of reverberation or other processing techniques, the composer might construct illusions to spaces of varying *Volumetric Sizes*. This may or may not suggest a specific location, though that descriptor would fall under the purview of the *Setting Class*. One can, however, interpret *Volumetric Size* intuitively through the perception of resonance (see *Reverberation Time*). We classify the *Volumetric Size* of a section or texture on an ordinal scale from small to large.

Ordinal: Order: [Very Small, Small, Medium, Large, Very Large Space]

Spatialization Archetype

per A. Vande Gorne [22]: "Four categories of space emerge from this particular practice of interpretation and knowledge of the acousmatic repertoire: The "surround space" immerses the listener in a "bath" and is opposed to the "sound source" space which localizes sounds;"

In this instance, Vande Gorne is alluding to two archetypal approaches to space. One in which sound encompasses the entirety of the abstract spatial environment, and another where sources have distinct localities within the space.

Categorical: States: [Spatialized, Localized]

I.IV Intermorphology

I.IV.I Stratified Processes

Stratification

per K. Elwell:

The perception of a stratified context, be it local or global, does not necessarily imply intentional development on the part of the composer. For example, some sampled source materials may be procured from dense urban environments where several audio sources are sounding at various *Proximal Depths*. In cases such as this, the stratified context is present but not intentionally orchestrated by the composer. Thus, the *Stratification* feature exists to distinguish between those contexts which are *intentionally* stratified, or those that are *intrinsically* stratified as a product of their recording context.

Categorical: States: [Intended Stratification, Intrinsic Stratification]

Stratified Position

per K. Elwell

Stratified Position can be used as a time-varying, statistical representation of 'foregrounded-ness' over the course of a work or section. It is a product of [*Substratum Index* / *Substratum Density*], which results in a value between 0 and 1. Values closer to 1 represent a sound source that is more foregrounded in the audio mix, while values closer to 0 are more backgrounded in their perception.

***** *The example shown in Chapter 3 was conducted using 1-based ordering for Substratum Index, though in retrospect, Stratified Position makes more conceptual sense in 0-based ordering.***

Statistical Quantitative: Scale: Foregrounded position on a scale from [0-1]

Stratum Structural Weight

per K. Elwell:

The *Stratum Structural Weight* feature incorporates aspects of the *Stratified Position* and *Structural Weight* features. In cases where the observed stratum utilizes several structural archetypes of differing temporal rates (i.e., impulses, gestures, and textures in simultaneity), *Stratum Structural Weight* classifies which structural archetype dominates the perceived foreground. By extension, this also carries implications about which timescale predominates over the stratified context. If the observed work exemplifies one continuous global context, then *Stratum Structural Weight* should be identical to *Structural Weight*. However, should there be multiple stratified contexts happening in simultaneity, *Stratum Structural Weight* can define each in isolation.

Ordinal: Order: [Impulse-carried, Gesture-carried, Texture-carried]

Stratum Density

per K. Elwell: *Stratum Density* quantifies how many parsable audio streams comprise the observed intermorphological stratum. The unit of measurement for density in this case is broadly defined. Density could pertain to individual sound units, sound structures, or attributed identities (*as shown in Chapters 3 and 4*).

Quantitative: Scale: Quantity of sound units, structures, or identities (as an *int*)

Stratum Duration

per K. Elwell: The *Stratum Duration* feature is far more lucrative when examining processes-based intermorphological processes. For, if the observed work is one continuous stratified context, then the *Stratum Duration* will be equivalent to the length of the work. However, if we are quantifying a single transformative intermorphological process in isolation, then a description of its duration is more apt.

Quantitative: Scale: Duration of stratified process in milliseconds (as an int)
Duration of stratified process in seconds (as an int)
Duration of stratified process as a timestamp

Stratum Index

per K. Elwell The *Stratum Index* is a chronological identifier which denotes the progression of succeeding stratified contexts. At minimum, the observed work will have at least 1 stratum and thus a minimal *Stratum Index* of 1. However, if there may be a sequence of intermorphological strata. They could succeed each other in turn or overlap.

The perception of succeeding intermorphological strata contributes to *Sectional Clarity*, creating allusion to scenes, sections, movements, or other delimiting boundaries.

Quantitative: Scale: Sound strata enumerated by an incremental index in 0-th ordering (as an *int*).

Substratum Density

per K. Elwell:

Substratum Density quantifies how many parsable audio streams comprise the observed intermorphological substratum. The unit of measurement for density in this case is broadly defined. Density could pertain to individual sound units, sound structures, or attributed identities (*as shown in Chapters 3 and 4*). This feature assumes that a superior stratum is perceived, and 1 or more sub-stratified contexts comprise it.

For example, with the global stratum, there may be non-functional harmonic layers in the background and iconic soundscapes in the foreground. The non-function harmonic layers may present as a sub-stratified context where specific pitch members or timbre variants arrive and retreat. *Substratum Density* would describe the internal unit density of this lower-level substratum.

Quantitative: Scale: Sound planes enumerated by an incremental index (as an *int*).

Substratum Index

per K. Elwell:

The *Substratum Index* feature is designed to hierarchically organize a series of audio streams within a single stratified context. Audio streams are graduated on a scale of backgrounded to foregrounded, where 0 represents the most backgrounded position in the audio mix, and a value equal to *Stratum Density* is the most foregrounded position.

*** *Previously in Chapter 3, observations of Substratum Index were carried out using 1-based ordering. However, in retrospect it would be to the benefit of the Stratified Position feature if Substratum Index were to follow 0-based ordering.*

Quantitative: Scale: Sound planes enumerated by an incremental index in 0-th ordering (as an *int*).

I.IV.II Sequential Processes

Sequential Density

per K. Elwell:

Intermorphological sequences are defined as continuous patterns of development applied to several successive sound structures. The *Sequential Density* feature classifies how many individual sequence members comprise the sequence. If there are 5 gestures occurring in a sequence, then the *Sequential Density* is equal to 5.

Quantitative: Scale: Quantity of individual sound sequence members enumerated by an incremental index (as an *int*).

Sequential Development

per K. Elwell: The definition of intermorphological sequences is dependent upon perceiving a continuous pattern of development across individual, successive sound structures. How that pattern of development is perceived is broadly defined, however we can characterize several possible avenues through which a sequence can manifest. It could be a lengthy sequence of related content with no transformations. It may have related content, but the scale of is proportions is diminishing or expanding. Its content could be iterated upon and slowly changing typomorphological character over time, such as becoming less iterative and more sustained. Or, it may have one specific aural feature that is being developed over the lifespan of the sequence. That parameter could be spatiomorphological, attributed, or an abstract transformation.

Quantitative: Scale: [Related, Proportional, Iterative, Parametric]

Sequential Duration

per K. Elwell: As the name suggests, the *Sequential Duration* describes the time interval of the observed sequence from the emission of its first member, to the termination of its final member.

Quantitative: Scale: Duration of sequence in milliseconds (as an int)
Duration of sequence in seconds (as an int)
Duration of sequence as a timestamp

Sequential Index

per K. Elwell: The *Sequential Index* is a chronological identifier which denotes the progression of succeeding intermorphological sequences. Sequences are enumerated by incremental index in 0-based ordering.

Quantitative: Scale: Sound sequence enumerated by an incremental index in 0-th ordering (as an *int*).

Sequential Inter-Onset Time

per K. Elwell:

Intermorphological sequences need not be one continuous stream of musical activity. They can apply transformative or developmental processes to spectromorphological structures over time. So long as an intention, and continuous, pattern of development can be perceived between said structures, there can be silences between their emissions. The *Sequential Inter-Onset Time* feature classifies the amount of time between the emission of one sequence member and another.

For example, there are 5 gestures in an intermorphological sequence. Sequence member 2 emerges at [2:55], and 7 seconds later member 3 emerges. The *Sequential Inter-Onset Time* between sequences members 2 and 3 would then be 7. This measurement is distinct from the *Sequential Lapse Time*, which measures the intervening silence.

Quantitative:

Scale: Inter-onset time in milliseconds (as an int)
Inter-onset time in seconds (as an int)
Inter-onset time as a timestamp

Sequential Lapse Time

per K. Elwell:

Intermorphological sequences need not be one continuous stream of musical activity. They can apply transformative or developmental processes to spectromorphological structures over time. So long as an intention, and continuous, pattern of development can be perceived between said structures, there can be silences between their emissions. The *Sequential Lapse Time* feature classifies the duration of the time interval between the termination of one sequence member and then emission of the succeeding sequence member.

For example, there are 5 gestures in an intermorphological sequence. Sequence member 2 emerges at [2:55], and it is 2 seconds long. Sequence member 3 emerges 7 seconds later at [3:02]. If member 2 terminated at [2:57] then the *Sequential Lapse Time* is 5 seconds. This measurement is distinct from the *Sequential Inter-Onset Time*, which measures the duration between successive emissions.

Note that member of intermorphological sequence also do not need to follow one another with intervening silences. They can overlap. Thus, *Sequential Lapse Times* can also be negative, thereby classifying the overlapping duration between successive sequence members.

Quantitative:

Scale: Duration of lapsed silence in milliseconds (as an int)
Duration of lapsed silence in seconds (as an int)
Duration of lapsed silence as a timestamp

I.V Macro-Structural Processes

Familial (Taxonomic) Weight

per K. Elwell: When observing isolated sections or the work as a whole, the analyst may describe the Familial (or taxonomic) Weight of the time interval. This is an expansion upon Smalley's gesture or texturally-carried archetypes. However, rather than reference to spectromorphological structures, we define a section, or the work based on which taxonomic family predominates in the resultant feature selection. Is spatiomorphology the primary catalyst by which the intra-musical logic is determined, or is it typomorphology, spectromorphology, or attributed classifications?

Categorical: States: [Typomorphology, Spectromorphology, Spatiomorphology, Intermorphology, Abstract Transformation, Attributed Classification, Archival Data]

Feature Selection Size

per K. Elwell: The macro-level *Feature Selection* is the primary vehicle the analyst has to characterize an idiosyncratic sound-based composition. It is best defined an as array of salient and static features. However, following an abstract statistical approach, we can also quantify a selection by its size. This can be utilized as a surrogate for a 'density' variable, where the sizes of *Feature Selections* or localized abstractions create a sense of contrast that contributes to the delineation of sectional boundaries.

Quantitative: Scale: The number of aural features determining the local or global intra-musical discourse (as an *int*).

Proportional Symmetry

per K. Elwell *Proportional Symmetry* describes the relationship between macro-level sections in the work, specifically their durations in relationship to each other and the whole work. Some works may have macro-level sections that are all approximately the same duration (Symmetrical), while others may have a single section that commands a larger majority of the work than others (Asymmetrical). Additionally, some sections may have their durations determined as a function of some larger algorithmic or idiosyncratic process (Conditional), and others may have no apparent logic or pattern governing the distribution of time between sections (Unrelated).

Dependent Categorical: if *Sectionality* == [Sectional]

States: [Asymmetrical, Symmetrical, Conditional, Unrelated]

Section Duration

per K. Elwell: As one would expect, *Section Duration* quantifies the elapsed time duration for an isolated macro-level section, provided that the observed piece exhibits characteristics which suggest *Sectionality*.

Dependent Quantitative: if *Sectionality* == [Sectional]

Scale: Duration of Macro-level section in milliseconds (as an int)
Duration of Macro-level section in seconds (as an int)
Duration of Macro-level section (as a timestamp)

Section Index

per K. Elwell: In keeping with the standards of formal analysis set in western music, he *Section Index* references a section's position in a work chronologically, provided that the observed piece exhibits characteristics which suggest *Sectionality*. Indexes can be represented as integers in either 0-based or 1-based ordering (0, 1, 2 or 1, 2, 3), or as Arabic characters incrementing alphabetically (A, B, C, etc.)

Dependent Quantitative: if *Sectionality* == [Sectional]

Scale: Incremental Indices (as int)
Incremental Indices (as Arabic characters)

Sectional Clarity

per K. Elwell *Sectional Clarity* defines how perceivable or predictable the delineation of sectional boundaries is. Even if the work suggests *Sectionality*, sectional boundaries could be realized through subtle means or according to a strictly regimented process. Perhaps the intra-musical discourse has several overlapping processing which obscure sectional boundaries, or perhaps there are substantial points of silence which clearly permit the perception of movements or sections.

Dependent Ordinal: if *Sectionality* == [Sectional]

Order: [Amorphous, Vague, Subtle, Clear, Strict]

Sectionality

per K. Elwell: *Sectionality* describes the perceptibility of segmentation of the macro-level intra-musical discourse. There are works which clearly suggest sectional boundaries and a specific time interval is distinctly separate from adjacent segments of time. Others, however, are one continuous global context and specific sectional boundaries are not perceivable. The state of the *Sectionality* feature will determine the relevance of many other macro-level aural features, as most are dependent *Sectionality*.

Categorical: States: [Sectional, Not Sectional]

Structure Density

per K. Elwell *Structure Density* can either be observed in isolated sections or throughout the global context of the entire work. It enumerates the total number of lower-level structures that are present during the aforementioned timescales. One section may have dozens of micro-gestures distributed over time, while another might have only a couple that overlap or persist throughout the entire section.

Quantitative: Scale: Quantity of perceived lower-level structural units (as an *int*)

Structural Weight

per K. Elwell: *Structural Weight* classifies structural archetypes as alluded to by Smalley. Specifically, whether the observe section or work exhibits a structural setting which is predominantly gesture-carried or one that is texturally-carried. Additionally, I'm including an Impulse-carried archetype to account for the potentiality that neither spectromorphological gesture nor texture carries the observed discourse.

Categorical: States: [Impulse-carried, Gesturally-carried, Texturally-carried]

II. Conceptual Domain

II.I Abstract Transformations

II.I.I Audio Effect Transformations

Processing Class

per. K. Elwell:

Like *Identity Classes* and *Behavior Classes*, a *Processing Class* is a classification attributed to a sound unit. The unit is the perceived as being transformed by a unique audio effect, and the class descriptor reflects the name of the transformation.

For example: Sound unit exhibits a *Processing Class* of type [Delay].

These types of classifications are useful when a particular audio effect transformation is bonded with a structural function, voice, process, or allegorical purpose.

Categorical: Potential States: [Delay, Granulation, Distortion, Pitch Shift, etc.]

Source Processing Density

per K. Elwell:

In respects to an isolated sound unit, the *Source Processing Density* quantifies how many perceivable audio effects transformations have been applied. This need not be an exact number or account for a complete signal chain of transformative processes. Nor does it need to account for multiple transformations of a similar type. For example, if an audio unit was subjected to a primary delay process and then a subsequent process the cumulative effect can be generalized to one processing archetype: "delay."

The utility in the feature is as a comparative variable for a single sound archetype over time- i.e., sound unit A's *Source Processing Density* increases overtime and tracing a developing path of sound transformations is integral to the understanding of the musical discourse.

Quantitative: Scale: *N*-number of audio transformations applied (as an *int*).

Example: Sound unit exhibits: [Delay, Pitch Shift, Resonant Filter]
Source Processing Density == [3]

Cyclical Growth Type

per D. Smalley [52]:

"Generally, in music, *centric motion* is expressed by spectromorphological recycling, giving an impression of motion related to a central point. This can be achieved through spectromorphological variation alone but is frequently aided by spatial motion. Continuing recycling, like other forms of repetition, can give an impression of structural stasis, but centric motions can also be strongly directional – vortical and spiral motions have this possibility, for example. Centric motions can also be associated with growth. For example, I can think of rotating motions which gather textural materials to them as they expand spectrally – a combination of rotation and exogenous or endogenous growth."

Dependent Categorical:

if *Parametric Variability* != [Stable]

&& *Growth Process Type* == [Cyclical]

Order: [Rotation, Spiral, Spin, Vortex, Pericentrality, Centrifugal Motion]

Growth Process Type

per D. Smalley [52]:

"The metaphors of motion and growth are appropriate ways of considering a time-based art like electroacoustic music. Traditional concepts of rhythm are inadequate to describe the often dramatic contours of electroacoustic gesture and the internal motion of texture which are expressed through a great variety of spectromorphologies. Quite often listeners are reminded of motion and growth processes outside music and the terms selected are intended to evoke these kinds of connections"

per K. Elwell:

The *Growth Process Type* feature is intended as the second in a line of dependent growth features, second to *Parametric Variability*. Provided that the observed structural unit is under the influence of a growth process the *Growth Process Type* defines which of Smalley's archetypes best describes the perceived motion.

Categorical:

if *Parametric Variability* != [Stable]

States: [Unidirectional, Reciprocal, Cyclical, Multidirectional, Indeterminate]

Growth Slope Type

per K. Elwell:

Smalley's growth archetypes are thorough in their depiction of intra-musical motions. However, there is still more resolution to be gained by defining its rate. For example, a sound was exhibiting the characteristics of an 'ascent,' but the slope of that descent can vary dramatically. It could be linear, exponential, logistic, or follow an inconsistent and random pattern of ascent.

Categorical: States: [Linear, Exponential, Logistic, Random]

Multidirectional Growth Type

per D. Smalley [52]:

"*Bi/multidirectional* motions create expectations, and most have a sense of directed motion. They can be regarded as having both gestural and textural tendencies, and could be large structures in themselves. Agglomeration (accumulating into a mass) and dissipation (dispersing or disintegrating) are textural processes. Dilation (becoming wider or larger) and contraction (becoming smaller) are concerned with changing dimensions and could be regarded as a different aspect of agglomeration/dissipation. Divergence and convergence are strongly directional and could be gestures or texture growths, or a simultaneous linear descent/ascent. Exogeny (growth by adding to the exterior) could be allied to dilation and agglomeration, while endogeny (growing from inside) implies some kind of frame which becomes filled, or texture which becomes thickened."

Dependent Categorical:

if *Parametric Variability* != [Stable]

&& *Growth Process Type* == [Multidirectional]

Order: [Agglomeration, Dissipation, Dilation, Contraction, Divergence, Convergence, Exogeny, Endogeny]

Parametric Variability

per K. Elwell:

Abstracted from: L. Thoresen [56]

Thoresen's expansion of Schaeffer's *Tableau re´capitulatif de la typologie* registers a two axis of representation, *Energy Articulation* and *Sound Spectrum*. Though compared to Schaeffer, Thoresen distinguishes between stable and variable sound spectrums. However, this application of growth and variability is another structured feature. Rather than include sound spectrum variability in this case, I'm electing to abstract it as a growth process.

This classification specifies whether a particular feature dimension demonstrates a static character or is the subject of intentional (or unintentional) variability. This is a superior feature which all other growth processes are dependent upon. If a feature is stable, it exhibits no growth, and thus, no other growth processes are warranted.

Categorical: States: [Stable, Variable]

Reciprocal Growth Type

per D. Smalley [52]: "In *reciprocal motion*, movement in one direction is balanced by a return movement. Oscillation and undulation, which are contour variations, could apply to internal, textural motions, as well as being descriptions of external contour. Parabolas are often more gestural, a class of curved trajectories. They are common in electroacoustic music, probably because of the dramatic possibilities of varying the duration, velocity, and spectral energy of the outward and return journeys."

Categorical: if *Parametric Variability* != [Stable]

&& *Growth Process Type* == [Reciprocal]

States: [Parabola, Oscillation, Undulation]

Unidirectional Growth Type

per D. Smalley [52]: "Motion and growth have directional tendencies which lead us to expect possible outcomes, and they are helpful guides in attributing structural functions. *Unidirectional motion* provides a simple example. If we encounter a slow, ascending contour, we could expect a variety of outcomes but not any outcome. It could ascend and fade as it goes out of 'sight'; it could increase in richness leading to an impact point; it could be joined and absorbed by other events; it could change direction, turning into a parabola; it could reach a stable ceiling. Whatever it eventually does may surprise us (if there are sudden changes) or it may do what we expect particularly if its rate of change gives us clues to its future."

Categorical: if *Parametric Variability* != [Stable]

&& *Growth Process Type* == [Unidirectional]

States: [Ascent, Plane, Descent]

Variability Depth

per K. Elwell: Abstracted from Thoresen's Gait features [56], *Variability Depth* is the equivalent to *Gait Deviation*. In cases where a growth process is applied to a static feature as a modulatory process, the Variability Depth defines the degree of change from the carrier feature's baseline value. The scale of this feature is dependent on the feature it is applied to.

Quantitative: Scale: Dependent on the carrier feature. It could be a quantitative value as determined by the scale of the carrier feature, or it could be an (*int*) value representing deviation as a number of ordinal states.

Variability Rate

per K. Elwell: Abstracted from Thoresen's Gait features [56], *Variability Rate* is the equivalent to *Gait Velocity*. In cases where a growth process is applied to a static feature as a modulatory process, the Variability Rate defines the rate at which the carrier feature's baseline value is changed.

Quantitative: Scale: Rate of change as a frequency value in Hertz (as a *float*)
Alt: Rate of change as note value as a function of BPM (as an int)

Ordinal: Order: [Slow, Middle, Fast] inferred from L. Thoresen

II.II Attributive Classifications

II.II.I Identity Descriptors

Identity Class

Per K. Elwell: An identity classification, or *Identity Class*, is a connotative descriptor that is attributed to a specific sound source bearing a recognizable typomorphological fingerprint. This is at times referred to as causality, in that it is identifies the real-world icon that is the source cause of a sound. However, we reserve the term causality to represent intra-musical relationships. The *Identity Class* is given as an alternative. It indexes the unique observable sound characters within the work for the purposes of source separation or for the appreciation of a rhetorical context that exemplifies a semiotic or narratological superstructure.

Categorical: States: *N*-Number of identifying class descriptors (as string's)

Example per T. Wishart [60]: *Identity Classes:* ["Bird", "Word", "Body/Animal", "Machine", "Other"]

note that for Wishart, he uses the term sound-images for what we are calling Identity Classes.

Identity Class Density

per K. Elwell: When attributing *Identity Classes* to units of a musical discourse, we might make note of the resultant density of diversity of classes. Does the observed work allude to a few real-world signifieds or many? This feature can encompass either the specific quantity of observed classes, or an arbitrary distinction about whether the class diversity is "narrow" or "diverse"

Quantitative: Scale: The number of observed *Identity Class* in the musical discourse. (as an *int*)

Ordinal: States: [Narrow, Diverse]

Identity Iconicity

per K. Elwell: *Identity Iconicity* is included as a companion to Denis Smalley's *Gestural Surrogacy [52]*. It is to the *Identity Class* what *Gestural Surrogacy* is to the *Behavior Class*. It is a graded classification that describes how far removed the observed *Identity Class* is from its prototypical icon, not based on its gestural activation, but as its communicability as a signifier. Those that are iconic closely resemble their prototypical icons, while those with remote iconicity are unrecognizable and fail to communicate the identity of their source. *Identity Iconicity* separates itself from *Gestural Surrogacy* in that *Identity Iconicity* can still maintain tenuous connotative reference without maintaining its *Gestural Surrogacy*. However, maintaining both in tandem creates a more effective signifier.

Dependent Ordinal: Order: [Iconic, Near Iconic, Diminishing Iconicity, Remote Iconicity]

Identity Subclass

per K. Elwell: *Identity Subclasses* exist to further define idiosyncrasies of complex networks of *Identity Class*. The superior *Identity Class* descriptor implies an associative theme, and the subordinate subclasses are identities that exist within that associative theme.

Dependent Categorical: States: *N*-Number of identifying subclass descriptors (as string's)

Example per T. Wishart: if *Identity Class* == ["Other"]

Identity Subclass == ["Buzz", "Book", "Door", "Sharp"]

Setting Class

per K. Elwell: A setting classification, or *Setting Class*, is a connotative descriptor reminiscent of the *Identity Class*. It is unique in that is describes an associative geolocation or setting. *Identity Classes* can be thought of as agents, and the *Setting Class* is a description of the universe they inhabit. Attributing a *Setting Class* descriptor could be solely based on associations between *Identity Classes* or it may be substantiated by spatiomorphological characteristics. Size and reflectivity of the virtual space may imply a connotative setting in itself.

Categorical: States: *N*-Number of identifying setting class descriptors (as string's)

Examples: [“Indoors”, “Underwater”, “In Nature”, “In the City”, etc.]

Setting Subclass

per K. Elwell: *Setting Subclasses* exist to further define idiosyncrasies of complex networks of *Setting Class*. The superior *Setting Class* descriptor implies an associative theme, and the subordinate subclasses are locations that exist within or in parallel to that associative theme.

Categorical: States: *N*-Number of identifying setting subclass descriptors (as string's)

Example: if *Setting Class* == [“Nature”]

Setting Subclass == [“Ocean”, “Forest”, “Stream”, etc.]

II.II.II Agent Descriptors

Agency Type

per K. Elwell When attributing an agency descriptor to a structural unit, the *Agency Type* signifies the causal implications of that connotative action. Intransitive actions imply that the structure is behavior in a way that has no causal ramification on the surrounding discourse (i.e., its “ascending”). Transitive actions imply a behavior where the initiating agent (the subject) directs causal energy towards a target agent (an object) (i.e., structure 1 is “triggering” structure 2). Dialogic actions suggest a relationship between two distinct actions. The two actions might be in conflict with or in cooperation with one another, but they each carry out their own unique action with equal agency.

Categorical: States: [Intransitive, Transitive, Dialogic]

Behavior Class

per K. Elwell:	A behavior classification, or *Behavior Class*, is a connotative descriptor that is attributed to specific typomorphological, spectromorphological, spatiomorphological, or intermorphological patterns of development. Each descriptor implies an action that is manifested through a selection of compositional dimensions. However, the descriptor itself is not prescriptive. It is an intuited shorthand representing a more complex behavior. Based on its influence in the intra-musical discourse, a behavior class will exhibit some *Agency Type*.
Categorical:	States: *N*-Number of behavioral class descriptors (as string's)
per A.V. Gorne [22]:	"Sparkling", "Swinging", "Rebounding", "Rupturing", "Exploding", "Invading", "Accumulating"
per D. Smalley [52]:	"Pushing", "Dragging", "Rising", "Throwing", Flinging", "Drifting", "Floating", "Flying", "Flocking", "Streaming", "Approaching", "Departing", "Wandering"
per. C. Roads [45]:	"Coalescing", "Evaporating", "Mutating", "Dissolving",
per S. Roy [47]:	"Triggering", "Interrupting", "Accumulating", "Dispersing", "Rupturing", "Affirming"

Behavior Subclass

per K. Elwell:	*Behavior Subclasses* exist to further define idiosyncrasies of complex networks of *Behavior Class*. The superior *Behavior Class* descriptor implies an associative theme, and the subordinate subclasses are actions that exist within that associative theme. An example is listed below.
Dependent Categorical:	States: *N*-Number of behavioral subclass descriptors (as string's)
Example:	if *Behavior Class* == *"*Automotive Actions*"* *Behavior Subclass:* ["Driving", "Engines", "Doors Shutting", etc.]

Gestural Surrogacy

per D. Smalley [52]: "The listener's experience of listening to instruments is a cultural conditioning process based on years of (unconscious) audiovisual training. A knowledge of sounding gesture is therefore culturally very strongly imbedded. This cannot be ignored and denied when we come to electroacoustic music. It is particularly important for acousmatic music where the sources and causes of sound-making become remote or detached from known, directly experienced physical gesture and sounding sources. The process of increasing remoteness I refer to as *gestural surrogacy*."

Ordinal: Order: [Primal Surrogacy, First Order Surrogacy, Second Order Surrogacy, Third Order Surrogacy, Remote Surrogacy]

Spatial Mimesis

per K. Elwell: When a sound exhibits a behavior within the musical discourse, that behavior might be realized in one of many ways. It could be realized through typomorphological, spectromorphological, or spatiomorphological means. *Spatial Mimesis* describes whether the projection of the sounding behavior in space mimics the conceived action. For example, the *Behavior Class* might be "bouncing" like a ping-pong ball. Does the spatial dimension also reflect a "bouncing" behavior whereby the sound source ascends to a higher elevation before falling to a lower elevation? Does the spatial dimension not reaffirm that behavior? Conversely, the spatial application could imply a change in elevation, but each impulse of the "bounce" behavior may be localized to a different position in space creating another mimetic disparity in its realization.

Ordinal: Order: [Mimetic, Nearly Mimetic, Slightly Mimetic, Not Mimetic]

II.II.III Function Descriptors

Causal Function

per K. Elwell: A *Causal Function* goes hand-in-hand with *Behavior Classes* and *Agency Types*. When a perceived action has intra-musical implications between two or more discernable sound units then some form of causality binds them together. This relationship could be transitive (when one sound acts upon another) or dialogic (when 2 sound groups carry out unique actions either against or in consort with each other with equal agency). The *Causal Function* defines which of these relationships exists.

Categorical: States: [Transitive, Dialogic]

Structural Function Type

Translated from S. Roy [47]:	"[Orientation Functions] bring together all the functions which energize the meaning of the music discourse. The typomorphology of objects related to these functions is generally characterized by a significant directionality to dynamic and spectral profiles. These functions have a discursive role since they direct musical discourse from an original state to a purpose. They internationalize the different moments of the syntax through a strong causal relationship with the context."
per D. Smalley [52]:	"Structural functions are concerned with expectation. Like other musics, electroacoustic music has its expectation patterns, and I have already suggested that these are based on our wide cultural acquaintance with the perceived spectral changes of a wide variety of sounds. During listening we attempt to predict the directionality implied in spectral change. We might ask ourselves, for example, where a gesture might be leading, whether a texture is going to continue behaving in the same way, whether change is likely or not, whether change is likely to be concerned with gradual merging or sudden interruption, and so on."
Categorical:	States: [Preceding, Onset, Linking, Continuation, Succeeding, Termination, None]

Structural Function

Per K. Elwell:	Both Smalley and Roy have noted several structural functions that are pertinent to spectromorphological and intermorphological contexts. Based on the *Structural Function Type* there are several descriptors that further classify the directionality and intra-musical expectation of the given structural function.
Dependent Categorical: per S. Roy [47]:	if *Structural Function Type* == [Preceding] States: [Introduction, Triggering, Anticipation] if *Structural Function Type* == [Linking] States: [Transition, Culmination, Link] if *Structural Function Type* == [Succeeding] States: [Suspension, Conclusion, Interruption, Extension]
Dependent Categorical: per D. Smalley:	if *Structural Function Type* == [Onset] States: [Departure, Emergence, Attack, Anacrusis, Upbeat, Downbeat] if *Structural Function Type* == [Continuation] States: [Passage, Transition, Prolongation, Maintenance, Statement] if *Structural Function Type* == [Termination] States: [Arrival, Disappearance, Closure, Resolution, Release, Plane]

Identifying Function

per K. Elwell: Several descriptors can be attributed to an observed sound unit; however, they need not be connotative references. We have an established vocabulary in western music that applies descriptors to intra-musical functions. Even if electroacoustic music doesn't have well-defined and culturally reinforced prescriptive codes, we may still apply certain intra-musical descriptors to electroacoustic works. We might identify a sound or sound structure as a 'Theme', an 'Antecedent', or a 'Resolution'. Any applicable intra-musical function descriptor qualifies as a state.

Categorical: States: [Theme, Imitation, Antecedent, Resolution, Interruption, etc.]

Transitive Role

per K. Elwell: A *Transitive Role* is dependent upon the *Causal Function* feature. If a causal relationship exists between two sounding groups, and the causal function is determined to be transitive (one sound acting upon another) then the *Transitive Role* feature signifies which sounds initiate the transitive action, and which sounds are receptors of the transitive action.

Dependent Categorical: States: [Initiator, Receiver]

II.III Archival Metadata

II.III.I Pre-Compositional Metadata

Source File Bit Depth

per C. Roads [44]: *In respect to the observed work's source audio files…*

"Sampling at discrete time intervals, discussed in the previous sections, constitutes one of the major differences between digital and analog signals. Another difference is *quantization*, or discrete amplitude resolution. The values of the sampled signal cannot take on any conceivable value. This is because digital numbers can only be represented within a certain range and with a certain accuracy, which varies with the hardware being used. The implications of this are an important factor in digital audio quality."

In describing a source audio file, the Bit Depth describes the "discrete amplitude resolution", represented as a number of bits.

Quantitative: Scale: *N*-number of bits used to encode one sample value of recorded audio (as an *int*).

Source File Channels

per K. Elwell: *In respect to the observed work's source audio files…*

As it pertains to a single audio source file, *Source File Channels* refers to how many channels of audio were recorded

Quantitative: Scale: *N*-number of recorded audio channels where *N* is greater than 1 (as an *int*).

Source File Duration

per K. Elwell: *In respect to the observed work's source audio files…*

As the name suggests, the *Source File Duration* quantifies the length of the original source recording.

Quantitative: Scale: Duration of source sound in milliseconds (as an *int*)
Duration of source sound in seconds (as an *int*)
Duration of source sound as a timestamp

Source File Name

per K. Elwell: *In respect to the observed work's source audio files…*

As the name suggests, the *Source File Name* categorizes a source audio recording by its filename. Note that distinctions can be made between filenames given prior to or following the ingestion of audio data. That could be a derived filename given to a recording by the hardware device at the time of recording, or it could be the author's classification given to a file after ingest- i.e., it could be either "STR-230401-001.wav" or it could be "whopping_big_sound.wav". The filename utilized for archival purposes should match the one used within the original project to reference the archived audio sources.

Categorical: States: *N*-number of unique file names (as a *string*)

Source File Sampling Rate

per C. Roads [44]: *In respect to the observed work's source audio files…*

"[When] the signal has been sampled … the rate at which samples are taken – *the sampling frequency* – is expressed in terms of samples per second. This is an important specification of digital audio systems. It is often called the *sampling rate* and is expressed in Hertz."

Quantitative: Scale: Number of samples per second in Hertz (represented as an *int*)

Source File Format

per K. Elwell: *In respect to the observed work's source audio files…*

A source media file can be preserved in one of several file formats. This could be determined by the audio or video technologies that facilitated its recording, or by a third party that originally distributed the source. Examples include AAC, WAV, Mp3, Mp4, QuickTime, etc.

Categorical: States: A descriptor of a media file format (as a *string*).

Source Generation Date

per K. Elwell: *In respect to the observed work's source audio files…*

Source Generation Date records autobiographical evidence of when a source sound material was created. *Source Generation Date* in this case refers to a specific calendar date. This may have little bearing in respect to synthesized sources, but in field recording applications the difference between a real-world soundscape during the spring versus the winter could be extreme. For the sake of reproducibility, *Source Generation Date* connects the archival audio source to the original state of its subject with more accuracy.

Quantitative: Scale: A sound source's date of creation
Potential format (*YYMMDD*: 230701)

Source Generation Means

per K. Elwell: *In respect to the observed work's source audio files…*

Source Generation Means classifies the specific tools or subjects that generated or recorded an observed audio source. The scope of the categorical states is broadly defined, including both the tools to record the audio subject and the subjects themselves. Examples include specific species of flora or fauna, microphones, specific communities or culture events, audio interfaces or field recorders, objects or machinery, phenomena, etc. *Source Generation Means* juxtaposes *Utilized Instruments* and *Utilized Programs.* The subject of *Source Generation Means* is outside the control of the composer, where the subjects of *Utilized Instruments* and *Utilized Programs* feature are.

Categorical: States: A descriptor for any physical or digital subjects that generated a pre-compositional audio source (as a *string*).

Source Generation Method

per K. Elwell: *In respect to the observed work's source audio files…*

When classifying a particular pre-compositional audio source, we can make a generalization between sources that are obtained through some method of sampling, and others that are generated via synthesis. We make this distinction to accommodate all potential cases, however, we must be mindful that to qualify as a pre-compositional source, the author must have no hand in its creation. In the case of sampling, this could mean a field recording scenario where the observer has no impact upon the sonic environment they are recording. For synthesis, all resultant audio fragments are generated without author input, and *not* utilizing tools of the authors making, for in their design the artist is also exerting their compositional influence upon the output. This could mean using a sample library of synthesized sounds.

If the observed source doesn't fit the description of *Source Generation Method*, see *Composed Source Generation Method*.

Categorical: States: [Sampled, Synthesized]

Source Generation Time

per K. Elwell: *In respect to the observed work's source audio files…*

Source Generation Time records autobiographical evidence of when a source sound material was created. *Source Generation Time* in this case refers to time of day. This may have little bearing in respect to synthesized sources, but in field recording applications the difference between a real-world soundscape during the day versus at night could be extreme. For the sake of reproducibility, *Source Generation Time* connects the archival audio source to the original state of its subject with more accuracy.

Quantitative: Scale: The source audio's time of creation (in a 12-hour format)
The source audio's time of creation (in a 24-hour format)

Source Recording Geolocation

per K. Elwell: *In respect to the observed work's source audio files…*

In cases where site-specific field recording is used in the creation of a work, the *Source Recording Geolocation* feature records the specific waypoint where the recording took place. This feature is distinct from the *Source Recording Location* feature. The *Source Recording Location* is a colloquial descriptor for the location (i.e., "Grandma's House"). The *Source Recording Geolocation* however are specific GPS coordinates or a similar format.

Categorical: States: The site of a source recording event (as GPS coordinates)
The site of a source recording event (as a Google Plus Code)

Source Recording Location

per K. Elwell: *In respect to the observed work's source audio files…*

In cases where site-specific field recording is used in the creation of a work, the *Source Recording Location* feature records the colloquial name of the location where the recording took place. This feature is distinct from the *Source Recording Geolocation* feature. The *Source Recording Geolocation* is an empirical designation for the recording waypoint (i.e., "48.12147364934269, -123.55618436045299"). The *Source Recording Location,* however, is an informal descriptor (i.e., - "Grandma's House")

Categorical: States: An informal location descriptor (as a *string*)

Source Recording Meteorological Data

per K. Elwell: *In respect to the observed work's source audio files…*

In cases where site-specific field recording is used in the creation of a work, the *Source Recording Meteorological Data* feature records various weather datapoints. This could encompass temperature, wind direction and speed, precipitation, etc. Realistically, all of these meteorological datapoints could be their own features, but for now they are reduced to a single array.

Categorical: States: Various meteorological datapoints (as an *array*)

Composed File Duration

per K. Elwell: *In respect to the utilization of source audio recordings in a work…*

It is often the case that sampled source materials aren't used in their entirety in a sound-based work. Fragments or short segments are frequently used. To distinguish between the duration of the original sampled content and the content used in the completed work, *Composed File Duration* is used in consort with the *Source File Duration*. For example, a source sound file may be 8 minutes and length, but only 2 minutes are used in the context of the work. In such a case the *Source File Duration* would be 8 minutes and the *Composed File Duration* is 2 minutes.

Quantitative: Scale:
The composed sound's duration in milliseconds (as an *int*)
The composed sound's duration in seconds (as an *int*)
The composed sound's duration as a timestamp

Composed File Offset

per K. Elwell: *In respect to the utilization of source audio recordings in a work…*

In cases where sampled audio is incorporated in an electroacoustic work, the *Composed File Offset* describes the relationship between the composed onset of a sound and the source it derives from. For example, a source audio recording is 5 minutes long, but the artist only utilizes a 1-minute fragment beginning at timestamp [2:49]. In this case, the composed audio sources onset time is offset from the onset of the original audio by 2 minutes and 49 seconds.

Quantitative: Scale:
The composed sound's offset time in milliseconds (as an *int*)
The composed sound's offset time in seconds (as an *int*)
The composed sound's offset time as a timestamp

Utilized Instruments

per K. Elwell: The *Utilized Instruments* feature is included as a way of cataloguing the technological or real-world resources that were pivotal to the construction of the work. What constitutes 'instruments' is broadly defined. Where the *Utilized Programs* feature covers all digital or software tools, the *Utilized Instruments* feature could encompass any materialistic elements used. Some examples may include microphones used for field recording, speaker arrays, audio interfaces, Leap Motion controllers, a Yamaha DX7, a cello, or physical sound objects like flower pots or dumpster lids.

Dependent Categorical: States: Any psychical object or tool that facilitated the construction of the work (as an array)

Utilized Programs

per K. Elwell: The *Utilized Programs* feature is included as a way of cataloguing the digital software technologies that were pivotal to the construction of the work. What constitutes 'programs' is broadly defined. Where the *Utilized Instruments* feature covers all psychical or materialistic elements, the *Utilized Programs* feature could encompass any digital tools. Some examples may include spatialization software, coding languages or coding environments, multimedia generation software, audio plugins, software intercommunication protocols, and more.

Categorical: States: Any digital or software tools that facilitated the construction of the work (as an array)

Utilized Presets

per. K Elwell: The *Utilized Presents* feature is a dependent feature of both *Utilized Instruments* and *Utilized Programs* features. Some potential classifications in either feature may come with developer-defined presets, and the *Utilized Presents* feature serves to catalogue the presets used. This is done for the benefit of reproducibility and the communication of compositional methods. Some examples could be synthesis patches, impulse responses in commercial reverberation plugins,

Dependent Categorical: States: Any presets of psychical or digital tools that facilitated the construction of the work (as an array)

Output Audio Format

per K. Elwell: *In respect to the observed work's final output audio files…*

Fixed performance materials are delivered in one of a few audio file formats. However, considering digital file sizes and data transfer size restrictions there may be several versions of a work with varying degrees of quality- depending on file compression. The *Output Audio Format* classifies the file format of the observed work.

Including Output Audio Format also implies the existence of an Output Media Format, an Output Sampling Rate, and similar features. However, for this iteration, we are constraining our glossary to only those features which were necessitated for our analysis.

Categorical: States: [Wave, AAC, mp3, etc.]

Spatial Format

per. K. Elwell: *In respect to the observed work's final output audio files…*

A final deliverable in every sound-based composition process is a fixed audio file. The audio file is offered as performance materials, and given the performance situation, can vary in the number of channels. However, rather than structuring a feature around specific channel counts alone, it's better to classify it with the projected *Spatial Formats* and intended listening situations. This also dispels any confusion between conflicting performance environments with identical channels counts. For example, a speaker dome and an Acousmonium that have the same number of audio channels.

Categorical: States: [Stereophonic, Binaural, 5.1, Octophonic, etc.]

Quantitative: (*Corresponding with the options above…*)

Scale: [2, 2, 5.1, 8.1]

II.IV Rhetorical Classification

Listening Discourse

per K. Elwell:

In addition to Simon Emmerson's *Musical Discourse* and *Musical Syntax* dimensions, I suggest the inclusion of an aural feature which broadly classifies the projected Listening Discourse. Electroacoustic music culture has expanded to encompass several genre styles with several aesthetic philosophies. Within this diverse cultural aesthetic, there are occasions when prescriptive listening expectations of the listener are lessened or heightened. Electroacoustic sound art installations for example may harbor no expectation that perceptual conclusions should be derived from the observed work. Rather, they might permit passive, or 'ubiquitous' listening reception discourse.

Conversely, even in concert music scenarios, abstract syntaxes exhibit an extreme range of digestibility. Computer generated works may establish a rigid intra-musical syntax from prescribed parameters determined by the composer, but the performance system may deliver such syntax at a rate that is indigestible to the listener.

Categorical: States: [Ubiquitous, Digestible, Indigestible]

Musical Discourse

per S. Emmerson [19]:

"The listener is confronted with two conflicting arguments: the more abstract musical discourse (intended by the composer) of interacting sounds and their patterns, and the almost cinematic stream of images of real objects being hit, scraped, or otherwise set in motion. …

In my discussion of music, I would like to use the term 'mimesis' to denote the imitation not only of nature but also of aspects of human culture not usually associated directly with musical material. …

This 'abstract musical' substance I wish to redesignate 'aural discourse' to differentiate it clearly from 'mimetic discourse'. The two, to varying degrees in any specific work, combine to make the totality of 'musical discourse.'

Ordinal: Order: [Aural, Combination, Mimetic]

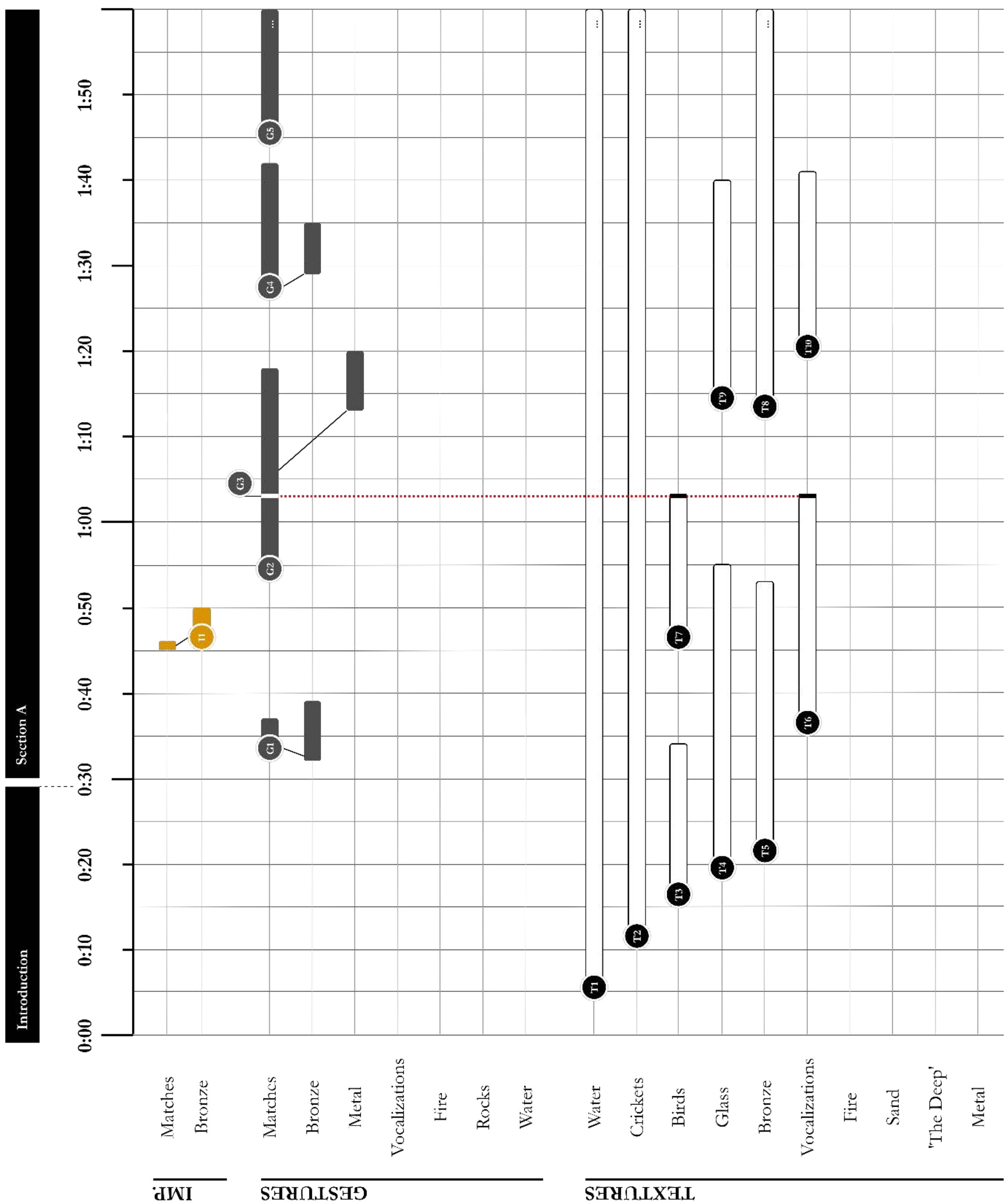
Musical Syntax

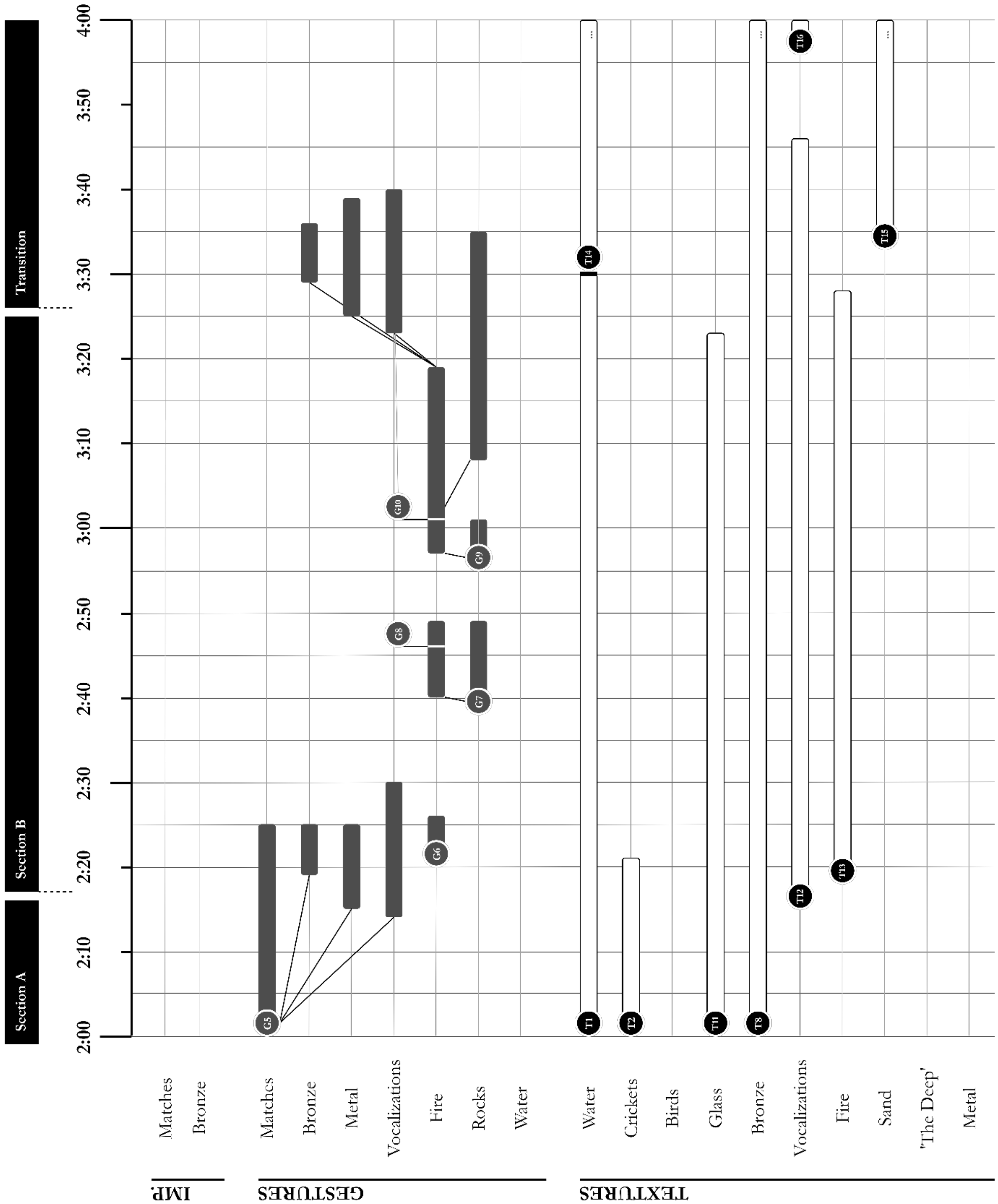
per S. Emmerson [19]: Therefore, in summary, we may see the possible languages of e1ectroacoustic music on tape in two dimensions. From one angle we may hear the music as having either an aural or a mimetic [*Musical Discourse*]; from another, either of these may be organized on ideas of syntax either abstracted from the [source sound] materials or constructed independently from them in an abstract way."

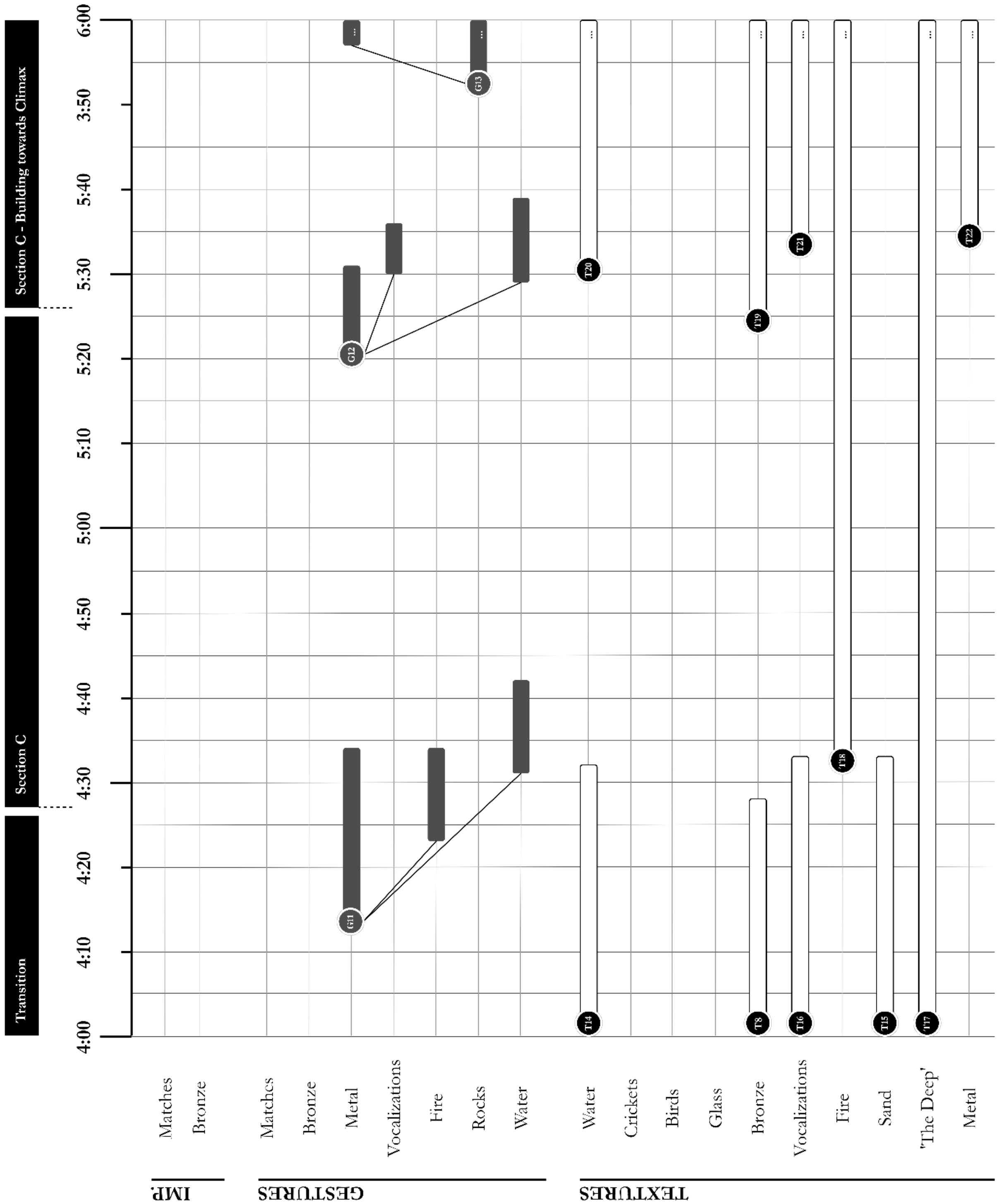
Ordinal: Order: [Abstract, Combination, Abstracted]

A.2 | *What Sleeps Beneath* - Paradigmatic Representations

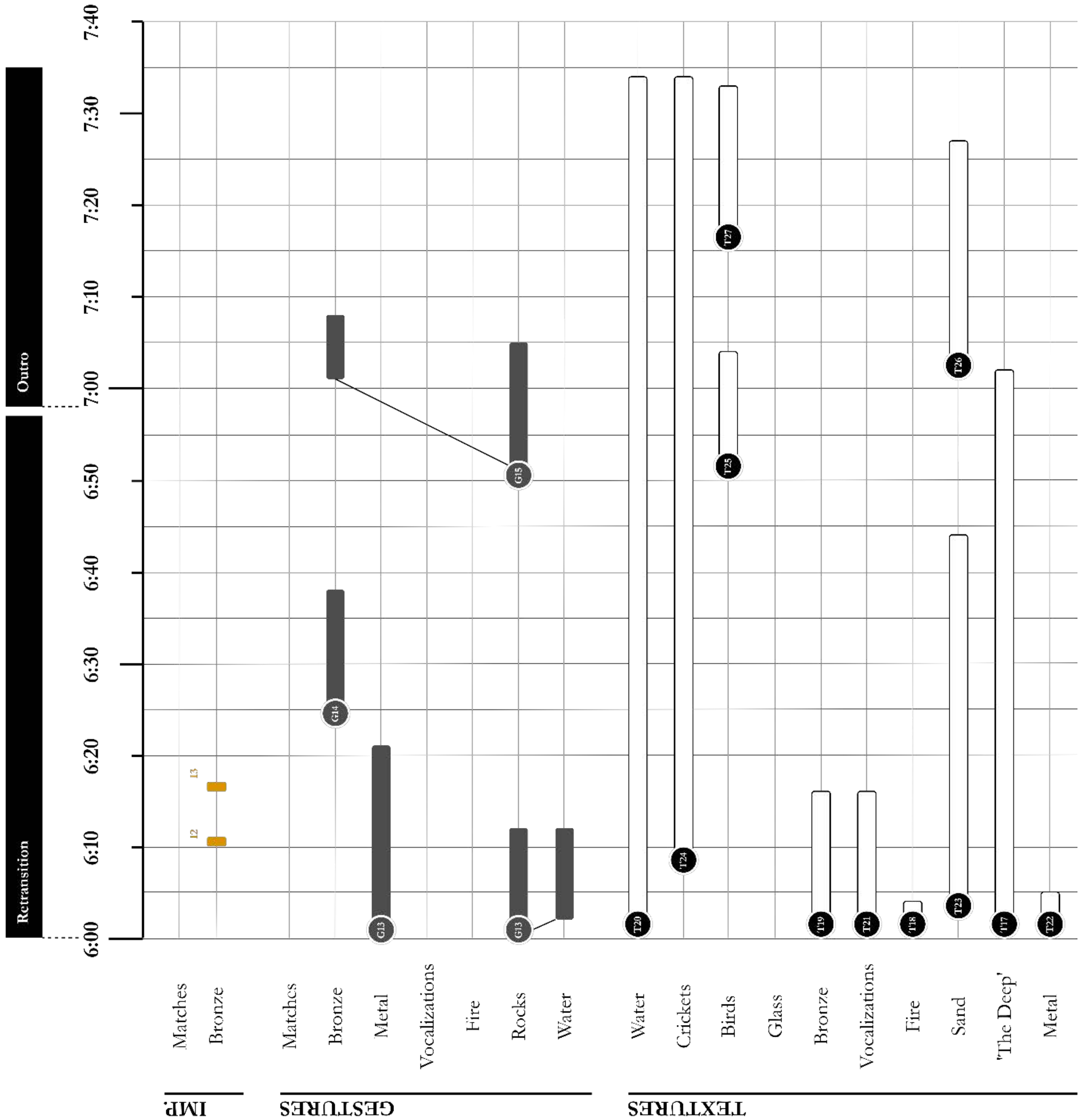
1) Spectromorphological Structure as a function of Identity Subclass




Section A
Section B
Transition
2:00
2:10
2:20
2:30
2:40
2:50
3:00
3:10
3:20
3:30
3:40
3:50
4:00
IMP
Matches
Bronze
GESTURES
Matches
Bronze
Metal
Vocalizations
Fire
Rocks
Water
TEXTURES
Water
Crickets
Birds
Glass
Bronze
Vocalizations
Fire
Sand
'The Deep'
Metal
G5
G6
G7
G8
G9
G10
T1
T2
T11
T8
T12
T13
T14
T15
T16



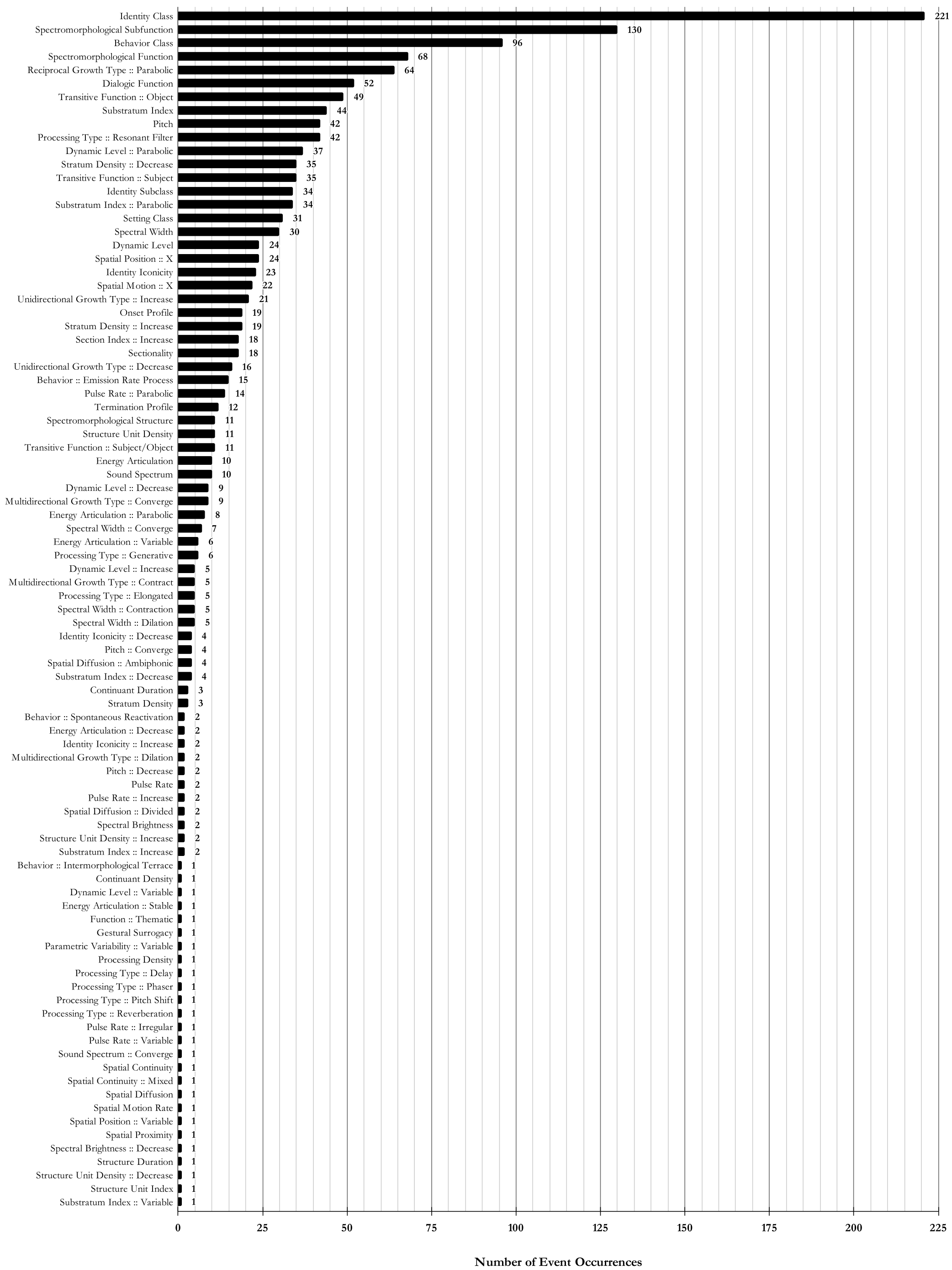
Transition
Section C
Section C - Building towards Climax
4:00
4:10
4:20
4:30
4:40
4:50
5:00
5:10
5:20
5:30
5:40
3:50
6:00
IMP.
Matches
Bronze
GESTURES
Matches
Bronze
Metal
Vocalizations
Fire
Rocks
Water
TEXTURES
Water
Crickets
Birds
Glass
Bronze
Vocalizations
Fire
Sand
'The Deep'
Metal
G11
G12
G13
T14
T8
T16
T15
T17
T18
T19
T20
T21
T22


Retransition
Outro
6:00
6:10
6:20
6:30
6:40
6:50
7:00
7:10
7:20
7:30
7:40
IMP.
Matches
Bronze
GESTURES
Matches
Bronze
Metal
Vocalizations
Fire
Rocks
Water
TEXTURES
Water
Crickets
Birds
Glass
Bronze
Vocalizations
Fire
Sand
'The Deep'
Metal
I2
I3
G13
G13
G14
G15
T17
T18
T19
T20
T21
T22
T23
T24
T25
T26
T27

A.3 | *What Sleeps Beneath* - Event Onset Classification Data

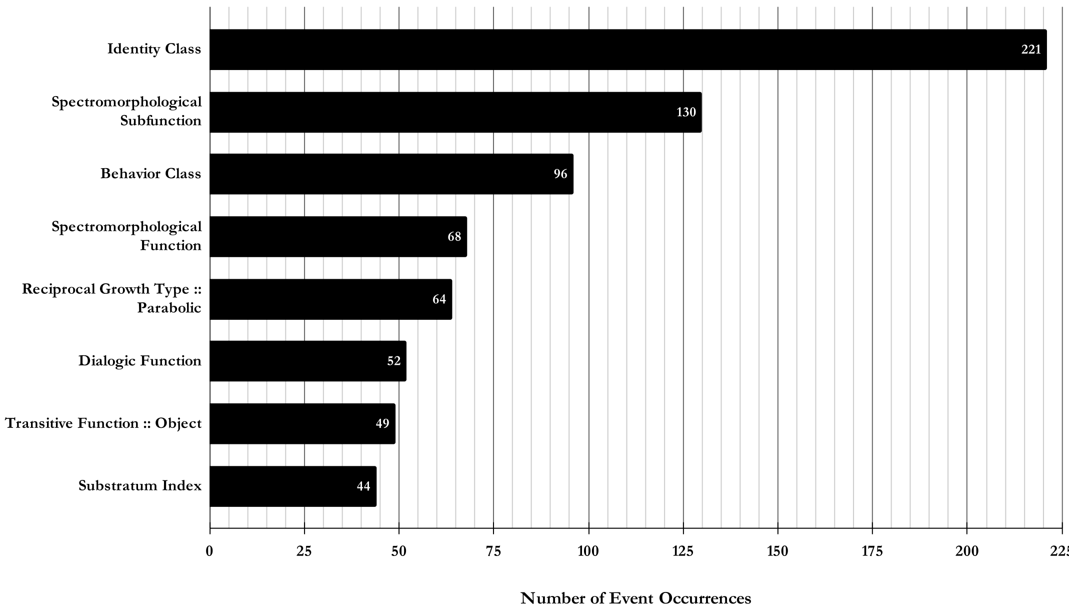
Histogram of Event Occurrence Frequency by Aural Feature

(out of 236 Event Onsets) (89 Total Aural Features)



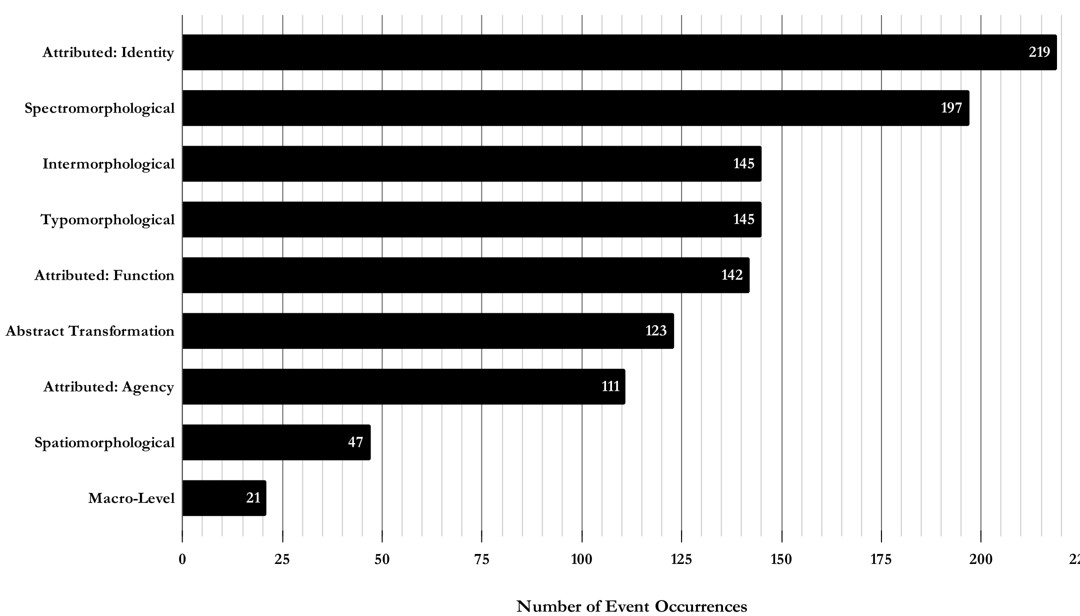
Histogram of Event Occurrence Frequency by Aural Feature

(out of 236 Event Onsets) (90th Percentile) (of 89 Total Aural Features)



Histogram of Event Occurrence Frequency by Taxonomic Family

(Out of 236 Event Onsets)



#	Time	Group	Description / Notes	Taxonomic Family	Aural Features
M1	00:04.8	"Water"	Anterior Onset of "Water" class texture [T1] - Opens the piece	Spectromorphological Macro-Level Attributed: Identity	Spectromorphological Function Sectionality Section Index :: Increase Identity Class Setting Class
M112	00:10.8	"Cricket"	Anterior Onset / Onset of [T2] texture First appearance of "Cricket" class Masked by "Swell" behavior of "Water" class [T2]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Function Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Transitive Function :: Object
M2	00:14.0	"Water"	Onset of [T1] - an emerging dynamic "swell" with expanded spectrum Includes spatial motion Initiates transitive action upon [T2] spawns further texture First instance of "Swell" action - thematic action throughout the work	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectral Width :: Dilation Spectromorphological Function Substratum Index Spatial Position :: X Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Transitive Function :: Subject Function :: Thematic
M106	00:15.2	"Soundscape"	Onset of [T3] "Bird" class static texture Onset is abrupt, does not adhere to the same terraced "swell" operation as other textures Onset of [T3] is masked by the "Swell" behavior of [T1] "Water" class texture Spatial emphasis trends L	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency	Onset Profile Dynamic Level :: Parabolic Spectromorphological Function Substratum Index :: Parabolic Spatial Position :: X Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Transitive Function :: Object
M134	00:18.1	"Glass"	First Appearance of "Glass" class [T3] Anterior Onset [T3] Receives transitive energy from [T1] "Waves" class	Spectromorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Subfunction Identity Class Transitive Function :: Object

M239	00:19.8	"Cricket"	Spatial Motion R Begin of perceive process affecting Energy Articulation of "Cricket" class [T2] [T2] moves to foregrounded perception with onset of emission process	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency	Energy Articulation :: Parabolic Pulse Rate :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior :: Emission Rate Process
M127	00:21.0	"Bronze"	Anterior Onset of [T5] "Bronze" class texture Entrance masked by peak of [T2] "Cricket" class Clearer perceivable pitch, stable	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Pitch Sound Spectrum Energy Articulation Sound Spectrum Spectromorphological Subfunction Identity Class Substratum Index Transitive Function :: Object
M143	00:22.7	"Cricket"	Peak of "Cricket" class [T2] Energy Articulation parabolic growth process Energy articulation moving back towards iconic representation Spatial Motion returns L Apex of [T2] coincides the onset of [T4]	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Energy Articulation :: Parabolic Pulse Rate :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Spatial Motion :: X Unidirectional Growth Type :: Increase Reciprocal Growth Type :: Parabolic Identity Class Identity Iconicity :: Increase Setting Class Behavior :: Emission Rate Process Dialogic Function
M201	00:24.0	"Water"	Medial Valley 1 of "Water" class [T1] Intransitive action of [T2] "Swell" behavior masks perception [T1] Emerging resonant implications - Offers foundational pitch.	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Pitch Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Processing Type :: Resonant Filter Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Transitive Function :: Object

M113	00:28.8	"Cricket"	"Cricket class [T2] Recedes from foregrounded perception to static accompaniment [T4] masks [T2] recession as it takes foreground After spatial motion L - an easy shift back towards C - Ambiphonic	Typomorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Function	Energy Articulation Reciprocal Growth Type :: Parabolic Substratum Index :: Decrease Spatial Position :: X Spatial Diffusion :: Ambiphonic Unidirectional Growth Type :: Decrease Identity Class Setting Class Transitive Function :: Object
M135	00:31.1	"Glass"	"Glass" class [T3] exhibits "Swell" behavior [T3] Initiates transitive energy - preparing for onset of [G1]	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Subject
M53	00:32.6	"FG-A"	Anterior Onset to "Match" class [G1] [G1] exhibits the "Strike Match" behavior class	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class
M107	00:34.6	"Soundscape"	Termination of [T3] "Bird" class static texture Termination of [T3] is masked by the Onset Termination of [G1] "Match" class gesture	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Function Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Setting Class Transitive Function :: Object
M161	00:35.6	"Vocal"	Anterior Onset / Onset of "Vocal" class texture [T6] First appearance of "Vocal" Class Receives transitive energy from termination of [G1] :: Triggered Low frequency content emerges and builds towards subtle peak - "Swell" behavior [T6] is less dynamic and offers little development. Backgrounded support texture.	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Pitch Sound Spectrum Dynamic Level :: Parabolic Energy Articulation Spectromorphological Subfunction Structure Unit Density :: Increase Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Object

M175	00:35.6	"Bronze"	Second Anterior Onset for new "Bronze" class [T5] low frequency member Second Anterior Onset coincides with the "Match" class anterior onset of [G1] Low frequency member (2) is a component of [G1] Low frequency (2) begins initiating the "Swell" behavior class	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch Spectral Width Dynamic Level :: Parabolic Spectromorphological Subfunction Structure Unit Density :: Increase Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function
M4	00:35.6	"FG-A"	Onset of "Match" class [G1] "Strike Match" behavior succeeds with defined onset - i.e., "Lit" [G1] initiates transitive energy :: Triggers [G1] triggers the abrupt termination of "Bird" class [T3] [G1] masks the anterior onset of "Vocal" class [T6]	Typomorphological Spectromorphological Attributed: Identity Attributed: Agency Attributed: Function	Onset Profile Spectromorphological Subfunction Identity Class Behavior Class Transitive Function :: Subject
M176	00:36.5	"Bronze"	Peak of [T5] "Bronze" class "Swell" behavior is rearticulated with a sharp onset Sharp onset is a component of [G1] Sharp onset coincides with the "Match" class termination of [G1] Onset at peak of "Swell" Behavior masks the entrance of a third frequency member Spectral width of Frequency 1 narrows following peak of "Swell" behavior high frequencies are removed due to reverberation resonance Onset of [G1] masks the entrance of new frequency member (3)	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch :: Converge Spectral Width :: Contraction Onset Profile Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Processing Type :: Reverberation Reciprocal Growth Type :: Parabolic Multidirectional Growth Type :: Contract Multidirectional Growth Type :: Converge Identity Class Behavior Class Dialogic Function Transitive Function :: Subject/Object
M203	00:39.1	"Water"	Anterior motion of [T1] - "Water" class texture building Anterior motion follows termination of [G1] Moving to foregrounded perception	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Substratum Index :: Increase Identity Class Setting Class Transitive Function :: Object

M144	00:45.3	"Water"	"Water" class [T1] medial event onset - Coincides with transitive energy of [I1] Peak of [T1] "Swell" Behavior	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Dialogic Function
M177	00:45.3	"Glass"	Second "Glass" class [T3] "Swell" Behavior [T3] coincides with transitive energy of onset [I1]	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function
M240	00:45.3	"Bronze"	Onset of Foregrounded "Bronze" class impulse Component member of impulse [I1] Termination of "Bronze" class [T5] [I1] Transitive energy - Triggers narrowing of Frequency 3 spectral width	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectral Width :: Contraction Spectromorphological Function Spectromorphological Subfunction Substratum Index :: Increase Unidirectional Growth Type :: Increase Multidirectional Growth Type :: Contract Identity Class Transitive Function :: Subject/Object
M5	00:45.3	"FG-A"	Onset of "Match" class impulse [I1] [I1] exhibits the "Blow out" behavior - Creates associative agency following [G1] [I1] "Blow out" behavior initiates transitive energy :: Triggers [I1] triggers "Cricket" class emission rate behavior [I1] triggers the onset of "Bird" class [T7] [I1] triggers the termination of "Glass" class [T4] and "Bronze" class [T5] [I1] coincides with "Water" class [T1] "Swell" Behavior	Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Subfunction Identity Class Behavior Class Transitive Function :: Subject Dialogic Function
M7	00:45.3	"Vocal"	Medial Peak of "Vocal" class [T6] Coincides with [I1] Utilizes "Swell" Behavior Class - Dynamic Level	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function

M144	00:45.3	"Soundscape"	Onset of [T7] "Bird" class static texture Onset is abrupt again [T7] receives transitive energy from [I1] "Match" class impulse :: Triggered Spatial emphasis trending further L	Typomorphological Spectromorphological Intermorphological Spatiomorphological Attributed: Identity Attributed: Function	Onset Profile Spectromorphological Function Stratum Density :: Increase Spatial Position :: X Identity Class Setting Class Transitive Function :: Object
M114	00:50.3	"Cricket"	Second instance of "Cricket" class [T2] Energy Articulation behavior [T2] returns to foregrounded perception in wake of [G1] and [I1] [T2] Initiates transitive energy Follows parabolic pattern Spatial Motion moves from L to R This instance includes greater resonance processing approaching apex	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Energy Articulation :: Parabolic Pulse Rate :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Spatial Motion :: X Processing Type :: Resonant Filter Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior :: Emission Rate Process Transitive Function :: Subject
M204	00:50.3	"Water"	Medial Valley 2 of "Water" class [T1] "Cricket" class [T2] "Swell" behavior masks perception [T1] More low frequency energy in [T1] resonance	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Spectral Width :: Dilation Spectral Brightness :: Decrease Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Identity Class Setting Class Behavior Class Transitive Function :: Object
M128	00:52.7	"Bronze"	Posterior Terminus of "Bronze" class [T5]	Spectromorphological Attributed: Identity	Spectromorphological Subfunction Identity Class
M194	00:53.4	"Glass"	Termination of "Glass" class [T3] coincides with the onset of [G1]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Dialogic Function
M6	00:54.2	"FG-A"	Abrupt Onset to "Match" class [G2] [G2] Onset masks the posterior termination of [T4] and [T5] [G2] exhibits the "box shake" behavior Spatial motion from C to L	Typomorphological Spectromorphological Intermorphological Spatiomorphological Attributed: Identity Attributed: Agency Attributed: Function	Onset Profile Spectromorphological Subfunction Substratum Index Spatial Position :: X Identity Class Behavior Class Transitive Function :: Subject

M148	00:58.6	"Cricket"	Spatial motion returns to L then to C Ambiphonic "Cricket" class [T2] concludeds emission rate behavior Resonance Processing recedes as "Cricket" Class [T2] returns to iconic Return to static coincides with [G2]	Typomorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Energy Articulation :: Parabolic Pulse Rate :: Parabolic Substratum Index :: Parabolic Spatial Position :: X Spatial Diffusion :: Ambiphonic Processing Type :: Resonant Filter Reciprocal Growth Type :: Parabolic Identity Class Identity Iconicity :: Increase Setting Class Behavior :: Emission Rate Process Dialogic Function
M54	00:59.0	"FG-A"	Onset of "Match" class [G2] Onset and following continuation contain non-iconic representation Though non-iconic, timbre is preserved [G2] exhibits "Shaking Matchbox" and "Dropping Matches" behaviors [G2] initiates transitive energy :: Triggers [G2] Triggers the termination of "Cricket" class emission rate behavior	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Sound Spectrum Onset Profile Spectromorphological Subfunction Substratum Index Identity Class Identity Iconicity :: Decrease Behavior Class Transitive Function :: Subject
M162	01:03.0	"Vocal"	Termination / Posterior Termination of "Vocal" class texture [T6] Receives transitive energyt from termination of [G2]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Transitive Function :: Object
M8	01:03.0	"FG-A"	Primary point of Termination for "Match" class [G2]	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class
M231	01:03.8	"FG-A"	Secondary point of termination initiates transitive energy :: Triggers Termination of "Match" class [G2] triggers the Anterior Onset of "Match" class [G3] Anterior Onset of [G3] exhibits the "Strike Match" behavior	Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Subfunction Substratum Index :: Decrease Identity Class Behavior Class Transitive Function :: Subject/Object
M55	01:03.8	"Soundscape"	Termination of [T7] "Bird" class static texture Termination of [T7] is Triggered by the Onset of [G2] / Onset of [G3]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Setting Class Transitive Function :: Object
M56	01:06.4	"FG-A"	"Match" class [G3] "Strike Match" behavior is unsuccessful - no pronounce arrival point	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class

M205	01:07.1	"Water"	Anterior motion to Medial Event 2 of "Water" class [T1] Coincides with Anterior Onset of [G3] "Water" class [T1] exhibits subtle "Swell" behavior Spatialization to R - anticipating spatial motion	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Spatial Position :: X Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Dialogic Function
M57	01:07.1	"FG-A"	"Match" class [G3] attempts a second "Strike Match" behavior	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class
M129	01:07.7	"Bronze"	Anterior onset of "Bronze" class [T8] [T8] Anterior onset is masked by second anterior reactivation onset of "Match" class [G3] [T8] returns with stable frequency 1	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Pitch Sound Spectrum Energy Articulation Spectromorphological Subfunction Stratum Density Identity Class Transitive Function :: Object
M136	01:08.5	"Glass"	Second onset of "Glass" class [T9] Receives transitive energy from the Termination of [G3]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Function Stratum Density :: Increase Identity Class Transitive Function :: Object
M58	01:09.5	"FG-A"	"Match" class [G3] "Strike Match" behavior is unsuccessful again	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class
M9	01:10.1	"FG-A"	"Match" class [G3] attempts a third "Strike Match" behavior	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class
M10	01:12.9	"FG-A"	Onset of "Match" class [G3] Onset of [G3] initiates transitive energy :: Triggers Onset of [G3] Triggers the termination of "Bird" class [T7] Onset of [G3] masks the anterior onset of "Bronze" class [T8] and "Glass" class [T9] [G3] "Match Strike" reaches moderate success - initiates transitive energy - continuant reaction	Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Subfunction Identity Class Behavior Class Transitive Function :: Subject
M163	01:14.5	"Vocal"	Anterior Onset / Onset of "Vocal" class [T10] is triggered by termination of [G3]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Stratum Density :: Increase Identity Class Transitive Function :: Object
M216	01:14.5	"FG-C"	First appearances of "Metal Components" class Anterior Termination to [G3]	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Subfunction Stratum Density Identity Class

M59	01:14.5	"FG-A"	Anterior Termination point of "Match" class [G3] [G3] low frequency timbre crescendos into another "Strike Match" behavior	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity Attributed: Agency	Pitch Dynamic Level :: Increase Spectromorphological Subfunction Unidirectional Growth Type :: Increase Identity Class Behavior Class
M206	01:16.1	"Water"	Medial Event 2 of "Water" class [T1] and peak of "Swell" behavior Coincides with Termination of [G3] Increased resonance	Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Processing Type :: Resonant Filter Unidirectional Growth Type :: Increase Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Dialogic Function
M11	01:16.9	"FG-A"	Termination of "Match" class [G3] [G3] Termination coincides with the onset of [T8] and [T9] [G3] Termination coincides with "Water" class [T1] "Swell" behavior [G3] Termination masks the anterior onset of "Vocal" class [T10] [G3] "Strike Match" behavior end with abrupt termination	Typomorphological Spectromorphological Attributed: Identity Attributed: Agency Attributed: Function	Termination Profile Spectromorphological Subfunction Identity Class Behavior Class Transitive Function :: Subject Dialogic Function Transitive Function :: Subject
M215	01:16.9	"FG-C"	Partial "Swell" behavior to Termination: Resonance Initiates transitive energy	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Agency Attributed: Function	Termination Profile Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Behavior Class Transitive Function :: Subject
M130	01:19.0	"Bronze"	Peak of "Swell" behavior of "Bronze" class [T8] frequency 1	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency	Pitch Dynamic Level :: Parabolic Spectromorphological Subfunction Structure Unit Density Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class

M151	01:20.2	"Cricket"	[T2] "Cricket" class adopts the "Swell" behavior class [T2] returns to foregrounded perception in wake of [G3] Spatial Emphasis R Increased Resonance Processing into the peak of "Swell" No prominent change in emission	Typomorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency	Dynamic Level :: Parabolic Substratum Index :: Parabolic Spatial Motion :: X Processing Type :: Resonant Filter Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class
M178	01:21.8	"Bronze"	"Bronze" class [T8] frequency 3 spawns from recession of [T8] frequency 1 "Swell" behavior "Bronze" class [T8] frequency 3 immediate begins trajectory towards "Swell" behavior	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch Dynamic Level :: Parabolic Spectromorphological Subfunction Structure Unit Density Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Subject/Object
M195	01:21.8	"Glass"	Perceived growth process in Dynamic Level :: Increase	Typomorphological Abstract Transformation Attributed: Identity	Dynamic Level :: Increase Unidirectional Growth Type :: Increase Identity Class
M12	01:27.3	"FG-A"	Anterior Onset of "Match" class [G4] Anterior Onset of [G4] exhibits "Strike Match" behavior "Strike Match" behavior is supported by a processed instance - removing iconicity	Spectromorphological Abstract Transformation Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Structure Unit Density Processing Type :: Generative Processing Type :: Resonant Filter Identity Class Identity Iconicity Behavior Class
M13	01:30.2	"FG-A"	Onset of "Match" class [G4] "Strike Match" behavior is successful - initiates transitive energy - continuant reaction Continuant function exhibits more erratic spatial motion across stereo field Continuant function has a longer duration	Typomorphological Spectromorphological Spatiomorphological Attributed: Identity Attributed: Agency Attributed: Function	Energy Articulation Spectromorphological Subfunction Continuant Duration Spatial Position :: X Spatial Motion Rate Spatial Continuity Identity Class Behavior Class Transitive Function :: Subject

M179	01:30.2	"Bronze"	"Bronze" class [T8] frequency 3 reaches peaks of "Swell" behavior "Bronze" class [T8] Frequency 3 "Swell" behavior coincides with the onset of [G4] "Bronze" class [T8] "swell" behavior is accentuated by a sharp impulse sharp "Bronze" class impulse is Onset component of [G4] gesture "Bronze" class [T8] frequency 3 begins receding following onset of [G4]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch Onset Profile Dynamic Level :: Parabolic Spectromorphological Function Spectromorphological Subfunction Structure Unit Density Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function
M196	01:30.2	"Glass"	"Glass" class "Swell" behavior coincides with onset of [G4]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function
M120	01:31.4	"Vocal"	Medial Peak of "Vocal" class [T10] Coincides with Onset of [G4] Utilizes "Swell" Behavior Class - Dynamic Level	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function
M149	01:32.0	"Cricket"	Medial Valley of "Cricket" class [T2] masked by onset / continuation of [G4] Recedes from Foregrounded perception Anterior motion of emission change process	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Energy Articulation :: Parabolic Pulse Rate :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior :: Emission Rate Process Transitive Function :: Object

M116	01:34.9	"Cricket"	"Cricket" class [T2] Emission rate process reaches a premature apex of parabolic motion [T2] Emission change supports continuation function of [G4]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Energy Articulation :: Parabolic Pulse Rate :: Parabolic Spectromorphological Function Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior :: Emission Rate Process Dialogic Function
M207	01:34.9	"Water"	Medial Valley 3 of "Water" class [T1] Continuant phase of [G4] masks perception of [T1] Iconicity of "Water" class is diminishing Low Frequency resonance is become the predominant character. Spatial focus L	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectral Width Spectral Brightness Spectromorphological Function Spectromorphological Subfunction Structure Unit Index Spatial Position :: X Processing Type :: Resonant Filter Identity Class Identity Iconicity :: Decrease Setting Class Transitive Function :: Object
M115	01:37.1	"Cricket"	"Cricket" class [T2] Emission process precedes a second "Swell" motion as an anterior action Resonance processing of [T2] increases with Dynamic Level of "Swell" behavior Spatial motion moves from R to L with "Swell" behavior "Swell" action of [T2] supports Anterior Termination for [G4]	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Energy Articulation :: Parabolic Pulse Rate :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Spatial Motion :: X Processing Type :: Resonant Filter Unidirectional Growth Type :: Increase Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Behavior :: Emission Rate Process Dialogic Function
M60	01:39.1	"FG-A"	Anterior termination point for "Match" class [G4] [G4] Spectral width beginning at Anterior Termination is more pronounce - More low frequency energy	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity	Pitch Spectral Width :: Dilation Spectromorphological Subfunction Multidirectional Growth Type :: Dilation Identity Class

M14	01:40.7	"FG-A"	Termination of "Match" class [G4] Abrupt termination of "Match" class [G4] implies "Blow out/Snuffed out" behavior [G4] Termination initiates transitive energy :: Triggers [G4] triggers the termination of "Glass" class [T9] and "Vocal" class [T10]	Typomorphological Spectromorphological Attributed: Identity Attributed: Agency Attributed: Function	Termination Profile Spectromorphological Function Identity Class Behavior Class Transitive Function :: Subject
M150	01:40.7	"Cricket"	[T2] "Cricket" class "Swell" behavior reaches apex of parabolic motion Coincides with the Termination of [G4] Maintains foreground perception in wake of [G4]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Function Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Dialogic Function
M164	01:40.7	"Vocal"	Termination /Posterior Terminus of "Vocal" class [T10] Receives transitive agency from termination of [G4] :: Triggered	Spectromorphological Intermorphological Attributed: Function	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Transitive Function :: Object
M197	01:40.7	"Glass"	Termination of "Glass" class [T9] coincides with termination of [G4]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Function Stratum Density :: Decrease Identity Class Dialogic Function
M15	01:45.7	"FG-A"	Anterior Onset of "Match" class [G5] [G5] exhibits the "Strike Match" behavior "Strike Match" behavior is supported by multiple processed instance - further from iconic Processed instances show increased resonance over time	Spectromorphological Abstract Transformation Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Structure Unit Density Unidirectional Growth Type :: Increase Processing Type :: Resonant Filter Unidirectional Growth Type :: Increase Identity Class Identity Iconicity Behavior Class
M152	01:48.5	"Cricket"	Conclusion of [T2] "Cricket" class "Swell" behavior Recedes from foregrounded perception to accompanimental texture Dissipation masked by Anterior Onset / Onset of [G5]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Transitive Function :: Object
M61	01:48.5	"FG-A"	"Match" class [G5] "Strike Match" behavior is unsuccessful - no pronounce arrival point	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class

M16	01:49.1	"FG-A"	"Match" class [G5] attempts a second "Strike Match" behavior	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class
M180	01:49.1	"Bronze"	Termination of "Bronze" class [T8] frequency 3 coincides with the termination of [G4] [T8] frequency 1 lingers near inaudibly - backgrounded [T8] frequency 1 begins to emerge more perceivably	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Pitch Dynamic Level :: Increase Spectromorphological Function Structure Unit Density Substratum Index :: Decrease Unidirectional Growth Type :: Increase Identity Class Dialogic Function
M232	01:51.7	"FG-A"	"Match" class [G5] "Strike Match" behavior is unsuccessful again	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class
M17	01:52.2	"FG-A"	"Match" class [G5] attempts a third "Strike Match" behavior	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Identity Class Behavior Class
M18	01:55.1	"FG-A"	"Match" class [G5] "Match Strike" is successful - initiates transitive energy	Spectromorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Subfunction Identity Class Behavior Class Transitive Function :: Subject
M138	01:59.0	"Water"	Anterior motion moving towards Medial Event 3 of "Water" class [T1] Continuant phase of [G5] masks initial perception of [T1] [T1] supports the trajectory of the continuant phase of [G5] Iconic representation of "Water" class marks the anterior motion	Spectromorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectromorphological Subfunction Unidirectional Growth Type :: Increase Identity Class Identity Iconicity Transitive Function :: Object Dialogic Function
M62	02:02.7	"FG-A"	"Match" class [G5] Continuant function is noticeably longer and more dense [G5] Continuant is partly remote generate texture and partly iconic [G5] Continuant has more foregrounded remote sources	Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Spectromorphological Function Structure Unit Density Continuant Duration Substratum Index Processing Type :: Generative Identity Class Identity Iconicity
M198	02:10.5	"Glass"	Third onset of "Glass" class [T11] masked by continuation of [G5]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Function Stratum Density :: Increase Identity Class Transitive Function :: Object

M153	02:11.4	"Cricket"	Point of Anterior Termination for "Cricket" class [T2] Perception of [T2] emission rate process Coincides with Anterior Termination of [G5]	Spectromorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Subfunction Identity Class Setting Class Behavior :: Emission Rate Process Dialogic Function
M63	02:11.4	"FG-A"	"Match" [G5] Continuant exhibits "Dropping Matches" and "Shaking Matchbox" behaviors Iconic behaviors take foregrounded perception	Spectromorphological Intermorphological Attributed: Identity Attributed: Agency	Spectromorphological Function Substratum Index Identity Class Identity Iconicity Behavior Class
M181	02:13.5	"Bronze"	Reappearance of "Bronze" class [T8] frequency 3 Slow emergence of new frequencies (4 and 5) simultaneously "Bronze" class [T8] now has nonfunctional harmonic implications (static) [T8] increased unit density coincides with anterior termination of [G5]	Typomorphological Attributed: Identity Attributed: Function	Pitch Sound Spectrum Spectral Width Energy Articulation Structure Unit Density Dialogic Function
M208	02:13.5	"Water"	Anterior motion toward Medial Event 3 of "Water" class [T1] - "Swell" Behavior Anterior movement coincides with the anterior terminus of [G5] Resonance also begins contributing to anterior motion	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Processing Type :: Resonant Filter Unidirectional Growth Type :: Increase Reciprocal Growth Type :: Parabolic Behavior Class Dialogic Function
M122	02:14.7	"Vocal"	New High frequency "Vocal" class content supports anterior termination of [G5]	Typomorphological Spectromorphological Attributed: Function	Spectral Width :: Dilation Spectromorphological Subfunction Dialogic Function
M154	02:15.4	"Cricket"	Apex of [T2] "Cricket" class emission rate process Begins returning to static Energy Articulation Increasing Resonance processing in "Swell" Behavior Coincides with Reactivation of Anterior Termination of [G5]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Energy Articulation :: Parabolic Pulse Rate :: Parabolic Spectromorphological Subfunction Processing Type :: Resonant Filter Unidirectional Growth Type :: Increase Reciprocal Growth Type :: Parabolic Identity Class Identity Iconicity Behavior :: Emission Rate Process Behavior Class Dialogic Function

M64	02:15.4	"FG-A"	Anterior Termination to "Match" class [G5] Anterior Termination of [G5] coincides with anterior onset of "Glass" class [T11] Anterior Motion has noticeably wider Spectral Width - Increased low frequency energy Obvious crescendo action into the termination of [G5]	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectral Width :: Dilation Dynamic Level :: Increase Spectromorphological Subfunction Unidirectional Growth Type :: Increase Multidirectional Growth Type :: Dilation Identity Class Dialogic Function
M217	02:15.9	"FG-C"	Second appearance of "Metal Components" class Anterior Termination to [G5]	Spectromorphological Attributed: Identity	Spectromorphological Subfunction Identity Class
M165	02:20.0	"Vocal"	Onset of [T5] and Section B "Vocal" class texture [T12] follow established formula New phonetic-esque "Vocal" class content assists in the termination of [G5] New "Vocal" class archetype has a downward motion on pitch	Typomorphological Spectromorphological Intermorphological Macro-Level Abstract Transformation Attributed: Identity Attributed: Function	Pitch :: Decrease Spectromorphological Function Stratum Density :: Increase Sectionality Section Index :: Increase Unidirectional Growth Type :: Decrease Identity Class Identity Subclass Dialogic Function
M182	02:20.1	"Bronze"	Low Frequency (2) returns with a sharp impulse Frequency 2 is a Termination component of [G5] Termination of [G5] marks the causal transition to Section B Frequencies (1, 3-5) all perform a unified "Swell" behavior The peak of the "Swell" behavior coincides with the termination of [G5] and Section A	Typomorphological Spectromorphological Macro-Level Abstract Transformation Attributed: Agency Attributed: Function	Pitch Onset Profile Dynamic Level Spectromorphological Function Sectionality Section Index :: Increase Reciprocal Growth Type :: Parabolic Behavior Class Dialogic Function
M96	02:20.1	"FG-C"	"Swell" to Termination Resonance Initiates transitive energy signaling the arrival of Section B	Typomorphological Intermorphological Macro-Level Attributed: Agency Attributed: Function	Dynamic Level Termination Profile Stratum Density :: Decrease Sectionality Section Index :: Increase Reciprocal Growth Type :: Parabolic Behavior Class Transitive Function :: Subject

M19	02:20.3	"FG-A"	Termination of "Match" class [G5] and Section A Termination does not imply "Blow out" or "Snuff out" behavior Termination of [G5] coincides with the "Swell" behavior in multiple voices Termination of [G5] initiates transitive energy :: Triggers Termination of [G5] triggers the onset of "Fire" class texture [T13] Termination of [G5] triggers the onset of "Vocal" class texture [T12] Termination of [G5] triggers the termination of "Cricket" class [T2] "Fire" class [T13] takes foregrounded perception "Fire" class [T13] saturates the full spectrum [T13] show no clear spatial pattern - Ambiphonic projection	Typomorphological Spectromorphological Intermorphological Spatiomorphological Macro-Level Attributed: Identity Attributed: Function	Sound Spectrum Spectral Width Spectromorphological Function Substratum Index Spatial Diffusion Stratum Density :: Decrease Identity Class Transitive Function :: Subject Dialogic Function
M199	02:20.4	"Glass"	"Glass" class "Swell" in Dynamic level Initiates transitive energy signally arrival of Section B	Typomorphological Macro-Level Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Subject
M209	02:20.4	"Water"	Medial event 3 of "Water" Class [T1] - largest medial event yet - Peak of "Swell" Behavior Coincides with the termination of [G5] and Section A	Typomorphological Spectromorphological Intermorphological Macro-Level Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Spectromorphological Subfunction Sectionality Section Index :: Increase Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Dialogic Function
M65	02:20.6	"FG-A"	"Fire" class [T13] exhibits dynamic reactivation impulses that are accentuated with processing	Spectromorphological Abstract Transformation Attributed: Identity	Spectromorphological Subfunction Processing Type :: Resonant Filter Processing Type :: Delay Identity Class Setting Class
M117	02:21.0	"Cricket"	Abrupt Termination of "Cricket" class [T2] Terminates in Resonant state - terminated mid-"Swell" Coincides with the Termination of [G5] and Section A	Typomorphological Spectromorphological Intermorphological Macro-Level Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Termination Profile Dynamic Level Spectromorphological Function Sectionality Section Index :: Increase Reciprocal Growth Type :: Parabolic Identity Class Setting Class Behavior Class Dialogic Function

M166	02:21.0	"Vocal"	new "vocal" class archetype "descends" in pitch	Typomorphological Abstract Transformation Attributed: Agency	Pitch Unidirectional Growth Type :: Decrease Identity Class Identity Subclass Behavior Class
M21	02:26.1	"FG-A"	Onset of "Fire" class [G6] [G6] functions as a reactivation impulse that is spawned from [T13]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Function Stratum Density :: Increase Identity Class Transitive Function :: Subject/Object
M241	02:26.1	"Bronze"	New "Bronze" class frequency (6) spawns from the posterior termination of [G5] and Section A Onset of [T8] frequency 6 is masked by reactivation gesture [T13] "Fire" Class	Typomorphological Spectromorphological Macro-Level Attributed: Identity Attributed: Function	Pitch Spectromorphological Subfunction Sectionality Section Index :: Increase Identity Class Transitive Function :: Object
M167	02:30.9	"Vocal"	Posterior terminus of [G5] and Archetype 2 "Vocal" content Archetype 1 "vocal content" persists with typical formula providing static support pedal	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Structure Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Identity Subclass
M210	02:30.9	"Water"	Iconic representation of "Water" class dissipates quicker than its resonance Spatial motion moves R	Spatiomorphological Abstract Transformation Attributed: Identity	Spatial Motion :: X Unidirectional Growth Type :: Decrease Processing Type :: Resonant Filter Identity Class Identity Iconicity :: Decrease
M23	02:38.2	"FG-A"	Anterior Onset to [G7] Introduction to "Rock" Identity Class of group "Nature" Anterior Onset of [G7] emerges from backgrounded position Anterior Onset of [G7] Coincides with narrowing of spectral width in "Glass" class [T11]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectral Width :: Contraction Spectromorphological Subfunction Substratum Index Multidirectional Growth Type :: Contract Identity Class Dialogic Function
M211	02:38.8	"Water"	Spatial motion returns to C Resonant "Water" class becomes more foregrounded, sonorous, and powerful	Typomorphological Spatiomorphological Intermorphological Abstract Transformation Attributed: Identity	Pitch Sound Spectrum Dynamic Level Substratum Index Spatial Motion :: X Processing Type :: Resonant Filter Unidirectional Growth Type :: Increase Identity Class

M22	02:40.4	"FG-A"	Onset of [G7] [G7] contains "Fire" class [T13] reactivation impulse - a la [G6] [G7] reactivation impulse is more foregrounded and longer [G7] reactivation impulse also exhibits resonance processing - reminiscent of "Match" class	Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Spectromorphological Function Structure Duration Substratum Index Stratum Density :: Increase Processing Type :: Resonant Filter Identity Class
M24	02:47.1	"FG-A"	Onset of "Fire" class [G8] - reactivation impulse spawned from [T13] [G8] reactivation impulse - equal strength to that triggered by [G7] Reactivation impulse spawns, unprompted by transitive energy	Spectromorphological Attributed: Identity Attributed: Function	Spectromorphological Function Spectromorphological Subfunction Identity Class Transitive Function :: Subject/Object
M183	02:51.7	"Bronze"	Spectral Width of "Bronze" class [T8] is narrowing across all frequencies (1, 3-6) :: Attenuation of high frequency content	Typomorphological Abstract Transformation Attributed: Identity	Spectral Width :: Converge Multidirectional Growth Type :: Converge Identity Class
M25	02:54.3	"FG-A"	Anterior Onset to [G9] - identical to [G7]	Spectromorphological Intermorphological	Spectromorphological Subfunction Stratum Density :: Increase
M200	02:55.7	"Glass"	Termination of "Glass" class [T11] high frequency members	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity	Spectral Width :: Converge Spectromorphological Function Stratum Density :: Decrease Multidirectional Growth Type :: Converge Identity Class
M212	02:55.7	"Water"	Medial Valley 4 of "Water" class [T1] Resonance of "Water" class now predominant character High Frequency content dissipating faster than Low Frequency content	Spectromorphological Abstract Transformation Attributed: Identity	Spectral Width :: Converge Spectromorphological Subfunction Processing Type :: Resonant Filter Multidirectional Growth Type :: Converge Identity Class Identity Iconicity
M26	02:57.7	"FG-A"	Onset of [G9] [G9] onset spawns from "Fire" class [T13] reactivation impulse - a la [G6]	Spectromorphological Attributed: Identity Attributed: Function	Spectromorphological Function Identity Class Transitive Function :: Subject/Object
M27	03:03.2	"FG-A"	Anterior onset to [G10] Anterior onset is a low frequency sustained timbre Anterior onset timbre crescendos into onset Anterior onset does not contain "Rock" Identity subclass Anterior onset of [G10] coincides with anterior motion in multiple voices	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Function	Pitch Sound Spectrum Energy Articulation Dynamic Level :: Increase Spectromorphological Subfunction Stratum Density :: Increase Unidirectional Growth Type :: Increase Dialogic Function

M139	03:05.9	"Water"	Low frequency content of Resonant "Water" class texture [T1] is all that remains Anterior motion towards Medial Event 5 of [T1] - prolonged "Swell" behavior Anterior motion masked by [G10]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch :: Decrease Sound Spectrum :: Converge Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Processing Type :: Resonant Filter Unidirectional Growth Type :: Decrease Reciprocal Growth Type :: Parabolic Multidirectional Growth Type :: Converge Identity Class Identity Iconicity :: Decrease Behavior Class Transitive Function :: Object
M242	03:08.3	"Bronze"	All "Bronze" class [T8] frequencies begin trajectory toward "Swell" behavior	Typomorphological Abstract Transformation Attributed: Identity Attributed: Agency	Pitch Dynamic Level Reciprocal Growth Type :: Parabolic Identity Class Behavior Class
M184	03:08.4	"Vocal"	Anterior Termination of "Vocal" class [T12] is triggered by onset of [G10]	Spectromorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Identity Class Transitive Function :: Object
M28	03:08.4	"FG-A"	Onset of [G10] [G10] termination contains "Fire" class [T13] reactivation impulse - a la [G6] "Rock" subclass is now present, processed in the continuant function "Rock" subclass is longer and lower in frequency	Typomorphological Spectromorphological Intermorphological Attributed: Identity	Pitch Energy Articulation Spectromorphological Function Stratum Density :: Increase Identity Class
M137	03:17.0	"Glass"	Full Termination of "Glass" class [T11] coincides with the Onset of [G9]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Function Stratum Density :: Decrease Identity Class Dialogic Function
M140	03:17.0	"Water"	Soft arrival to Medial Event 5 of [T1] Medial Event 5 character matches established Medial Events but prolonged. Prolongation of Medial Event 5 supports the termination function of [G5] Prolongation of Medial Event 5 supports the termination of Section B	Typomorphological Spectromorphological Intermorphological Macro-Level Abstract Transformation Attributed: Agency Attributed: Function	Onset Profile Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Sectionality Section Index :: Increase Reciprocal Growth Type :: Parabolic Dialogic Function
M29	03:17.0	"FG-A"	Anterior Termination to [G10] Previous Anterior onset "Rock" class is now operating as Anterior Terminus	Spectromorphological Attributed: Identity	Spectromorphological Subfunction Identity Class

M97	03:18.6	"FG-C"	Abrupt introduction of Anterior Termination "Rock" class of [G10] Variable rate energy articulation of type [Composite] Intransitive Agency implies 'Rolling' or 'Grinding' behavior	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity Attributed: Agency	Termination Profile Energy Articulation :: Variable Spectromorphological Subfunction Parametric Variability :: Variable Identity Class Setting Class Behavior Class
M123	03:25.2	"Vocal"	Archetype 2 "Vocal" content contributes to anterior terminus of [G10]	Spectromorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Identity Class Identity Subclass Dialogic Function
M98	03:25.8	"FG-C"	Third appearance of "Metal Components" Class Additional Anterior Termination to [G10]	Spectromorphological Attributed: Identity	Spectromorphological Subfunction Identity Class
M168	03:30.1	"Vocal"	Termination of [T12] and [G10] Archetype 1 "Vocal" class crescendos into termination Archetype 2 phonetic "Vocal" class creates impulse on termination of [G10]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Dynamic Level Termination Profile Spectromorphological Function Unidirectional Growth Type :: Increase Identity Class Identity Subclass
M185	03:30.1	"Bronze"	"Bronze" class low frequency (2) impulse - component of [G10] Termination Peak [T8] "Swell" behavior coincides with terminations of [G10] and [T13] Peak of "Swell" behavior marks the termination of [T8] Termination of [G10] and [T13] mark the end of Section B and start of the Transition section	Typomorphological Spectromorphological Intermorphological Macro-Level Attributed: Identity Attributed: Agency Attributed: Function	Pitch Spectromorphological Function Stratum Density :: Decrease Sectionality Section Index :: Increase Identity Class Dialogic Function
M218	03:30.1	"FG-C"	Termination of [G10] signaling the termination of Section B Extended termination function by "Rocks" and "Metal Components" Classes	Spectromorphological Intermorphological Macro-Level Attributed: Identity Attributed: Function	Spectromorphological Function Stratum Density :: Decrease Sectionality Section Index :: Increase Transitive Function :: Subject Identity Class
M227	03:30.1	"FG-B"	Termination function of [G10] with "Metal" class Termination of [G10] marks the end of Section B	Spectromorphological Intermorphological Macro-Level Attributed: Identity	Spectromorphological Function Stratum Density :: Decrease Identity Class Transitive Function :: Subject

M30	03:30.1	"FG-A"	Termination of [G10] signaling the termination of Section B Termination of [G10] initiates transitive energy :: Triggers Termination of [G10] triggers the termination of "Glass" class [T11] and "Vocal" class [T12] Termination of [G10] triggers the onset of "Sand" class texture [T15] Termination of [G10] triggers the "Water" class "Splash" behavior Termination of [G10] triggers change in Global Spectral Width / Brightness	Typomorphological Spectromorphological Intermorphological Macro-Level Attributed: Identity Attributed: Agency Attributed: Function	Spectral Width Spectral Brightness Spectromorphological Function Stratum Density :: Decrease Stratum Density :: Increase Sectionality Section Index :: Increase Identity Class Behavior Class Transitive Function :: Subject
M99	03:34.1	"FG-C"	First Onset of "Sand" class texture [T15] Masks Posterior Terminus of [G10] Classes "Rock" and "Metal Components	Spectromorphological Attributed: Identity Attributed: Function	Spectromorphological Function Identity Class Transitive Function :: Subject
M141	03:37.7	"Water"	Movement towards Termination of "Water" Class [T1] following section B Spectral width narrows and harmonic content is slowly removed Low Frequency content	Typomorphological Spectromorphological Macro-Level Abstract Transformation Attributed: Identity	Pitch :: Converge Spectral Width :: Converge Spectromorphological Function Sectionality Section Index :: Increase Multidirectional Growth Type :: Converge Identity Class
M169	03:37.7	"Vocal"	Posterior Terminus of [G10] "Vocal" class	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class
M186	03:37.7	"Bronze"	All "Bronze" class [T8] frequencies are slowly diminishing Higher frequency content is being removed faster than Low frequency content	Typomorphological Abstract Transformation	Pitch :: Converge Spectral Width :: Converge Multidirectional Growth Type :: Converge Identity Class
M20	03:37.7	"FG-B"	Posterior Terminus of [G10] masks the onset of "Water" [T14] Termination of [G10] marks the end of Section B [T14] exhibits Intransitive Agency of type "Splashing" or "Swimming"	Spectromorphological Intermorphological Macro-Level Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Function Spectromorphological Subfunction Stratum Density :: Decrease Sectionality Section Index :: Increase Identity Class Behavior Class Transitive Function :: Subject
M124	03:45.1	"Vocal"	Posterior Terminus of [T12] and "Vocal" class	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class

M219	03:56.7	"FG-C"	[T15] "Sand" Class diminishes in dynamic activity and spectral width Perception of increased resonance and processing	Typomorphological Intermorphological Abstract Transformation Attributed: Identity	Dynamic Level :: Decrease Spectral Width :: Converge Processing Type :: Resonant Filter Unidirectional Growth Type :: Increase Unidirectional Growth Type :: Decrease Multidirectional Growth Type :: Converge Identity Class
M142	04:01.3	"Water"	Low frequency content is all that remains Dissipates to almost nothing Narrowing Spectral Width of "Water" class juxtaposes the remaining "Rock" High frequency content in transition section. Coincides with rate increase in "Splash" Behavior Class	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch :: Converge Spectral Width :: Converge Dynamic Level :: Decrease Pulse Rate :: Increase Unidirectional Growth Type :: Increase Unidirectional Growth Type :: Decrease Multidirectional Growth Type :: Converge Identity Class Behavior Class Dialogic Function
M125	04:05.2	"Vocal"	Reemergence of "Vocal" class [T16] masked by "Splash" Behavior Class Notably different than Section A "vocal" class - much lower frequency	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Pitch Spectral Width Spectromorphological Function Stratum Density :: Increase Identity Class Identity Subclass Behavior Class Transitive Function :: Object
M31	04:09.4	"FG-C"	[T15] "Sand Texture diminishes further Perception of iconicity fades as processed resonance becomes more prominent	Typomorphological Intermorphological Abstract Transformation Attributed: Identity	Dynamic Level :: Decrease Substratum Index Unidirectional Growth Type :: Decrease Processing Type :: Resonant Filter Identity Class Identity Iconicity
M213	04:12.2	"Water"	Anterior motion to Termination of "Water" class [T1] Anterior motion supported by Mid range to High Frequency content Coincides with the appearance of "The Deep" class	Typomorphological Spectromorphological Attributed: Identity Attributed: Function	Termination Profile Spectral Width Spectromorphological Function Identity Class Dialogic Function

M76	04:12.2	"The Deep"	Onset of new Identity Class "The Deep" "Deep" class [T17] exhibits mostly Sub/Low Frequency content Energy articulation is constant but sporadically reactivates Generative texture - not iconic sampling	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Energy Articulation :: Variable Sound Spectrum Spectral Width Spectromorphological Function Stratum Density :: Increase Processing Type :: Generative Identity Class Identity Iconicity
M228	04:12.5	"FG-B"	"Water" class [T14] exhibits continuous spatial movement from R to L [T14] "Splash" behavior becomes more frenetic over time Anterior Onset of [G11] coincides with onset of [T17] "The Deep" class	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pulse Rate :: Increase Spectromorphological Subfunction Spatial Motion :: X Unidirectional Growth Type :: Increase Identity Class Behavior Class Dialogic Function
M170	04:23.2	"Vocal"	Dynamic growth - "Vocal" class using "Swell" behavior	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Reciprocal Growth Type :: Parabolic Identity Class Behavior Class
M32	04:23.2	"FG-B"	Onset of [G11] Continuant fallout is larger than warranted by onset Onset of [G11] initiates Transitive Agency Onset of "Fire" class texture [T18] [T18] receives Transitive Agency from [G11] [T18] introduces notable high frequency content [T18] has erratic, generative energy articulation and pointillistic spatialization [T18] is notably processed and removed from iconicity and surrogacy	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Function	Onset Profile Spectral Width Energy Articulation :: Variable Spectromorphological Function Continuant Density Continuant Duration Stratum Density :: Increase Spatial Position :: Variable Processing Type :: Generative Processing Type :: Resonant Filter Identity Class Identity Iconicity Gestural Surrogacy Transitive Function :: Subject

M77	04:23.6	"The Deep"	"Deep" class [T17] exhibits foregrounded medial event impulse [T17] Medial impulse signals anterior motion towards the onset of Section C [T17] Medial impulse coincides with the onset of [G11] [T17] recedes towards valley post-"Swell"	Typomorphological Spectromorphological Intermorphological Macro-Level Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Spectromorphological Subfunction Substratum Index Sectionality Section Index :: Increase Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function
M131	04:27.7	"Bronze"	Posterior Termination of "Bronze" class [T8] is masked by onset of [G11]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Transitive Function :: Object
M66	04:29.0	"FG-B"	Notable dynamic peak in continuant function of [G11] "Swell" behavior Peak of the [G11] "Swell" behavior contains spatial motion from L to R	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Agency	Dynamic Level Spectromorphological Function Substratum Index Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Behavior Class
M100	04:31.8	"FG-C"	Termination of "Sand" texture [T15]	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Function Stratum Density :: Decrease Identity Class
M171	04:31.8	"Vocal"	"Swell" action peaks at the termination supporting anterior terminus of [G11] Termination of [T16] and [G11] signal onset of Section C.	Typomorphological Spectromorphological Intermorphological Abstract Transformation Macro-Level Attributed: Agency Attributed: Function	Dynamic Level Spectromorphological Function Spectromorphological Subfunction Substratum Index Stratum Density :: Decrease Sectionality Section Index :: Increase Reciprocal Growth Type :: Parabolic Behavior Class Transitive Function :: Subject Dialogic Function
M214	04:31.8	"Water"	Uncharacteristically abrupt cutoff to "Water" Class [T1] Termination contradicts the established behavioral agency of "Water" class. Receives transitive energy from Termination of [G11]	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Termination Profile Spectromorphological Function Identity Class Transitive Function :: Object

M33	04:31.8	"FG-B"	Prominent termination of [G11] signals arrival in Section C Termination of [G11] initiates transitive energy throughout global context With termination of [G11], high frequency context of [T18] is foregrounded	Typomorphological Spectromorphological Intermorphological Macro-Level Attributed: Function	Spectral Width Spectromorphological Function Substratum Index Sectionality Section Index :: Increase Transitive Function :: Subject
M78	04:34.6	"The Deep"	"Deep" class [T17] exhibits underlying resonance that has higher frequency content, introduces a "Bell-like" resonant metal reactivation.	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity	Spectral Width Spectromorphological Subfunction Processing Type :: Resonant Filter Identity Class Identity Subclass
M34	04:37.2	"The Deep"	"Deep" class [T17] exhibits new sound character - a high frequency "vocal" quality [T17] "Deep" class exhibits spontaneous reactivation but of a more "improvisatory" character and less intentionally gestural	Typomorphological Spectromorphological Attributed: Identity Attributed: Agency	Spectral Width Energy Articulation :: Variable Spectromorphological Subfunction Identity Class Identity Subclass Behavior :: Spontaneous Reactivation
M79	04:39.3	"The Deep"	"Deep" class [T17] "Bell-like" subclass exhibits a prominent reactivation event onset "Deep" class [T17] "Metal" subclass exhibits an emission pattern that is reminiscent of the "Cricket" emission rate process, however [T17] is more erratic and over a shorter duration.	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Agency	Pulse Rate :: Parabolic Spectromorphological Subfunction Substratum Index Identity Class Identity Subclass Behavior :: Spontaneous Reactivation Behavior :: Emission Rate Process
M35	04:40.2	"FG-B"	[T18] "Fire" class texture is modified to be removed from iconic representation [T18] exhibits irregular iterative energy articulation with spontaneous dynamic fluctuations [T18] Accentuation instance is lower in frequency and perceivably different timbre	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity	Spectral Width Energy Articulation :: Variable Pulse Rate :: Irregular Dynamic Level Spectromorphological Subfunction Structure Unit Density Processing Type :: Generative Processing Type :: Resonant Filter Identity Class Identity Iconicity

M36	04:43.1	"The Deep"	"Deep" class [T17] Low frequency content exhibits the "Swell" behavior [T17] Low frequency "Swell" - spatial emphasis L [T17] "Swell" behavior initiates transitive energy	Typomorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch Dynamic Level Substratum Index Spatial Position :: X Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Subject
M37	04:46.2	"FG-B"	[T18] Generative fluctuation exhibits a rapid emission rate pattern Emission rate pattern is embellished through spatial motion from L to R	Typomorphological Spatiomorphological Abstract Transformation Attributed: Agency	Energy Articulation Pulse Rate Spatial Motion :: X Processing Type :: Generative Behavior :: Emission Rate Process
M80	04:49.4	"The Deep"	[T17] exhibits anterior motion in "vocal" character [T17] displays less spatial coherence than previous textures. Member units are displaced across the stereophonic field [T17] Current spatial emphasis trends L	Spectromorphological Spatiomorphological Attributed: Identity	Structure Unit Density Spatial Position :: X Spatial Diffusion :: Ambiphonic Spatial Continuity :: Mixed Spatial Motion :: X Identity Class
M229	04:52.4	"FG-B"	[T18] Appearance of an resonant "bell-like" "Metal" class accentuation "Metal" class accentuation is not prominently foregrounded	Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectromorphological Subfunction Substratum Index Processing Type :: Resonant Filter Identity Class Identity Subclass
M83	04:53.2	"The Deep"	[T17] sharp onset of "vocal" class event [T17] exhibits terracing effect between "metal" and "vocal" esque characters terracing is similar to tidal actions in the introduction, but more erratic and spontaneous	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Agency	Onset Profile Dynamic Level :: Variable Substratum Index :: Variable Stratum Density :: Increase Identity Class Identity Subclass Behavior :: Intermorphological Terrace
M233	04:54.0	"FG-A"	Anterior Onset to "Match" class [T19] [T19] is considerably backgrounded - near imperceivable [T19] is reminiscent of the "Match Strike" behaviors, but has been elongated to the point of become textural [T19] modified "Match Strike" exhibits notable resonance processing	Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency	Spectromorphological Structure Spectromorphological Subfunction Substratum Index Stratum Density :: Increase Processing Type :: Resonant Filter Processing Type :: Elongated Identity Class Behavior Class

M81	04:54.7	"The Deep"	Posterior termination of [T17] "Deep" class medial event	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class
M84	04:55.9	"The Deep"	An articulate reactivation event of [T17] "Deep" class [T17] exhibits notable processing :: Phasing, Pitch Shifting, Resonance	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity	Onset Profile Spectromorphological Subfunction Processing Type :: Phaser Processing Type :: Pitch Shift Processing Type :: Resonant Filter Identity Class
M222	05:02.4	"The Deep"	[T17] Onset of medial event, "overblown" behavior - reactivates lower frequency.	Typomorphological Spectromorphological Attributed: Identity Attributed: Agency	Pitch Spectral Width Spectromorphological Subfunction Identity Class Behavior Class
M67	05:02.4	"FG-B"	Second instance of [T18] "bell-like" resonant "Metal" class accentuation second accentuation has a sharp attack onset than previous second accentuation is more foregrounded than previously	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Onset Profile Spectromorphological Subfunction Substratum Index Processing Type :: Resonant Filter Identity Class Identity Subclass
M234	05:04.4	"FG-A"	[T19] modified "Match Strike" behavior is unsuccessful - no causal influence	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Processing Type :: Resonant Filter Processing Type :: Elongated Identity Class Behavior Class
M235	05:07.8	"FG-A"	[T19] onset of second "Match Strike" attempt	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Processing Type :: Resonant Filter Processing Type :: Elongated Identity Class Behavior Class
M68	05:14.2	"FG-B"	Third instance of [T18] "bell-like" resonant "Metal" class accentuation third accentuation's attack onset is less pronounced third accentuation is less foregrounded than second instance	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Onset Profile Spectromorphological Subfunction Substratum Index Processing Type :: Resonant Filter Identity Class Identity Subclass
M236	05:16.7	"FG-A"	[T19] second modified "Match Strike" behavior is unsuccessful - no causal influence	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Processing Type :: Resonant Filter Processing Type :: Elongated Identity Class Behavior Class

M237	05:19.7	"FG-A"	[T19] onset of third "Match Strike" attempt	Spectromorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Processing Type :: Resonant Filter Processing Type :: Elongated Identity Class Behavior Class
M69	05:19.7	"FG-B"	Fourth instance of [T18] "bell-like" resonant "Metal" class accentuation fourth accentuation's attack onset is less pronounced fourth accentuation is the most backgrounded instance yet fourth accentuation masks the emerging anterior onset of [G12] [G12]'s anterior onset is lower in frequency and stable with sustained energy articulation	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Pitch Spectral Width Energy Articulation :: Stable Onset Profile Spectromorphological Subfunction Substratum Index Processing Type :: Resonant Filter Identity Class Identity Subclass Transitive Function :: Subject
M70	05:21.6	"FG-B"	[G12] low frequency member is crescendo-ing and becoming more foregrounded	Typomorphological Spectromorphological Intermorphological Abstract Transformation	Pitch Spectral Width Dynamic Level Substratum Index Unidirectional Growth Type :: Increase
M132	05:24.6	"Bronze"	Onset of "Bronze" class [T19] [T19] retains some harmonic implications from [T8] but less high frequency content [T19] emerges more processed that previous [T8] [T19] now exhibits spatial movement - trending L [T19] object of transitive energy from [G12] :: Triggered	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Function	Pitch Spectral Width Spectromorphological Function Stratum Density :: Increase Spatial Motion :: X Processing Density Identity Class Transitive Function :: Object
M126	05:28.6	"Vocal"	"Vocal" Class texture [T21] receives transitive agency from termination of [G12] Sub Low Frequency Content Offers little development Return to static support pedal	Typomorphological Spectromorphological Attributed: Identity Attributed: Function	Pitch Spectral Width Spectromorphological Structure Identity Class Transitive Function :: Object
M223	05:30.1	"The Deep"	[T17] "Deep" class texture displays a more prominent "Swell" behavior [T17] "Swell" behavior marks the Termination of [G12] [G12] initiates transitive energy	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Substratum Index Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function Transitive Function :: Subject

M71	05:30.1	"FG-B"	Termination of [G12] initiates transitive energy across the global context Termination of [G12] triggers "Vocal" class [T21] Termination of [G12] triggers "Water" class [T20] and the return of "Splashing" behavior	Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Function Stratum Density :: Decrease Identity Class Behavior Class Transitive Function :: Subject
M238	05:30.3	"FG-A"	[T19] second modified "Match Strike" behavior is still unsuccessful However, the termination of [T19] does still coincide with [G12] Termination	Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Subfunction Substratum Index Identity Class Behavior Class Dialogic Function
M72	05:33.0	"FG-B"	A fifth [T18] "bell-like" resonant accentuation triggers the onset of "Metal" class [T22]	Spectromorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectromorphological Subfunction Processing Type :: Resonant Filter Identity Class Identity Subclass Transitive Function :: Subject
M187	05:40.3	"Bronze"	"Bronze" class [T19] Spatial emphasis L	Spatiomorphological Attributed: Identity	Spatial Position :: X Identity Class
M73	05:41.7	"FG-B"	Sixth [T18] "bell-like" accentuation	Spectromorphological Abstract Transformation Attributed: Identity	Spectromorphological Subfunction Processing Type :: Resonant Filter Identity Class Identity Subclass
M85	05:42.3	"The Deep"	"Deep" class [T17] - A prominently foregrounded "metal" "bell-like" impulse	Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Spectromorphological Subfunction Substratum Index Processing Type :: Resonant Filter Identity Class
M188	05:47.4	"Bronze"	"Bronze" class [T19] Spatial emphasis C	Spatiomorphological Attributed: Identity	Spatial Position :: X Identity Class
M87	05:47.4	"The Deep"	"Deep" class [T17] A prominent, foreground low frequency "vocal-like" event onset. Low frequency event onset add significantly more energy in texture [T17] [T17] Low frequency event initiates transitive energy that triggers [G13]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Pitch Spectral Width Dynamic Level Spectromorphological Subfunction Substratum Index Processing Type :: Resonant Filter Identity Class Identity Subclass Transitive Function :: Subject

M101	05:51.9	"FG-C"	Second abrupt introduction of "Rock" class - Onset of [G13] Variable rate energy articulation of type [Composite] Intransitive Agency implies 'Rolling' or 'Grinding'	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Agency	Onset Profile Energy Articulation :: Variable Spectromorphological Function Identity Class Setting Class Behavior Class
M189	05:54.9	"Bronze"	"Bronze" class [T19] Spatial emphasis R	Spatiomorphological Attributed: Identity	Spatial Position :: X Identity Class
M88	05:54.9	"The Deep"	"Deep" class [T17] Anterior motion towards high frequency event onset	Typomorphological Spectromorphological	Pitch Spectral Width Spectromorphological Subfunction
M89	05:57.8	"The Deep"	"Deep" class [T17] High frequency "bell-like" "metal" embellishment High frequency embellishent spatial emphasis L	Typomorphological Spectromorphological Spatiomorphological Attributed: Identity Attributed: Function	Pitch Spectral Width Spectromorphological Subfunction Spatial Position :: X Identity Class Identity Subclass Dialogic Function
M102	05:58.7	"FG-C"	Fourth appearnce of "Metal Components" Class Additional Anterior Termination to [G13]	Spectromorphological Attributed: Identity	Spectromorphological Subfunction Identity Class
M224	05:59.2	"The Deep"	Reaactivation of low frequency member of [T17] "Deep" class Energy and density in [T17] is decreasing	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity	Pitch Energy Articulation :: Decrease Spectromorphological Subfunction Structure Unit Density :: Decrease Unidirectional Growth Type :: Decrease Identity Class
M74	05:59.2	"FG-B"	Anterior Termination of "Metal" class [T22] supports [G13] [T22] performs the "Swell" behavior into termination	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Spectromorphological Subfunction Substratum Index Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function
M108	06:00.4	"Water"	Onset - Receivees Transitive energy from "The Deep" class	Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Spectromorphological Function Stratum Density :: Increase Identity Class Transitive Function :: Object

M108	06:00.4	"Soundscape"	Anterior Onset of iconic member of [T20] "Water" class texture Anterior Onset of [T20] is masked by [G15] [T20] lacks high frequency content, only low to mid range frequency range [T20] Spatial emphasis R	Typomorphological Spectromorphological Intermorphological Spatiomorphological Attributed: Identity Attributed: Function	Pitch Spectral Width Spectromorphological Subfunction Stratum Density :: Increase Spatial Position :: X Identity Class Identity Iconicity Transitive Function :: Object
M172	06:03.5	"Vocal"	Peak of Dynamic "Swell" and termination of "Vocal" class [T21] [T21] is Triggered by termination of [G13] - begins attenuation towards posterior terminus.	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Decrease Spectromorphological Function Unidirectional Growth Type :: Decrease Identity Class Behavior Class Transitive Function :: Object
M190	06:03.5	"Bronze"	"Bronze" class [T19] Spatial emphasis C Return to C marks the termination of [T19] - Slowly recedes	Typomorphological Spectromorphological Spatiomorphological Abstract Transformation Attributed: Identity	Dynamic Level :: Decrease Spectromorphological Function Spatial Position :: X Unidirectional Growth Type :: Decrease Identity Class
M220	06:03.5	"FG-C"	Termination of class types "Rocks" and "Metal Components" of [G13] [G13] repeats the Anterior termination process of [G10] [G13] No longer has an extenderd Termination function [G13] Initiates Transitive Agency Immediate Onset of Texture [T23] [T23] Receives transitive energy from [G13] [T23] Begins processed with resonance and returns to a state of iconicity	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Termination Profile Spectromorphological Function Spectromorphological Subfunction Stratum Density Processing Type :: Resonant Filter Identity Class Identity Iconicity Transitive Function :: Subject/Object
M39	06:03.5	"FG-B"	Peak of [T22] "Swell" behavior Termination of [T22] and [G13] conclude Section C Termination of [T22] and [G13] trigger return of "Water" class "Splash" behavior	Typomorphological Spectromorphological Intermorphological Macro-Level Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Spectromorphological Function Substratum Index Stratum Density :: Decrease Sectionality Section Index :: Increase Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Subject

M90	06:05.7	"The Deep"	Prominent reactivation of "Deep" class [T17] in high frequency "vocal-like" character. Reactivation occurs during recession of climactic "swell" behavior	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Agency Attributed: Function	Pitch Spectral Width Dynamic Level Spectromorphological Subfunction Substratum Index Identity Class Behavior Class Transitive Function :: Object
M118	06:07.7	"Cricket"	Anterior Onset / Onset of [T24] "Cricket" class [T24] onset is masked by continuant reactivations of [G13] "Cricket" class [T24] does not match iconic representation Noticable processing on "Cricket" class texture - Recalls Mysticism	Spectromorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectromorphological Subfunction Processing Type :: Resonant Filter Identity Class Identity Iconicity Transitive Function :: Object
M225	06:10.3	"The Deep"	"Deep" class [T17] exhibits significantly thinner spectrum and activity	Typomorphological	Spectral Width :: Contraction Energy Articulation :: Decrease Unidirectional Growth Type :: Decrease Multidirectional Growth Type :: Contract
M40	06:11.0	"Bronze"	Posterior Termination of "Bronze" class [T19] is masked by "Bronze" class impulse [I2] Very prominent, foregrounded low frequence onset of [I1] [I1] does not exhibit the same harmonic quality as [T8] or [T19] [I2] is similar to "Bronze" class impulses in [G1], [G4], and [G5]	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Pitch Onset Profile Spectromorphological Structure Spectromorphological Subfunction Substratum Index Stratum Density :: Decrease Identity Class Transitive Function :: Subject/Object
M173	06:13.4	"Vocal"	Posterior Termination of "Vocal" class [T21] triggered by "Bronze" class [I2]	Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Transitive Function :: Object
M91	06:13.4	"The Deep"	"Deep" class [T17] More isolated high frequency emission rate event.	Typomorphological Spectromorphological Attributed: Identity	Pitch Spectral Width Pulse Rate Energy Articulation Spectromorphological Subfunction Identity Class

M41	06:14.3	"The Deep"	"Deep" class [T17] a more subtle high frequency "vocal-like" event Changes to density and spectrum begin to imply a change in proximity Spatial emphasis shifts R	Typomorphological Spectromorphological Spatiomorphological Attributed: Identity	Pitch Spectral Width Spectromorphological Subfunction Structure Unit Density Spatial Position :: X Spatial Proximity Identity Class Identity Subclass
M42	06:17.3	"Bronze"	Onset of "Bronze" class impulse [I3] - similar to [I2]	Spectromorphological Attributed: Identity	Spectromorphological Structure Spectromorphological Function Identity Class
M92	06:18.8	"The Deep"	From near silence "Deep" class [T17] starts to reemerge with more substantial anterior motion Anterior Motion of [T17] is triggered by "Bronze" class impulse [I2]	Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Function	Dynamic Level Spectromorphological Structure Spectromorphological Subfunction Substratum Index Unidirectional Growth Type :: Increase Identity Class Transitive Function :: Object
M109	06:19.5	"Water"	Modified Iconicity "Water" class Spatial Motion R to L and Dynamic "Swell" Receives Transitive energy from "The Deep"	Typomorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Function	Dynamic Level Substratum Index Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Identity Iconicity Behavior Class Transitive Function :: Object
M109	06:19.5	"Soundscape"	"Water" class [T20] exhibits spatial motion from R to L with slight "Swell" behavior "Water" class [T20] receives transitive energy from [I2] :: Triggers	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level Substratum Index Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Object
M75	06:21.1	"FG-B"	Posterior termination of "Metal" class [T22] and "Water" class "Splash" behavior	Spectromorphological Intermorphological Attributed: Identity Attributed: Agency	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class Behavior Class
M155	06:21.5	"Cricket"	[T24] expands to include iconic "Cricket" class and "Mystic" "Cricket" class Iconic "Cricket" class receives transitive agency from onset of [G14] :: Triggered	Attributed: Identity Attributed: Function	Identity Class Identity Subclass Identity Iconicity Transitive Function :: Object

M43	06:24.1	"Bronze"	A third "Bronze" class impulse - similar to [I2] and [I3] Third impulse is the onset of "Bronze" class gesture [G14] [G14] exhibits the same emission rate process as the "Cricket" class in Section A [G14] initiates transitive agency	Typomorphological Spectromorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pulse Rate :: Parabolic Spectromorphological Function Reciprocal Growth Type :: Parabolic Identity Class Behavior :: Emission Rate Process Transitive Function :: Subject
M157	06:26.8	"Cricket"	Spatial Emphasis R "Cricket" class [T24] returns to the emission rate process - begins slowing Emission process and "Swell" behavior support Anterior Termination of [G14]	Typomorphological Spatiomorphological Attributed: Identity Attributed: Agency Attributed: Function	Pulse Rate :: Parabolic Spatial Position :: X Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Behavior :: Emission Rate Process Dialogic Function
M94	06:26.8	"The Deep"	Peak of "Deep" class [T17]'s most substantial "Swell" behavior [T17] "Swell" behavior coincides with/supports the termination of [G14] High and Low frequency "vocal-like" characters carry the "Swell" "Bell-like" character exhibits a emission process to accentuate the "Swell" peak	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch Spectral Width Dynamic Level :: Parabolic Pulse Rate :: Parabolic Substratum Index Reciprocal Growth Type :: Parabolic Identity Class Identity Subclass Behavior Class Behavior :: Emission Rate Process Dialogic Function
M156	06:28.1	"Cricket"	Apex of parablic growth process of emission rate marks the introduction of new harmonic member of the "Mystic" "Cricket" Class Spatial Motion R to L	Typomorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency	Pitch Spectral Width Pulse Rate :: Parabolic Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Identity Subclass
M158	06:30.4	"Cricket"	Equal foregroundedness between new harmonic member and Iconic "Cricket"	Typomorphological Intermorphological Attributed: Identity	Pitch Spectral Width Substratum Index Identity Class Identity Subclass
M133	06:31.7	"Bronze"	Peak of "Bronze" class variable rate iterative pulse	Typomorphological Abstract Transformation Attributed: Identity Attributed: Agency	Pulse Rate :: Parabolic Reciprocal Growth Type :: Parabolic Identity Class Behavior :: Emission Rate Process

M119	06:34.6	"Cricket"	Iconic "Cricket" member returns to "Swell" behavior Recession masked by Termination of [G14] and "Swell" behavior of "Water" class [20] Spatial motion from L to R at peak of "Swell" behavior Iconic "Cricket" class member begins to recede in wake of "Swell" behavior	Typomorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Dynamic Level :: Decrease Substratum Index Spatial Motion :: X Reciprocal Growth Type :: Parabolic Unidirectional Growth Type :: Decrease Identity Class Identity Subclass Identity Iconicity Behavior Class Transitive Function :: Object
M191	06:34.6	"Bronze"	Termination of "Bronze" class gesture [G14]	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Function Stratum Density :: Decrease Identity Class
M45	06:34.6	"The Deep"	Conclusion of "Deep" class "Swell" behavior Recedes from foregroundeed perception to accompanimental texture Dissipation masked by Anterior Onset / Onset of [G15]	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Dynamic Level :: Decrease Spectromorphological Structure Substratum Index Reciprocal Growth Type :: Parabolic Unidirectional Growth Type :: Decrease Identity Class Behavior Class Transitive Function :: Object
M110	06:36.7	"Water"	"Water" Class [T20] - Spatial Motion from L to R and Dynamic Swell receives Transitive energy	Typomorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Substratum Index Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Object
M110	06:36.7	"Soundscape"	"Water" class [T20] exhibits spatial motion, returning from L to R with more prominent "Swell" behavior [T20] receives transitive energy from the termination of [G14] :: Triggers	Typomorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Substratum Index Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Object

M46	06:40.0	"The Deep"	"Deep" class [T17] lingering high frequency "vocal-like" emission - spatial emphasis L Spectral width of [T17] diminishes - influenced by transitive agency of "Water" class [T20]	Typomorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Function	Pitch Spectral Width :: Contraction Spatial Position :: X Multidirectional Growth Type :: Contract Identity Class Identity Subclass Transitive Function :: Object
M145	06:41.6	"Soundscape"	Recession of [T20] "Swell" behavior invites return of iconic "Water" class texture with high frequency	Typomorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Pitch Spectral Width Dynamic Level :: Parabolic Substratum Index Reciprocal Growth Type :: Parabolic Identity Class Identity Subclass Identity Iconicity Behavior Class Transitive Function :: Subject/Object
M145	06:41.6	"Water"	Onset - Receives of transitive agency from Modified "Waves" Return to Iconic identity "Waves"	Spectromorphological Attributed: Identity Attributed: Function	Spectromorphological Function Identity Class Identity Subclass Identity Iconicity Transitive Function :: Subject/Object
M47	06:43.7	"The Deep"	"Deep" class [T17] "bell-like" character acts in simulteneity with "vocal-like" activation Spatial emphasis of "bell-like" character R Spatial emphasis of "bell-like" character juxtaposes "vocal-like" - creates spatial separation	Spectromorphological Intermorphological Spatiomorphological Attributed: Identity Attributed: Function	Spectromorphological Subfunction Substratum Index Spatial Position :: X Spatial Diffusion :: Divided Identity Class Identity Subclass Dialogic Function
M103	06:44.0	"FG-C"	Termination of "Sand" class [T23] [T23] returns to iconic presentation of "Sand" class - no longer processed	Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Spectromorphological Function Stratum Density :: Decrease Processing Type :: Resonant Filter Identity Class Identity Iconicity

M48	06:47.0	"The Deep"	"Deep" class [T17] exhibits a second "bell-like" emission onset - similar characteristics as M47 but fading in energy and influence	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Function	Dynamic Level :: Decrease Spectromorphological Subfunction Substratum Index Spatial Position :: X Spatial Diffusion :: Divided Unidirectional Growth Type :: Decrease Identity Class Identity Subclass Dialogic Function
M159	06:48.9	"Cricket"	Medial Valley of "Cricket" class [T24] "Cricket" class recedes to background as static accompaniment Iconic "Cricket" is backgrounded locally and "Mystic" variant is more prominent Global [T24] begins increasing in Dynamic Level	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity	Dynamic Level :: Decrease Spectromorphological Structure Spectromorphological Subfunction Substratum Index :: Decrease Unidirectional Growth Type :: Decrease Identity Class Identity Subclass Identity Iconicity
M104	06:49.3	"FG-C"	Third appearnce of variable rate "Rock" class as [G15] "Rock" class is developed with spatial spread [G15] mirrors [G10] and [G13] No presence of "Metal Components" Class	Typomorphological Spectromorphological Spatiomorphological Attributed: Identity Attributed: Function	Pulse Rate :: Variable Spectromorphological Structure Spectromorphological Function Spatial Diffusion :: Ambiphonic Identity Class
M49	06:50.5	"The Deep"	"Deep" class [T17] a third "bell-like" reactivation [T17] maskes an upward anterior motion carried out by the low frequency "vocal-like" character Spatial emphasis L for low frequency "vocal-like" character	Typomorphological Spectromorphological Spatiomorphological Attributed: Identity Attributed: Function	Pitch Spectral Width Spectromorphological Subfunction Spatial Position :: X Identity Class Identity Subclass
M146	06:52.5	"Soundscape"	Onset of [T25] "Bird" class static texture Onset of [T25] is masked by the anterior onset of [G15] Onset is abrupt [T25] receives transitive energy from :: Triggered Spatial emphasis R	Typomorphological Spectromorphological Spatiomorphological Attributed: Identity Attributed: Function	Onset Profile Spectromorphological Function Spatial Motion :: X Identity Class Transitive Function :: Object
M226	06:56.3	"The Deep"	Peak of "Deep" class [T17]'s concluding "Swell" behavior Concluding "Swell" coincides with the anterior motion of [G15] "Swell" carried out by "vocal-like" characters Spatial emphasis L for "vocal-like" characters	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Subfunction Substratum Index :: Parabolic Spatial Position :: X Reciprocal Growth Type :: Parabolic Identity Class Identity Subclass Behavior Class

M147	07:02.1	"Soundscape"	[T20] "Water" class and [T25] "Bird" class exhibit spatial motion from R to L [T20] "Water" class exhibits "Swell" behavior as it passes through spatial C Termination of [T25] "Bird" class is triggered by the termination of [G15] and [T20] "Swell"	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Function Stratum Density :: Decrease Substratum Index :: Parabolic Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Object
M192	07:02.1	"Bronze"	Final "Bronze" class impulse Impulse is a Termination component of [G15] Termination "Bronze" class impulses are notably more resonant that [I2], [I3], or [G14] Termination of [G15] marks the termination of the "Bronze" group [G15] initiates transitive agency	Spectromorphological Abstract Transformation Attributed: Identity Attributed: Function	Spectromorphological Structure Processing Type :: Resonant Filter Identity Class Transitive Function :: Subject
M221	07:02.1	"FG-C"	Termination of [G15] Onset of "Sand" class [T26] No accentuation of termination of [G15] ('softer')	Typomorphological Spectromorphological Intermorphological Attributed: Identity	Termination Profile Spectromorphological Structure Spectromorphological Function Identity Class
M50	07:02.1	"The Deep"	Abrupt termination of "Deep" class [T17] "vocal-like" characters Termination of [G15] initiates transitive energy that triggers termination of [T17] Ambient resonance is all that remains "bell-like" ambient resonance is slightly more prominent than the "vocal-like" character	Typomorphological Spectromorphological Intermorphological Attributed: Identity Attributed: Function	Termination Profile Spectromorphological Function Substratum Index Identity Class Identity Subclass Transitive Function :: Object
M95	07:08.1	"The Deep"	Posterior termination of [T17] "Deep" class texture	Spectromorphological Intermorphological Attributed: Identity	Spectromorphological Subfunction Stratum Density :: Decrease Identity Class
M111	07:15.4	"Soundscape"	""Water" class [T20] exhibits spatial motion from R to C and discrete "Swell" behavior Abrupt Onset of [T27] "Bird" class texture [T20]'s return to center coincides with the onset of [T27]	Typomorphological Spectromorphological Intermorphological Spatiomorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Onset Profile Spectromorphological Function Substratum Index :: Parabolic Spatial Motion :: X Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Dialogic Function
M105	07:29.1	"FG-C"	Termnation of "Sand" class [T26] [T26] iconicty transition to resonance similar to [T15]	Spectromorphological Abstract Transformation Attributed: Identity	Spectromorphological Function Stratum Density :: Decrease Processing Type :: Resonant Filter Identity Class Identity Iconicity

M160	07:32.2	"Cricket"	Termination of "Cricket" class [T24] "Mystic" variant of "Cricket" class predominates as sole element at termination Spatial motion from L to R [T24] is terminated by "Water" Class [T20] via transitive action	Spectromorphological Intermorphological Spatiomorphological Attributed: Identity Attributed: Function	Spectromorphological Function Stratum Density :: Decrease Spatial Motion :: X Identity Class Identity Subclass Identity Iconicity Transitive Function :: Object
M51	07:32.2	"Soundscape"	Termination of [T20] "Water" class and [T27] "Bird" class Termination of [T20] exhibits one final "Swell" behavior Idenity of [T20] is presented iconically - aligned with the behavior of the opening "Waves" class [T20] Terminates [T27] via Transitive Energy	Typomorphological Spectromorphological Intermorphological Abstract Transformation Attributed: Identity Attributed: Agency Attributed: Function	Dynamic Level :: Parabolic Spectromorphological Function Substratum Index :: Parabolic Stratum Density :: Decrease Reciprocal Growth Type :: Parabolic Identity Class Behavior Class Transitive Function :: Subject
M52	07:36.1	"Cricket"	Posterior Terminus of "Cricket" class [T24] :: Resonance Termination of work	Spectromorphological Macro-Level Abstract Transformation Attributed: Identity	Spectromorphological Subfunction Sectionality Section Index :: Increase Processing Type :: Resonant Filter Identity Class

A.4 | *What Sleeps Beneath* - Structure Classification Catalogue

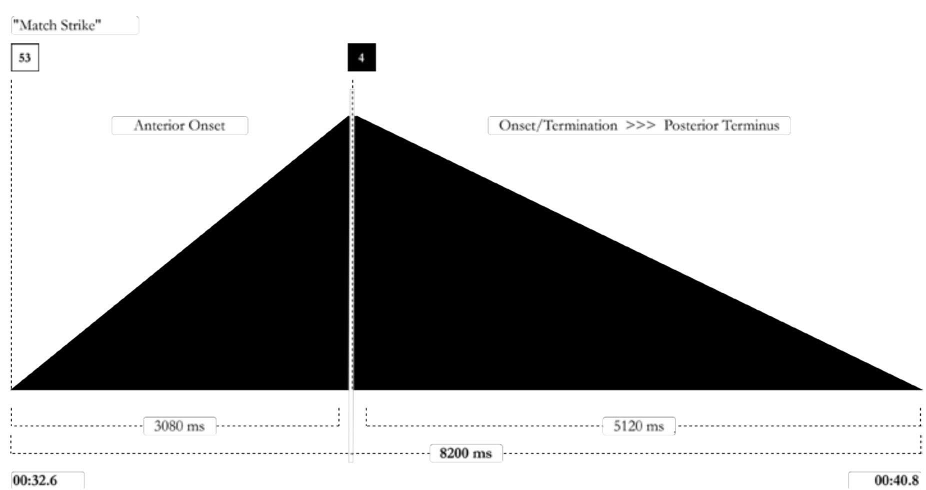
Impulse 1	Structure
Duration	5160 ms
Unit Density	3 Units
Unit Array	[19, 20, 21]
Behavior	"Blow out"
Function	Transitive

Impulse 2	Structure
Duration	5050 ms
Unit Density	1 unit
Unit Array	[199]
Behavior	
Function	Transitive

Impulse 3	Structure
Duration	5220 ms
Unit Density	1 Units
Unit Array	[201]
Behavior	
Function	Transitive

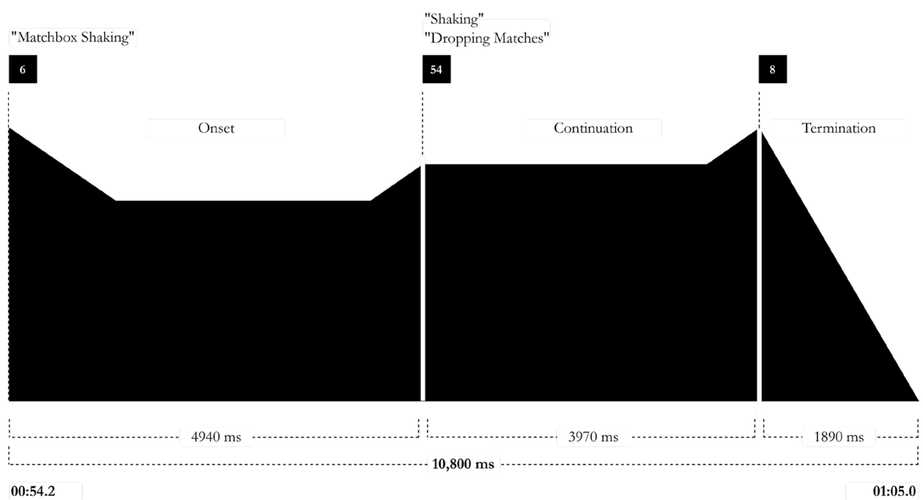
Gesture [G1] :: Identity Classes: ["Match", "Bronze"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	3080 ms	3 units	[11, 12, 13]	"Match Strike"	
Onset Termination	5120 ms	3 units	[15, 16, 17]		Transitive
Structure	8200 ms	6 units	[11, 12, 13, 15, 16, 17]		



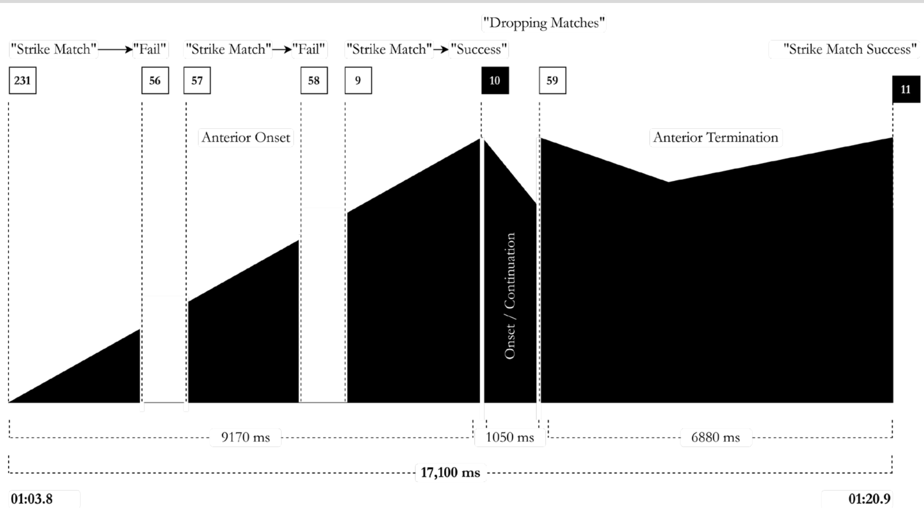
Gesture [G2] :: Identity Classes: [“Match”]

Subfunction	Duration	Unit Density	Unit Array	Behavior	Function
Onset	4940 ms	1 unit	[23]	“Shaking”	Transitive
Continuation	3970 ms	3 units	[24, 25, 26]	“Shaking” “Dropping Matches”	Transitive
Termination	1890 ms	3 units	[27, 28, 29]		Transitive
Structure	10,800 ms	7 units	[23, 24, 25, 26, 27, 28, 29]		



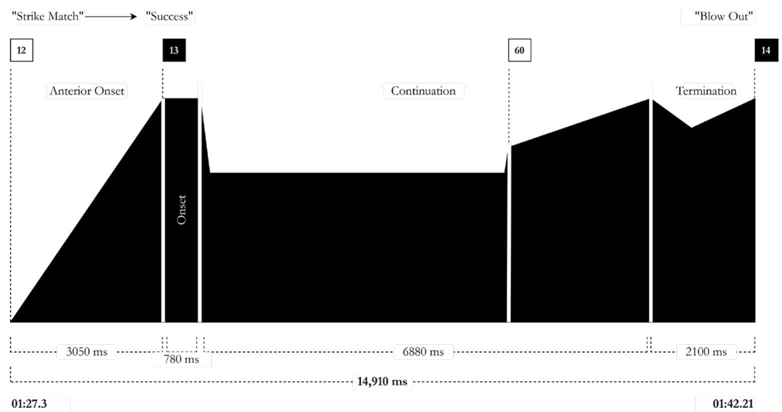
Gesture [G3] :: Identity Classes: [“Match”, “Metal”]

Subfunction	Duration	Unit Density	Unit Array	Behavior	Function
Anterior Onset	9170 ms	2 units	[30, 31]	“Match Strike Fail”	
Onset / Continuation	1050 ms	3 units	[38, 39, 41]	“Match Strike Success” “Dropping Matches”	Transitive
Anterior Termination	6880 ms	2 units	[40, 43]	“Match Strike Success”	Transitive
Structure	17,100 ms	7 units	[30, 31, 38, 39, 40, 41, 43]		



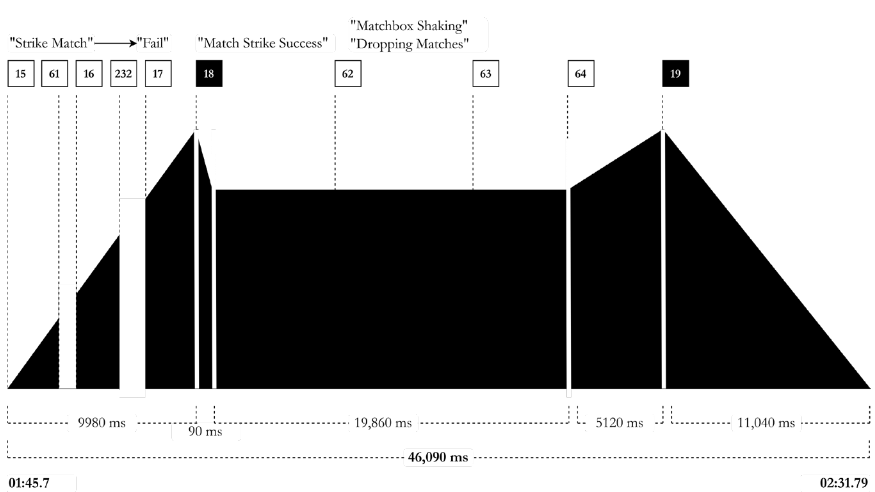
Gesture [G4] :: Identity Classes: ["Match", "Bronze"]

Subfunction	Duration	Unit Density	Unit Array	Behavior	Function
Anterior Onset	3,050 ms	2 units	[45, 46]		
Onset	780 ms	3 units	[47, 48, 49]	"Strike Success"	Transitive
Continuation	8,980 ms	2 units	[50, 51]		
Termination	2,100 ms	2 units	[52, 53]	"Blow Out"	Transitive
Structure	14,910 ms	9 units	[45, 46, 47, 48, 49, 50, 51, 52, 53]		



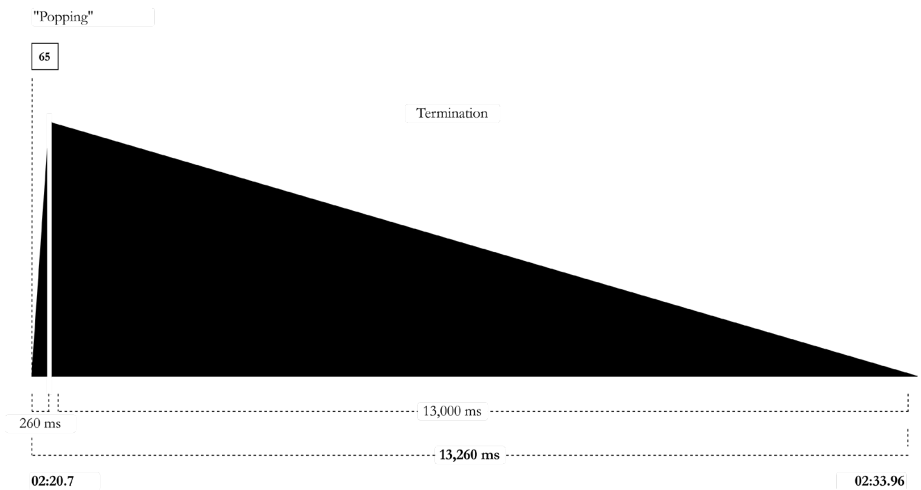
Gesture [G5] :: Identity Classes: ["Match", "Bronze", "Metal", "Vocal"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	9980 ms	4 units	[54, 55, 56, 57]	"Strike Fail"	
Onset	90 ms	2 units	[58, 59]	"Strike Success"	Transitive
Continuation	19,860 ms	9 units	[60, 61, 62, 63, 64, 65, 66, 71, 75]	"Shaking", "Dropping"	
Anterior Terminus	5,120 ms	5 units	[76, 77, 78, 80, 81]		
Termination	11,040 ms	4 units	[84, 85, 86, 87]		Transitive
Structure	46,090 ms	24 units	[54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 71, 75, 76, 77, 78, 80, 81, 84, 85, 86, 87]		



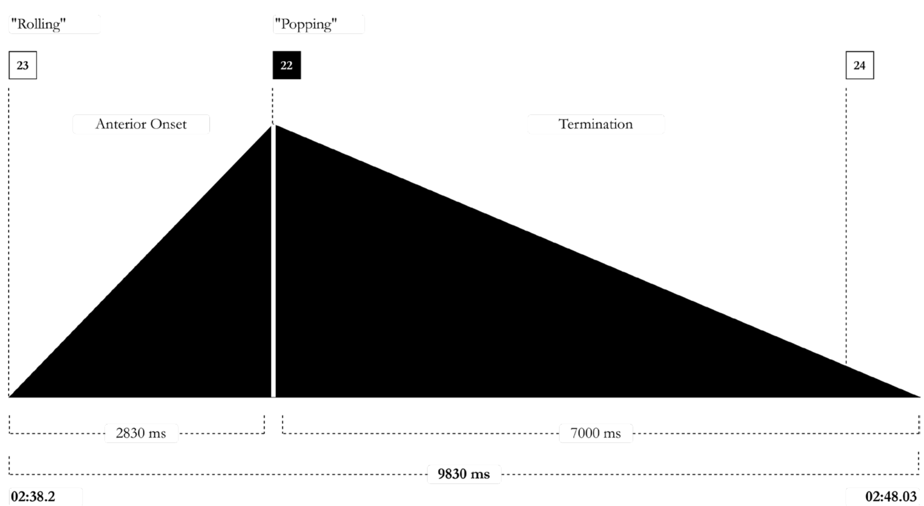
Gesture [G6] :: **Identity Classes: ["Fire"]**

Subfunction	Duration	Unit Density	Unit Array	Behavior	Function
Onset	260 ms	1 unit	[89]	"Popping"	
Termination	13,000 ms	3 units	[90, 93, 96]		
Structure	13,260 ms	4 units	[89, 90, 93, 96]		



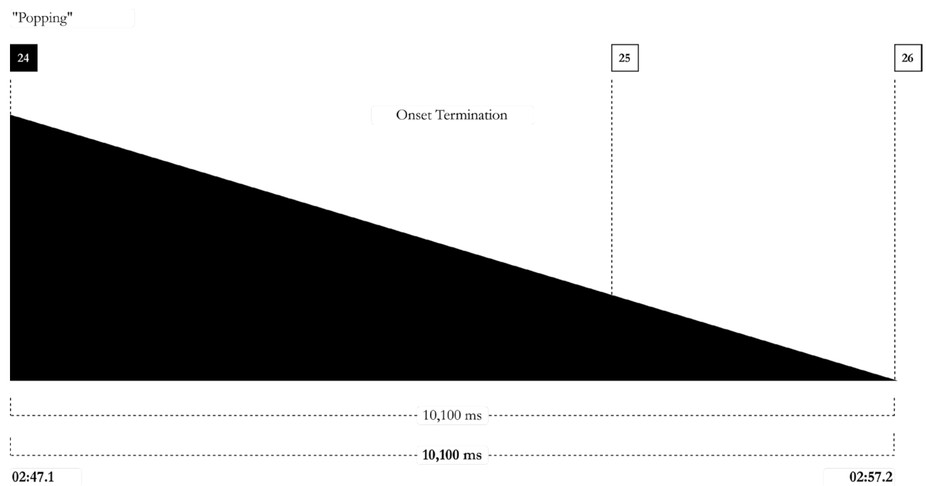
Gesture [G7] :: **Identity Classes: ["Fire", "Rock"]**

Subfunction	Duration	Unit Density	Unit Array	Behavior	Function
Anterior Onset	2,830 ms	1 unit	[97]	"Rolling"	
Onset	-	2 units	[99, 100]		Transitive
Termination	7,000 ms	1 unit	[101]	"Popping"	Masked
Structure	9,830 ms	4 units	[97, 99, 100, 101]		



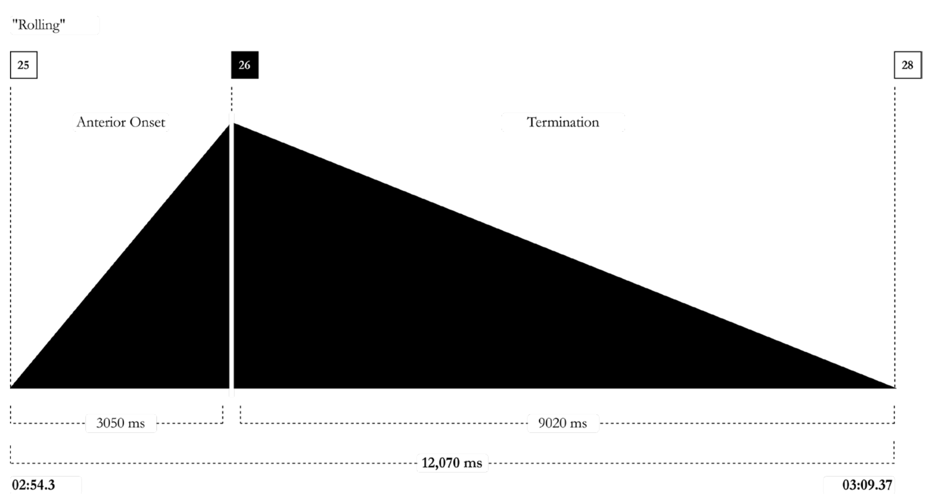
Gesture [G8] :: Identity Classes: [“Fire”]

Subfunction	Duration	Unit Density	Unit Array	Behavior	Function
Onset	-	1 unit	[103]	“Popping”	Transitive
Termination	10,100 ms	3 units	[102, 104, 105]		Masked
Structure	10,100 ms	4 units	[102, 103, 104, 105]		



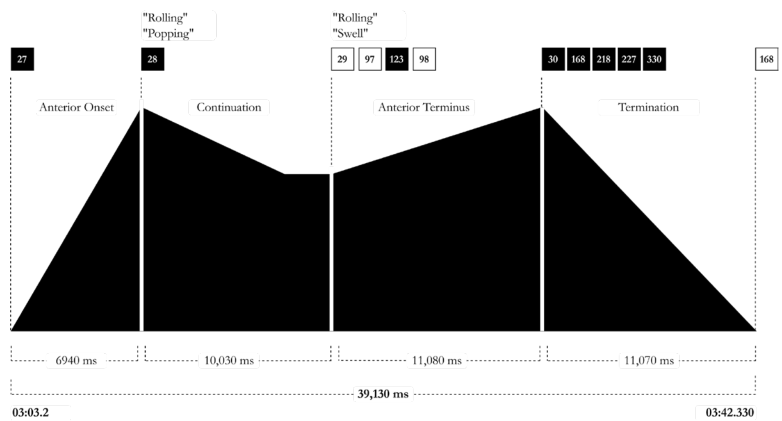
Gesture [G9] :: Identity Classes: [“Rock”, “Fire”]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	3,050 ms	1 unit	[106]	“Rolling”	
Onset	-	2 units	[107, 108]		Transitive
Termination	9,020 ms	2 units	[109, 110]		Masked
Structure	12,070 ms	5 units	[106, 107, 108, 109, 110]		



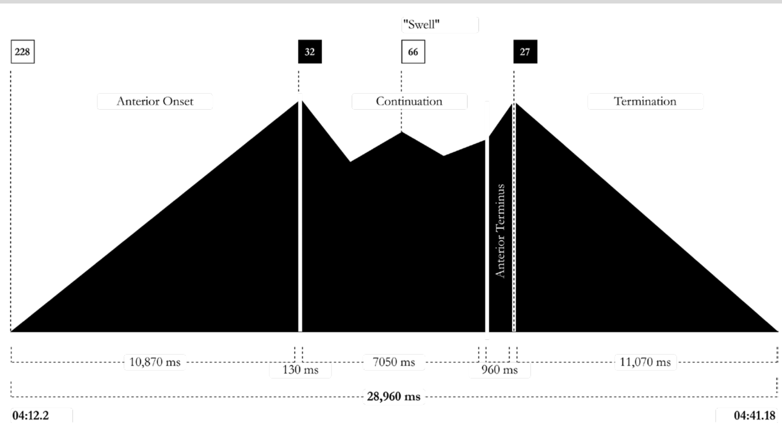
Gesture [G10] :: Identity Classes: [“Fire”, “Rock”, “Vocal”, “Metal”, “Bronze”]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	6,940 ms	1 unit	[111]		Transitive
Onset	10 ms	1 unit	[114]		Transitive
Continuation	10,030 ms	5 units	[112, 113, 115, 116, 117]		
Anterior Terminus	11,080 ms	4 units	[118, 119, 120, 121]		Transitive
Termination	11,070 ms	5 units	[122, 123, 124, 125, 126]	“Rolling”, “Swell”	Transitive
Posterior Terminus	-	1 unit	[127]		
Structure	39,130 ms	17 units	[111. 112. 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127]		



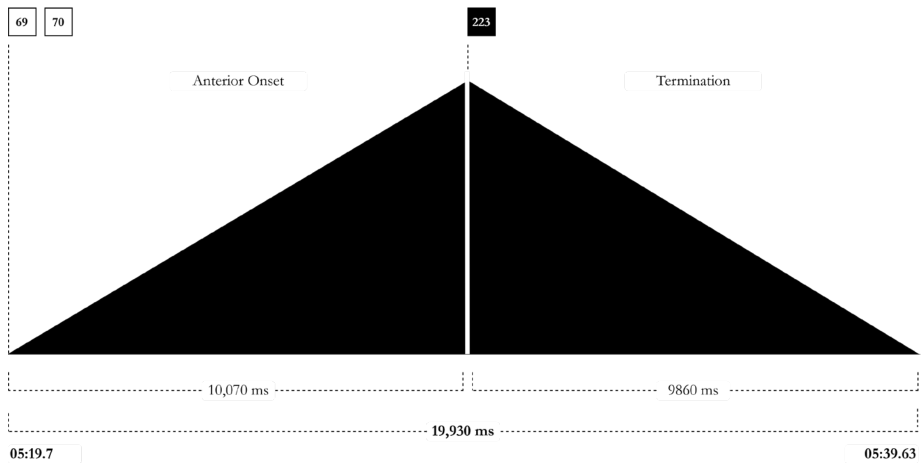
Gesture [G11] :: Identity Classes: [“Metal”, “Fire”, “Water”]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	10,870 ms	2 units	[134, 135]		
Onset	130 ms	1 unit	[136]		Transitive
Continuation	7,050 ms	2 units	[137, 138]	“Swell”	
Anterior Terminus	960 ms	1 unit	[139]		
Termination	9,920 ms	1 unit	[140]		Transitive
Structure	28,930 ms	7 units	[134, 135, 136, 137, 138, 139, 140]		



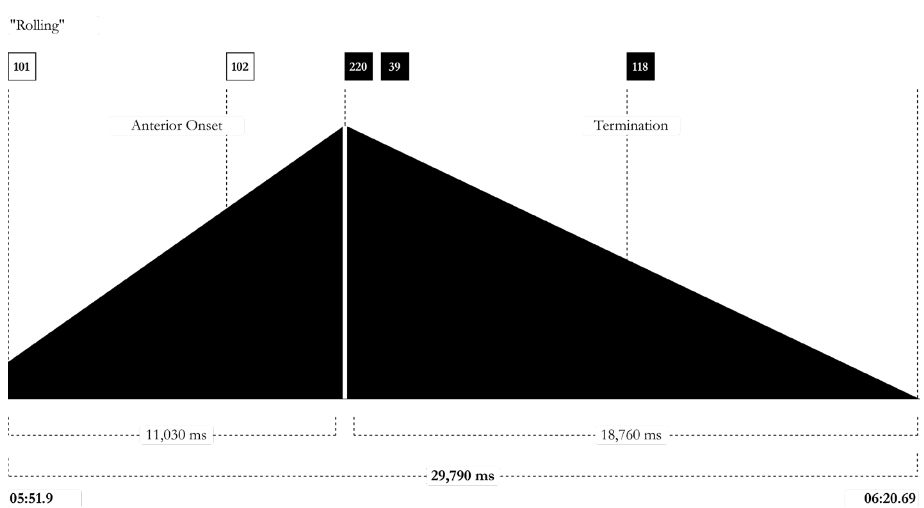
Gesture [G12] :: Identity Classes: ["Metal", "Water", "Vocal"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	10,070 ms	1 unit	[162]		
Onset Termination	9,860 ms	2 units	[172, 174]		Transitive
Structure	19,930 ms	3 units	[162, 172, 174]		



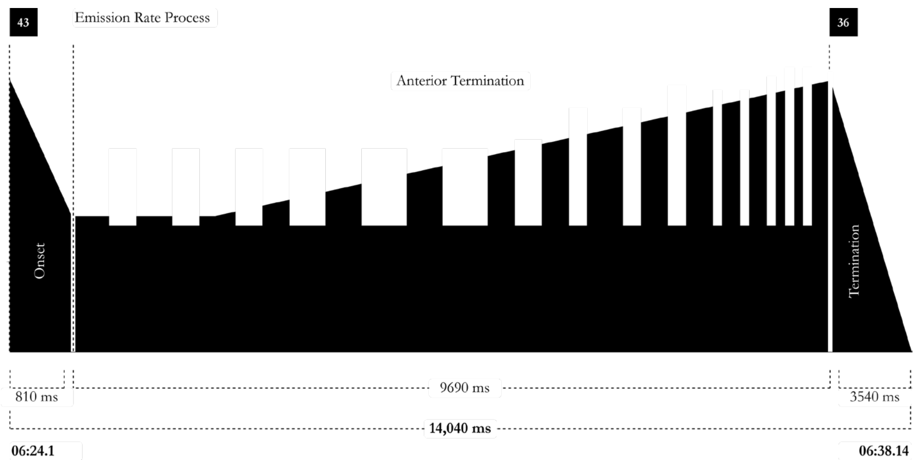
Gesture [G13] :: Identity Classes: ["Rock", "Metal", "Water"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	11,030 ms	4 units	[183, 187, 188, 189]		
Termination	18,760 ms	3 units	[194, 195, 196]		Transitive
Posterior Terminus	-	1 unit	[197]		
Structure	29,790 ms	8 units	[183, 187, 188, 189, 194, 195, 196, 197]		



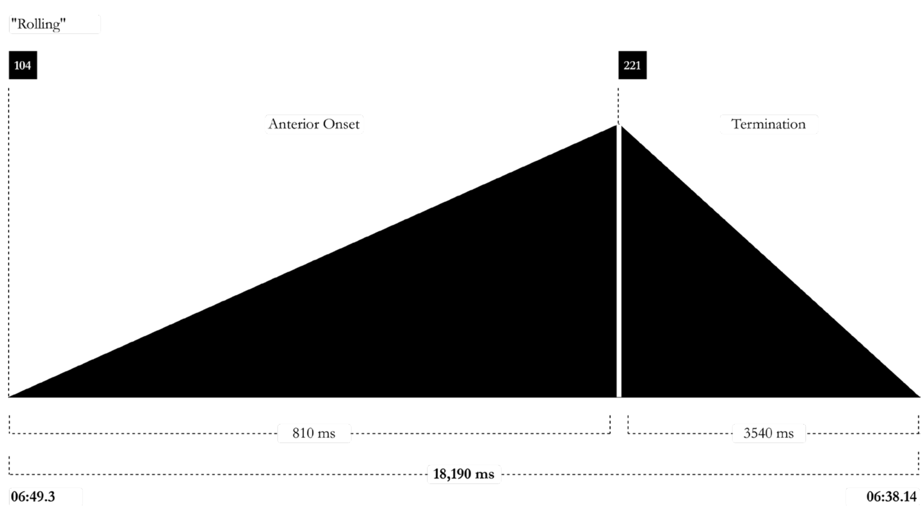
Gesture [G14] :: **Identity Classes: ["Bronze"]**

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	810 ms	1 unit	[202]		Transitive
Anterior Terminus	13,230 ms	1 unit	[203]	Emission Rate Process	
Termination	3540 ms	-			Transitive
Structure	14,040 ms	2 units	[202, 203]		



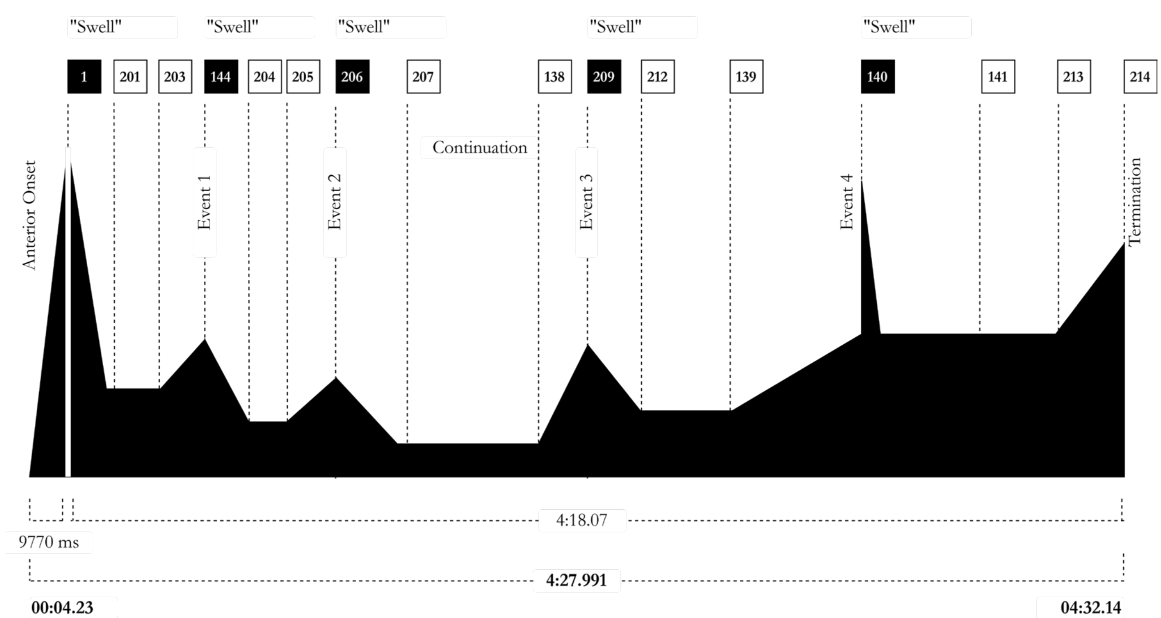
Gesture [G15] :: **Identity Classes: ["Rock", "Bronze"]**

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	12,190 ms	3 units	[210, 211, 212]	"Rolling"	Transitive
Onset Termination	6,000 ms	2 units	[215, 216]		Transitive
Structure	18,190 ms	5 units	[210, 211, 212, 215, 216]		



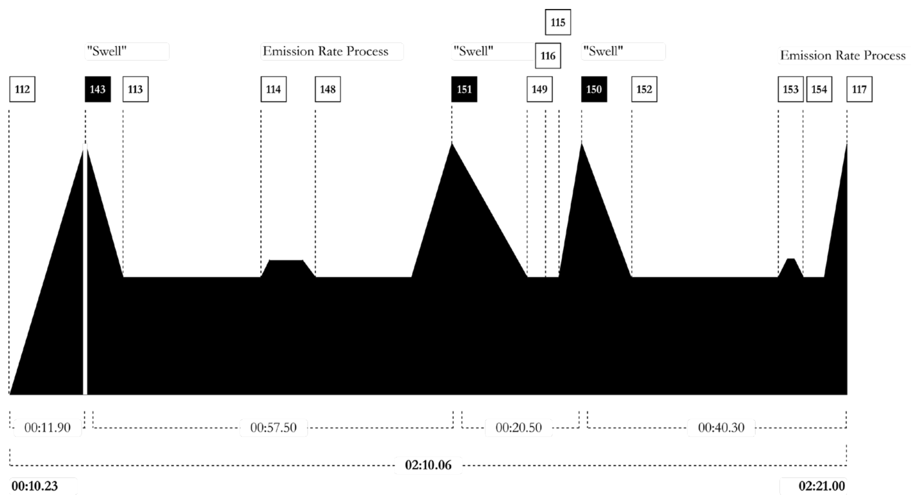
Texture [T1] :: Identity Classes: [“Water”]

Subfunction	Dur/Time	Density	Unit Array	Behavior	Function
Anterior Onset	9770 ms	4 Units	[1, 2, 3, 4]		
Onset	0:14.043	4 Units	[1, 2, 3, 4]	“Swell”	Transitive
Continuation	04:18.07	7 Units	[1, 2, 3, 32, 37, 94]	“Swell”	Dialogic
Medial Event 1	0:45.343	3 Units	[1, 2, 3]	“Swell”	Dialogic
Medial Event 2	1:16.924	5 Units	[1, 2, 3, 32, 37]	“Swell”	Dialogic
Medial Event 3	2:20.594	4 Units	[1, 2, 3, 32]	“Swell”	Dialogic
Medial Event 4	3:30.121	4 Units	[1, 32, 94]	“Swell”	Dialogic
Termination	4:32.14	-	-		
Structure	4:27.21	7 units	[1, 2, 3, 4, 32, 37, 94]	“Swell”	



Texture [T2] :: **Identity Classes: [“Cricket”]**

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	11,900 ms	1 Unit	[5]	“Swell”	
Onset	00:11.90	1 Unit	[5]	“Swell	Transitive
Continuation	01:58.04	1 Unit	[5]	“Swell” Emission Rate Process	
Medial Event 1	00:11.90	1 Unit	[5]	“Swell”	Dialogic
Medial Event 2	00:11.90	1 Unit	[5]	“Swell”	Dialogic
Termination	00:11.90	1 Unit	[5]	“Swell”	
Structure	2:10.06	1 Unit	[5]	“Swell” Emission Rate Process	Transitive Dialogic

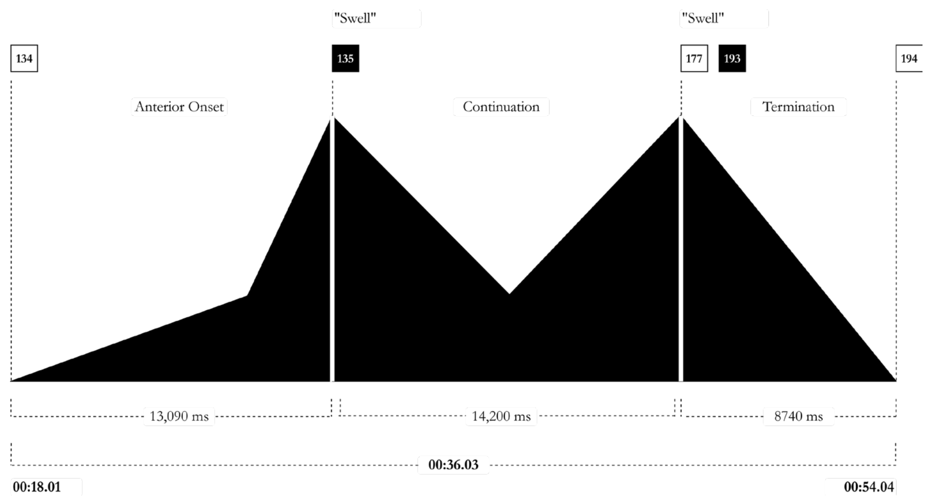


Texture [T3] :: **Identity Classes: [“Bird”]**

Subfunction	Duration	Density	Unit Array	Behavior	Function
Structure	00:19.190	1 Unit	[6]		

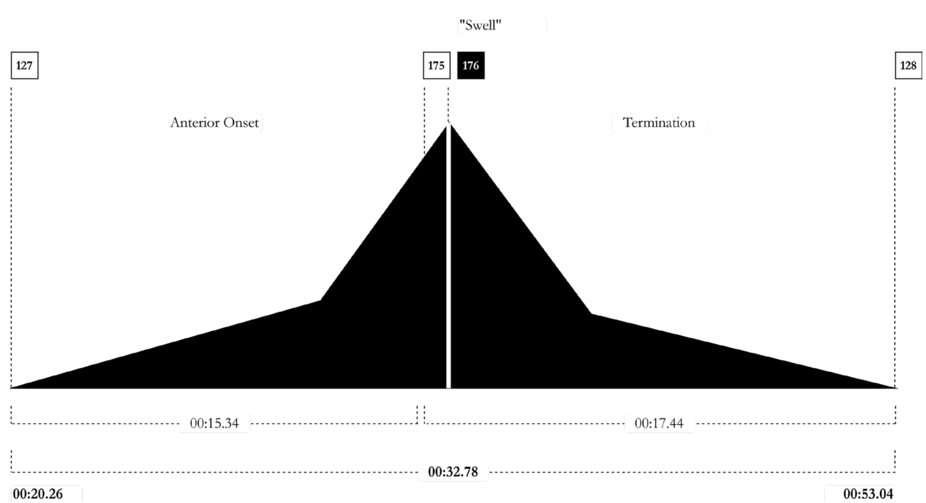
Texture [T4] :: Identity Classes: ["Glass"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	13,900 ms	3 Units	[7, 8, 9]	"Swell"	
Onset	-	3 Units	[7, 8, 9]	"Swell"	Transitive
Continuation	14,200 ms	3 Units	[7, 8, 9]	"Swell"	
Termination	8740 ms	3 Units	[7, 8, 9]	"Swell"	Dialogic
Structure	00:36.03	3 Units	[7, 8, 9]		



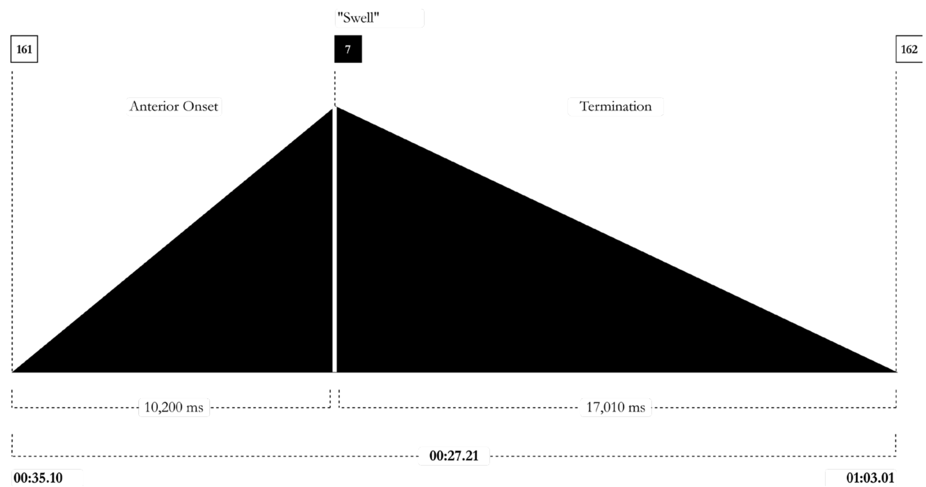
Texture [T5] :: Identity Classes: ["Bronze"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	00:15.34	1 Unit	[10]	"Swell"	
Onset	-	2 Units	[10, 18]	"Swell"	Transitive
Termination	00:17.44	2 Units	[10, 18]	"Swell"	
Structure	00:32.978	2 Units	[10, 18]		



Texture [T6] :: Identity Classes: ["Vocal"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	10,200 ms	1 Unit	[14]	"Swell"	
Onset	-	1 Unit	[14]	"Swell"	Dialogic
Termination	17,010 ms	1 Unit	[14]	"Swell"	
Structure	00:27.210	1 Unit	[14]		

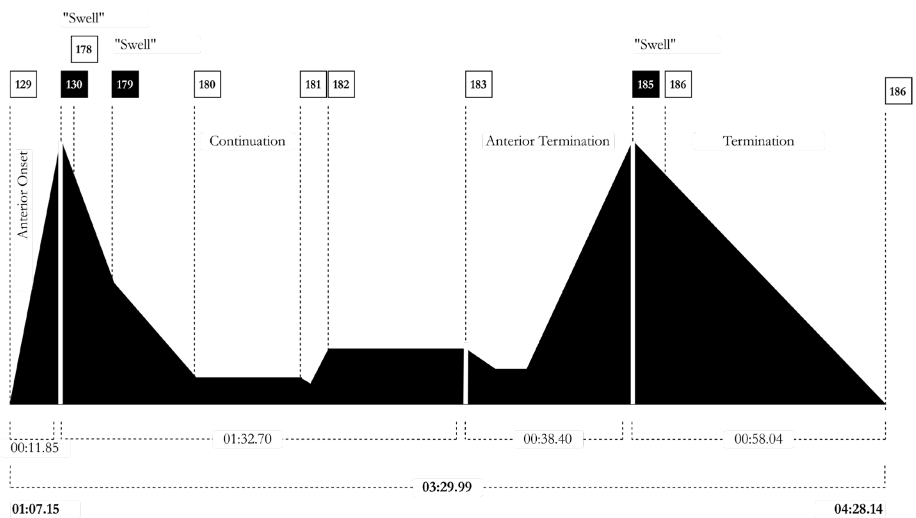


Texture [T7] :: Identity Classes: ["Bird"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Structure	00:18.000	1 Unit	[22]		

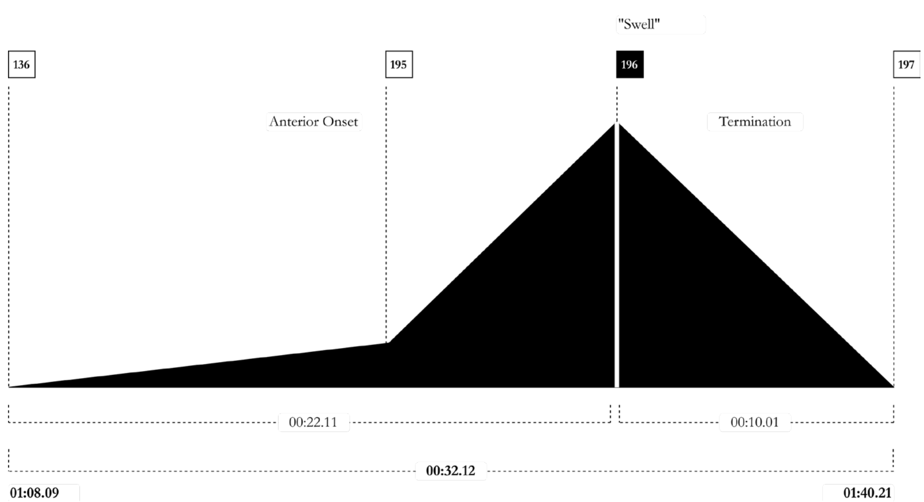
Texture [T8] :: Identity Classes: ["Bronze"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	00:11.85	1 Unit	[33]	"Swell"	
Onset	-	1 Unit	[33]	"Swell"	Dialogic
Continuation	01:32.70	6 Units	[33, 44, 67, 73, 74, 95]	"Swell"	
Anterior Termination	00:38.40	5 Units	[33, 67, 73, 74, 95]	"Swell"	Dialogic
Termination	00:58.04	4 Units	[33, 67, 74, 95]	"Swell"	
Structure	03:20.999	6 Units	[33, 44, 67, 73, 74, 95]		



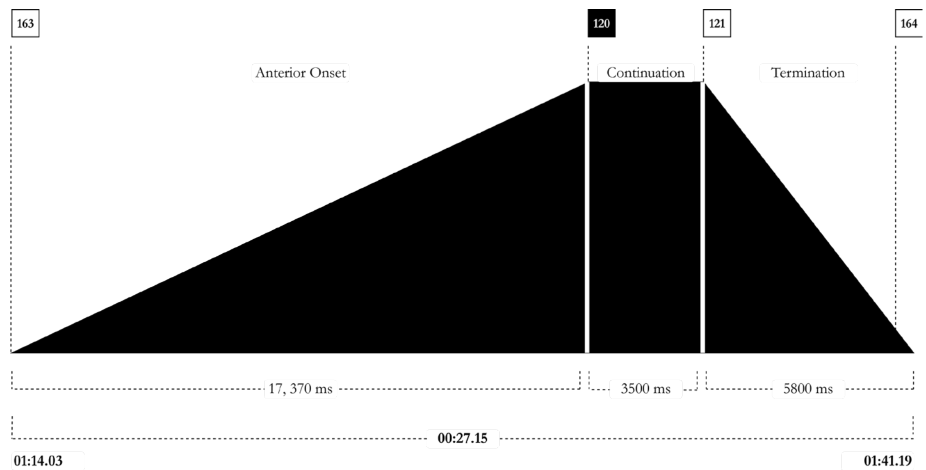
Texture [T9] :: Identity Classes: ["Glass"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	00:22.11	3 Units	[34, 35, 36]	"Swell"	
Onset	[00:22.11]	3 Units	[34, 35, 36]	"Swell"	Dialogic
Termination	00:10.01	3 Units	[34, 35, 36]	"Swell"	
Structure	00:32.12	3 Units	[34, 35, 36]	"Swell"	



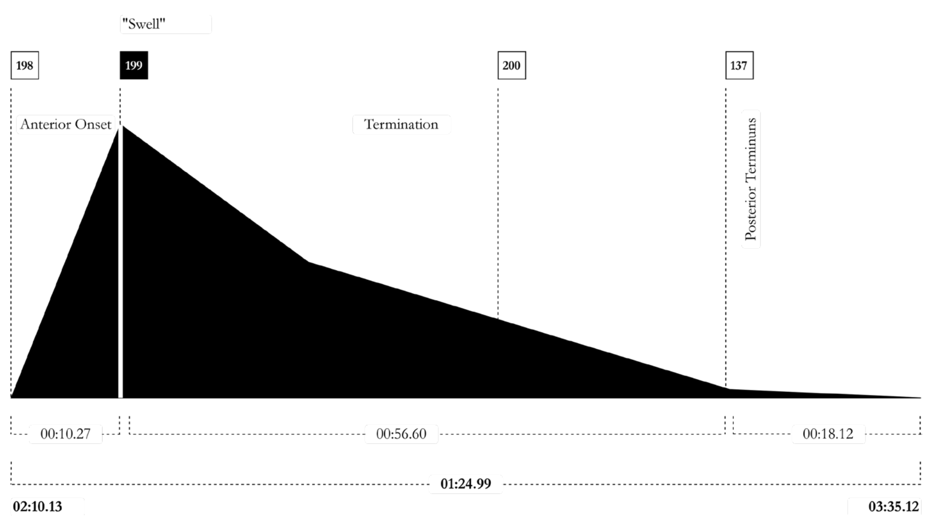
Texture [T10] :: Identity Classes: ["Vocal"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	17,370 ms	1 Unit	[42]	"Swell"	
Onset	-	1 Unit	[42]	"Swell"	Dialogic
Continuation	3500 ms	1 Unit	[42]	"Swell"	
Termination	5800 ms	1 Unit	[42]	"Swell"	
Structure	00:27.150	1 Unit	[42]		



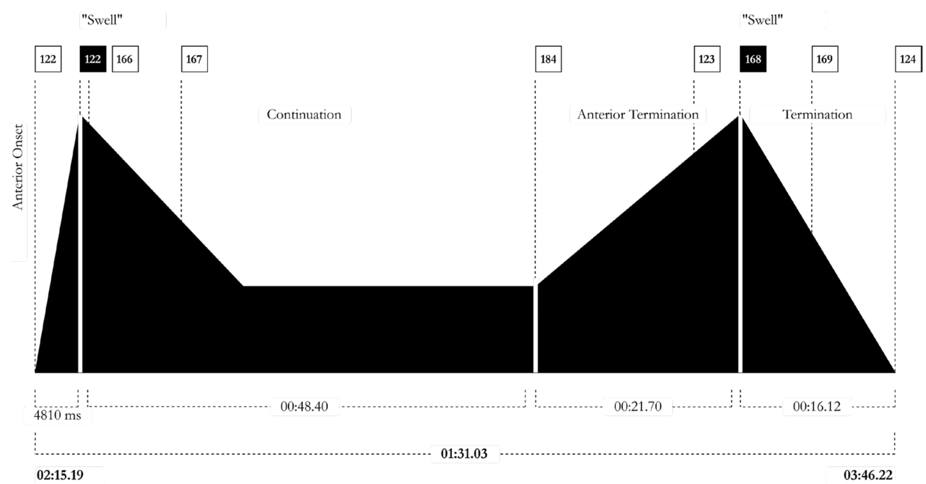
Texture [T11] :: Identity Classes: ["Glass"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	00:10.27	4 Units	[68, 69, 70, 72]	"Swell"	
Onset	-	4 Units	[68, 69, 70, 72]	"Swell"	Dialogic
Termination	00:56.60	4 Units	[68, 69, 70, 72]	"Swell"	
Posterior Terminus	[03:17.00]	2 Units	[69, 72]		
Structure	01:24.999	4 Units	[68, 69, 70, 72]		



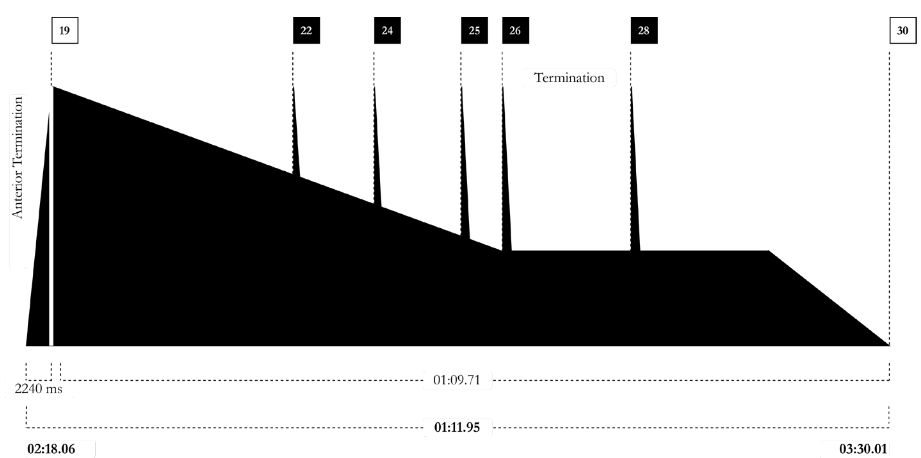
Texture [T12] :: Identity Classes: ["Vocal"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	4810 ms	1 Unit	[79]	"Swell"	
Onset	-	1 Unit	[79]	"Swell"	Dialogic
Continuation	00:48.40	1 Unit	[79]		
Anterior Termination	00:21.70	1 Unit	[79]	"Swell"	
Termination	00:16.12	1 Unit	[79]	"Swell"	Dialogic
Structure	01:31:030	1 Unit	[79]		



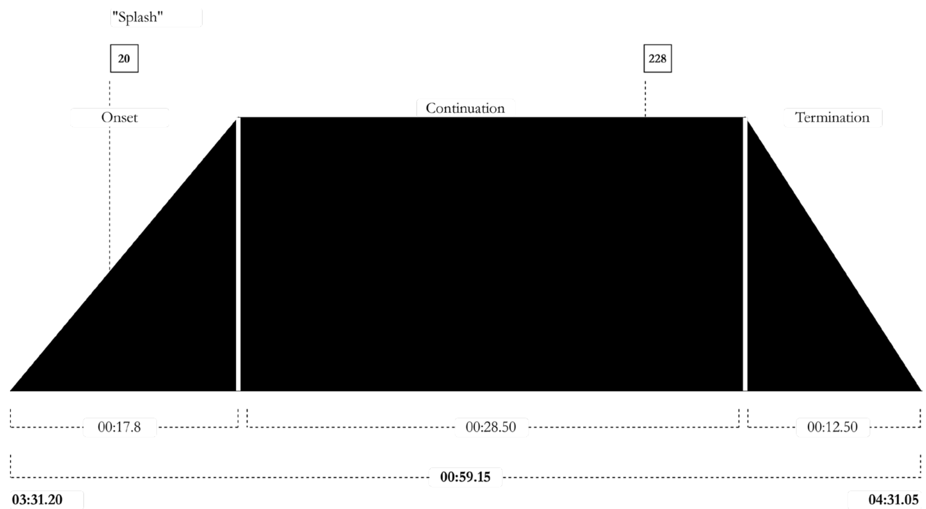
Texture [T13] :: Identity Classes: ["Fire"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	2240 ms	2 Units	[82, 83]		
Onset	-	3 Units	[82, 83, 88]		
Termination	01:09.71	6 Units	[82, 83, 88, 91, 92, 98]	"Pop"	
Structure	01:11.995	6 Units	[82, 83, 88, 91, 92, 98]		



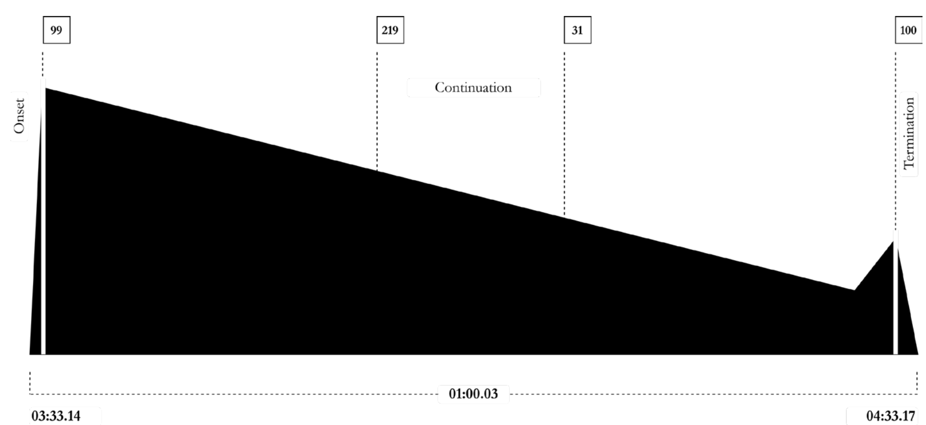
Texture [T14] :: Identity Classes: ["Water"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	00:17.80	1 Unit	[128]	"Splash"	
Continuation	00:28.50	1 Unit	[128]	"Splash"	
Termination	00:12.50	1 Unit	[128]	"Splash"	
Structure	00:59.150	1 Unit	[128]	"Splash"	



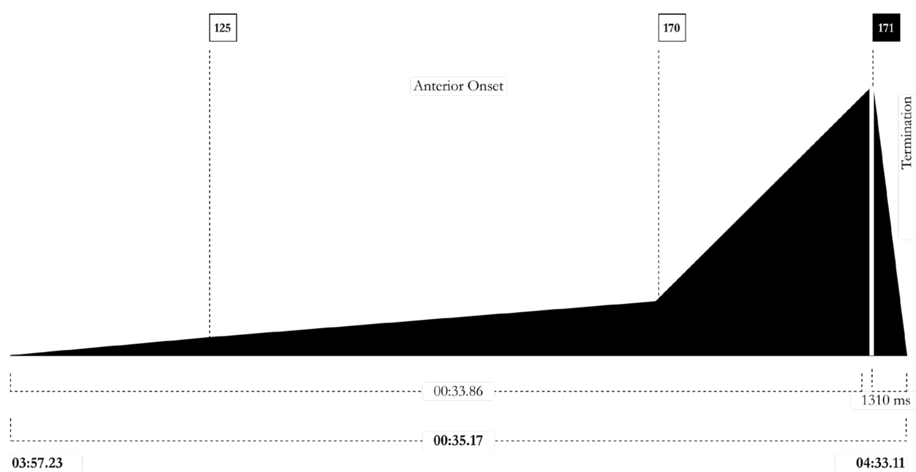
Texture [T15] :: Identity Classes: ["Sand"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	960 ms	3 Units	[129, 130, 131]		
Continuation	00:57.70	3 Units	[129, 130, 131]		
Termination	1370 ms	1 Unit	[131]		
Structure	01:00.03	3 Units	[129, 130, 131]		



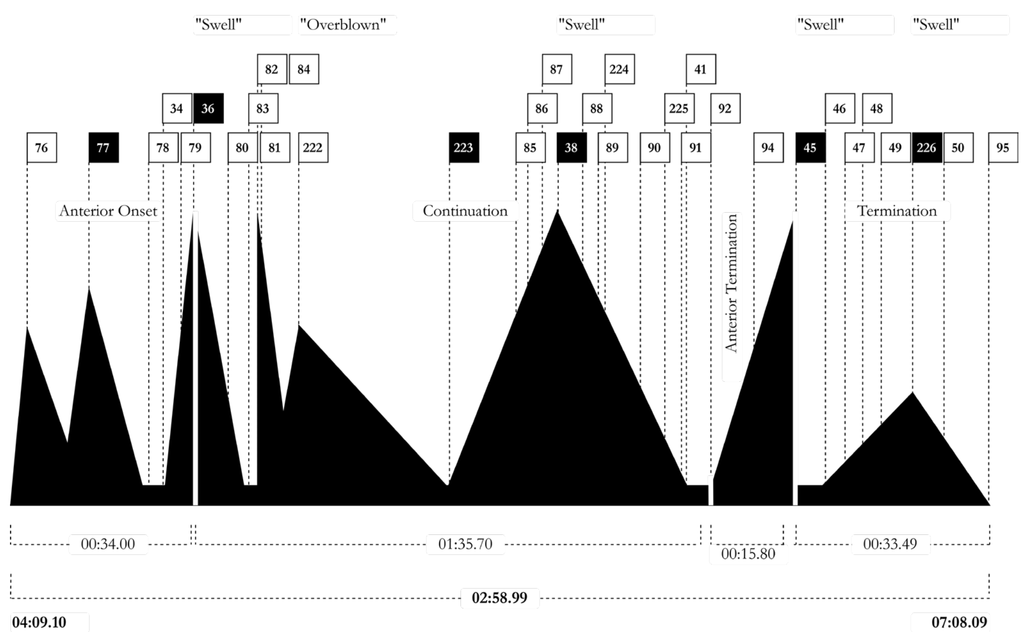
Texture [T6] :: Identity Classes: ["Vocal"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	00:33.86	1 Unit	[132]		
Onset Termination	1310 ms	1 Unit	[132]		Dialogic
Structure	00:25.170	1 Unit	[132]		



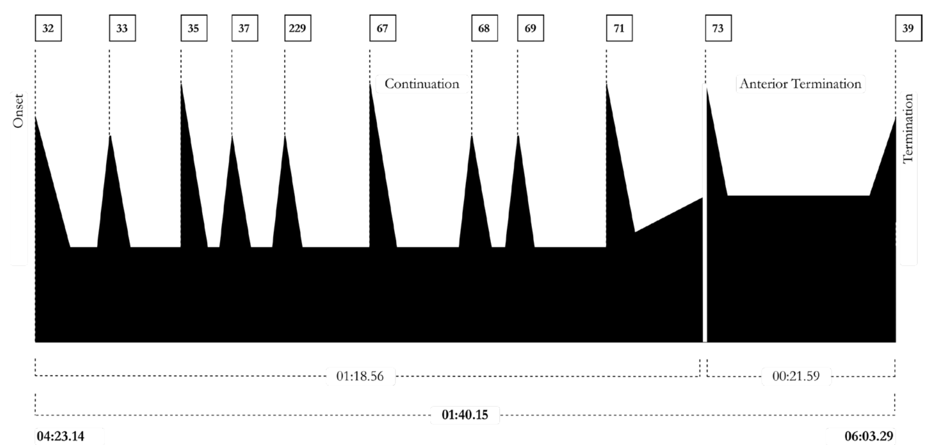
Texture [T17] :: Identity Classes: ["The Deep"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	00:34.00	1 Unit	[133]		
Onset	-			"Swell"	Transitive
Continuation	01:35.70	8 Units	[133, 142, 143, 144, 153, 165, 170, 181]	"Overblown" "Swell"	
Medial Event 1	[05:30.10]	4 Units	[142, 153, 165, 170]		
Medial Event 2	[05:50.30]	4 Units	[142, 153, 165, 181]		
Anterior Termination	00:15.80	4 Units	[142, 181, 204, 205]	"Swell"	
Termination	00:33.49	3 Units	[204, 205, 209]	"Swell"	Transitive
Structure	02:58.999	11 Units	[133, 142, 143, 144, 153, 165, 170, 181, 204, 205, 209]	"Overblown" "Swell"	



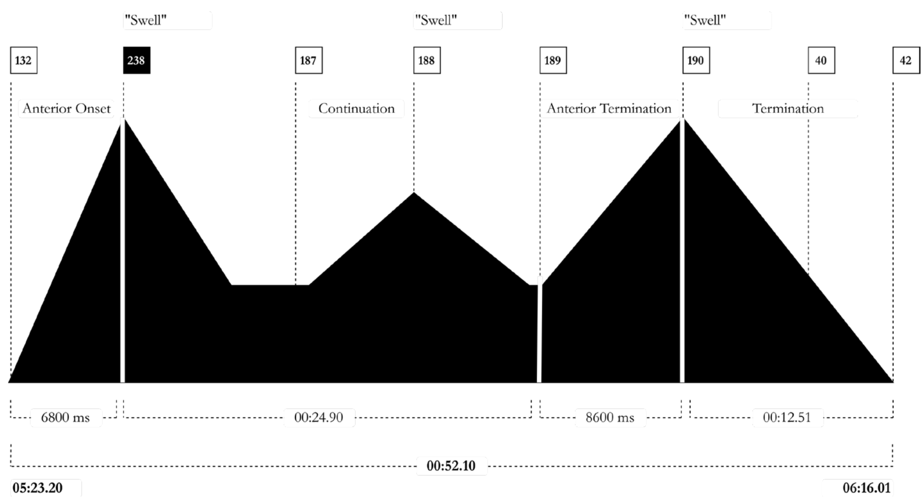
Texture [T18] :: **Identity Classes: ["Fire"]**

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	-	1 Unit	[137]		
Continuation	01:18.56	22 Units	[137, 141, 145, 146, 147, 148, 150, 151, 152, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 167, 168, 171]		
Anterior Termination	00:21.59	13 Units	[161, 164, 167, 168, 171, 175, 177, 178, 179, 180, 184, 185, 186]		
Termination	-	4 Units	[178, 184, 185, 186]		
Structure	01:32.056	31 Units	[137, 141, 145, 146, 147, 148, 149, 150, 151, 152, 154, 155, 156, 157, 158, 159, 160, 161, 163, 164, 167, 168, 171, 175, 177, 178, 179, 180, 184, 185, 186]		



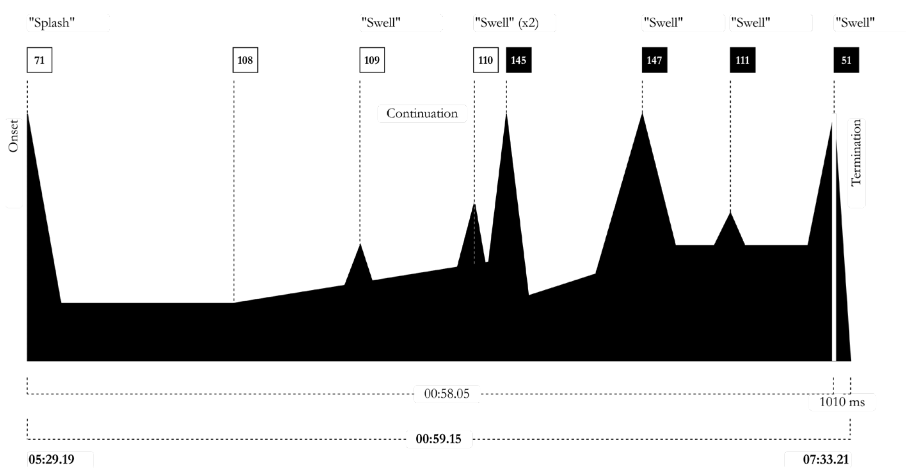
Texture [T19] :: Identity Classes: [“Bronze”]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	6800 ms	1 Unit	[166]	“Swell”	
Onset	-	1 Unit	[166]	“Swell”	Dialogic
Continuation	00:24.90	1 Unit	[166]	“Swell”	
Anterior Termination	8600 ms	1 Unit	[166]	“Swell”	
Termination	00:12.51	1 Unit	[166]	“Swell”	
Structure	00:52.100	1 Unit	[166]		



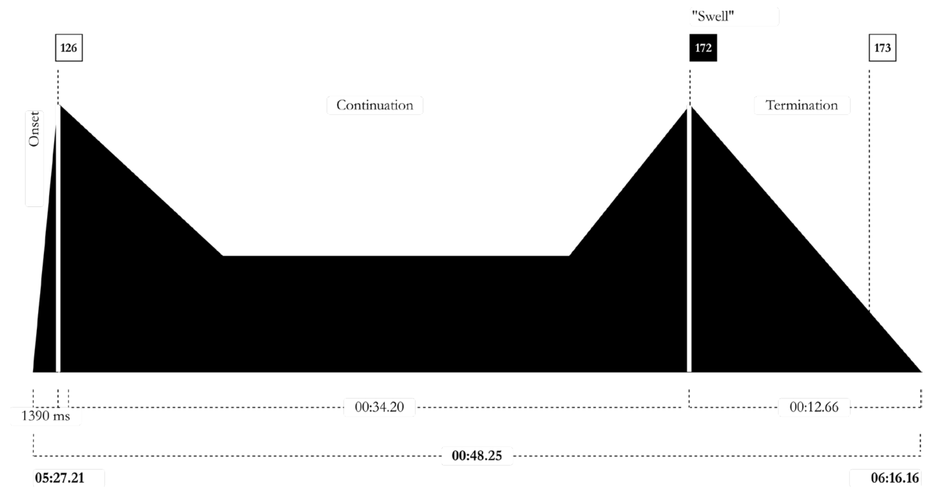
Texture [T20] :: Identity Classes: ["Water"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	-	1 Unit	[173]		
Continuation	00:58.05	3 Units	[173, 190, 208]	"Splash" "Swell"	
Medial Event 1	[06:41.60]	3 Units	[190, 208]	"Swell"	Transitive
Medial Event 2	[07:02.10]	1 Unit	[208]	"Swell"	Transitive
Medial Event 3	[07:15.40]	1 Unit	[208]	"Swell"	Transitive
Termination	1010 ms	1 Unit	[208]	"Swell"	Transitive
Structure	02:04.02	3 Units	[173, 190, 208]	"Splash" "Swell"	



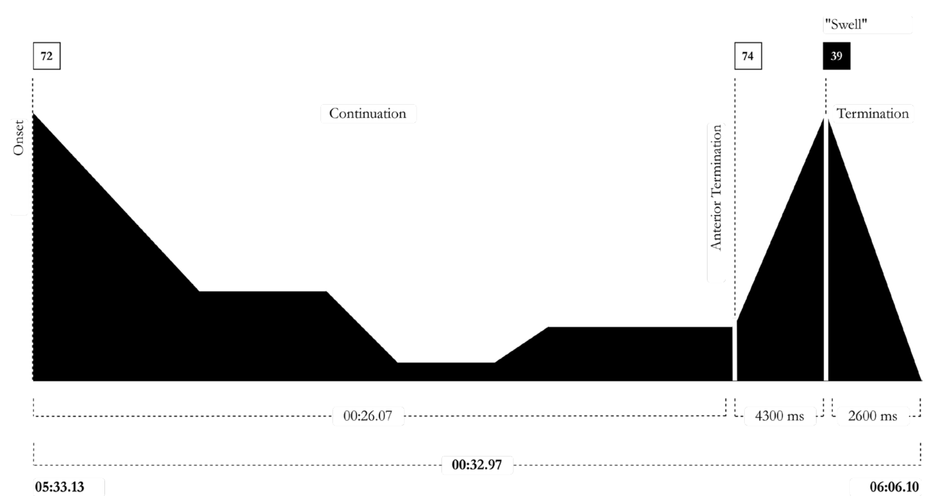
Texture [T21] :: Identity Classes: ["Vocal"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	1390 ms	1 Unit	[169]		
Continuation	00:34.20	1 Unit	[169]	"Swell"	
Termination	00:12.66	1 Unit	[169]	"Swell"	Dialogic
Structure	00:48.25	1 Unit	[169]	"Swell"	



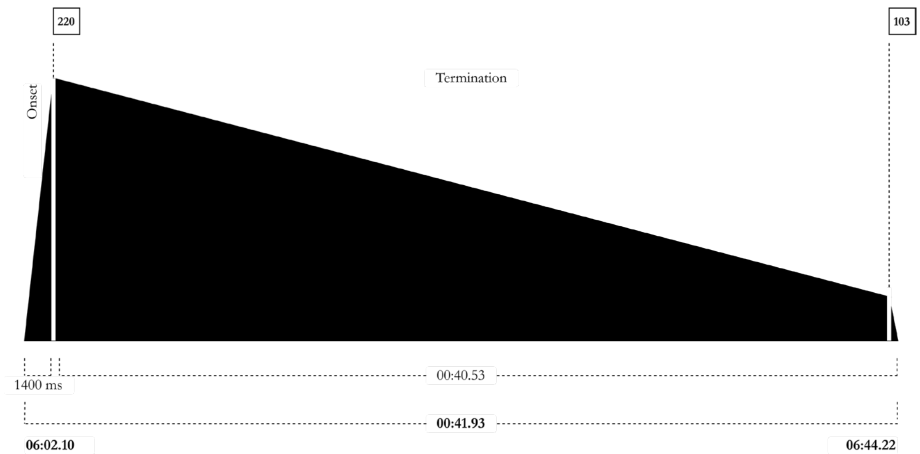
Texture [T22] :: Identity Classes: ["Metal"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	-	1 Unit	[176]		
Continuation	00:26.07	2 Units	[176, 182]		
Anterior Termination	4300 ms	2 Units	[176, 182]		Dialogic
Termination	2600 ms	2 Units	[176, 182]	"Swell"	Transitive
Structure	00:32.997	2 Units	[176, 182]		



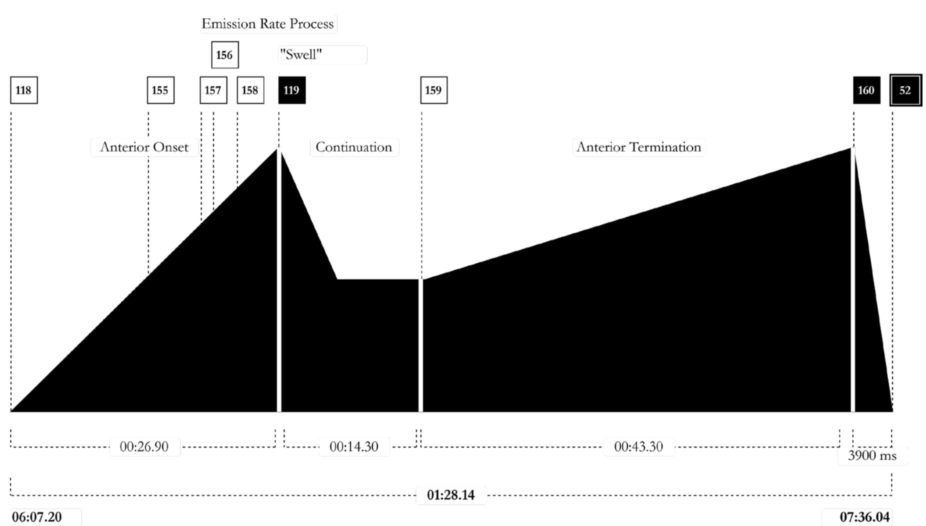
Texture [T23] :: Identity Classes: ["Sand"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	1400 ms	3 Units	[191, 192, 193]		
Termination	00:40.53	3 Units	[191, 192, 193]		
Structure	00:41.993	3 Units	[191, 192, 193]		



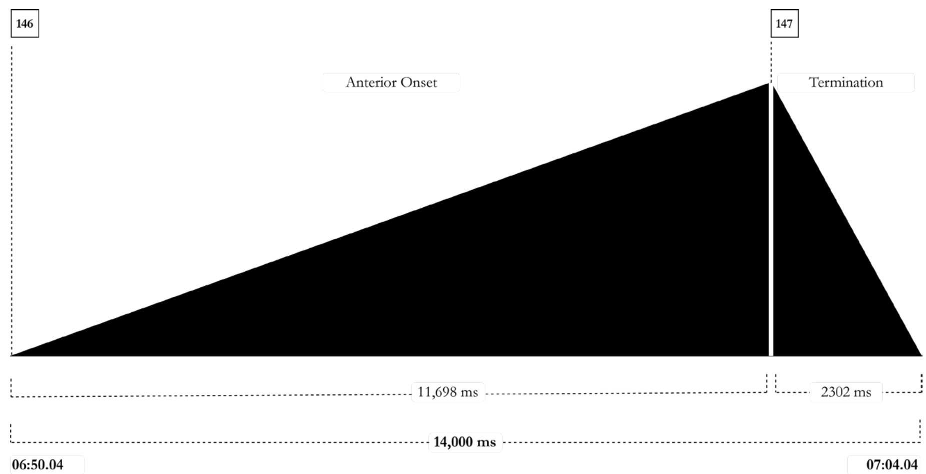
Texture [T24] :: Identity Classes: ["Cricket"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	00:26.90	4 Units	[198, 200, 206, 207]	Emission Rate Process "Swell"	
Onset	-	4 Units	[198, 200, 206, 207]	"Swell	Transitive
Continuation	00:14.30	4 Units	[198, 200, 206, 207]		
Anterior Termination	00:43.30	4 Units	[198, 200, 206, 207]		
Termination	3900 ms	3 Units	[198, 206, 207]		Transitive
Structure	01:28.984	4 Units	[198, 200, 206, 207]	Emission Rate Process	



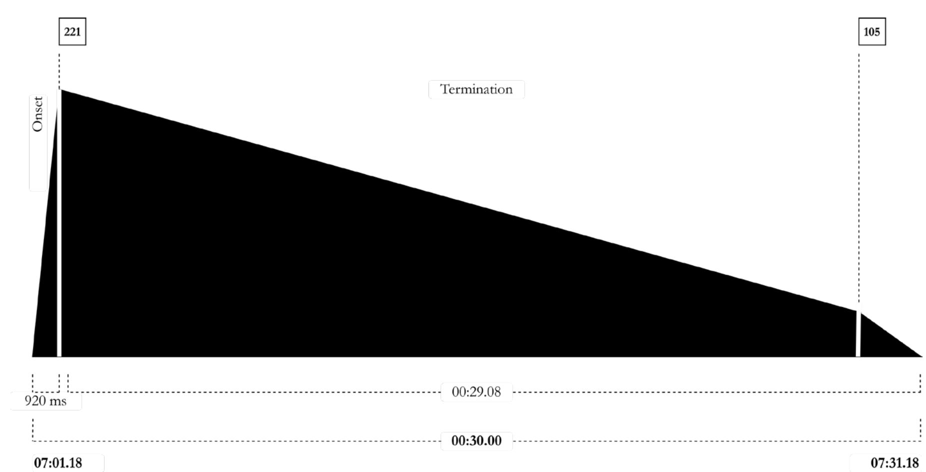
Texture [T25] :: Identity Classes: ["Bird"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Anterior Onset	11,698 ms	1 Unit	[213]	"Swell"	
Onset Termination	2302 ms	1 Unit	[213]	"Swell"	
Structure	00:14.000	1 Unit	[213]	"Swell"	



Texture [T26] :: Identity Classes: ["Sand"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Onset	920 ms	2 Units	[214, 217]		
Termination	00:29.08	3 Units	[214, 217, 218]		
Structure	00:30.000	3 Units	[214, 217, 218]		



Texture [T27] :: Identity Classes: ["Bird"]

Subfunction	Duration	Density	Unit Array	Behavior	Function
Structure	00:18.190	1 Unit	[219]		

A.5 | *What Sleeps Beneath -* Source Unit Catalogue

IMPULSES

Index: 19 **Source Soundfile Name:**
Bronze Pot freeze.wav

Structure:	Impulse 1	**Start:**	00:00:45:06	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	N/A	**End:**	00:00:50:22	**Source Offset:**	00:00:44:29	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:05:16	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

Index: 20 **Source Soundfile Name:**
[NOISE] Blowing out Match.wav

Structure:	Impulse 1	**Start:**	00:00:45:08	**Source Duration:**	00:00:56:00	**Method:**	Studio
Function:	N/A	**End:**	00:00:45:27	**Source Offset:**	00:00:32:01	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:00:19	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	February 20th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	6:51 PM

Index: 21 **Source Soundfile Name:**
[NOISE] Blowing out Match.wav

Structure:	Impulse 1	**Start:**	00:00:45:09	**Source Duration:**	00:00:56:00	**Method:**	Studio
Function:	N/A	**End:**	00:00:45:27	**Source Offset:**	00:00:32:01	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:00:17	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	February 20th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	6:51 PM

Index: 199 **Source Soundfile Name:**
Bronze Pot freeze.wav

Structure:	Impulse 2	**Start:**	00:06:10:18	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	N/A	**End:**	00:06:15:24	**Source Offset:**	00:06:54:24	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:05:05	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

Index: 201 **Source Soundfile Name:**
Bronze Pot freeze.wav

Structure:	Impulse 3	**Start:**	00:06:16:29	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	N/A	**End:**	00:06:22:22	**Source Offset:**	00:06:54:24	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:05:22	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

GESTURES

Index: 11 **Source Soundfile Name:**
[NOISE] Match scrape - 3.wav

Structure:	Gesture 1	**Start:**	00:00:32:03	**Source Duration:**	00:00:04:15	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:00:36:21	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:04:18	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:53 PM

Index: 12 **Source Soundfile Name:**
Bronze Pot freeze reversed 001.wav

Structure:	Gesture 1	**Start:**	00:00:32:13	**Source Duration:**	00:00:06:14	**Method:**	Studio
Function:	Anterior Onset.2	**End:**	00:00:36:17	**Source Offset:**	00:00:04:29	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:04:04	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 31st, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	12:40 PM

Index: 13 **Source Soundfile Name:**
[NOISE] Match scrape - 3.wav

Structure:	Gesture 1	**Start:**	00:00:33:02	**Source Duration:**	00:00:04:15	**Method:**	Studio
Function:	Anterior Onset.3	**End:**	00:00:37:17	**Source Offset:**	00:00:00:28	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:04:15	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:53 PM

Index: 15 **Source Soundfile Name:**
Bronze Pot freeze.wav

Structure:	Gesture 1	**Start:**	00:00:35:11	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Termination.1	**End:**	00:00:39:20	**Source Offset:**	00:00:45:00	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:04:09	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

Index: 16 **Source Soundfile Name:**
[NOISE] Match Ignite - 4.wav

Structure:	Gesture 1	**Start:**	00:00:35:12	**Source Duration:**	00:00:07:13	**Method:**	Studio
Function:	Termination.2	**End:**	00:00:40:23	**Source Offset:**	00:00:00:07	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:05:11	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:53 PM

Index: 17	Source Soundfile Name:						
	[NOISE] Match Ignite - 4.wav						
Structure:	Gesture 1	**Start:**	00:00:35:13	**Source Duration:**	00:00:07:13	**Method:**	Studio
Function:	Termination.3	**End:**	00:00:36:01	**Source Offset:**	00:00:00:07	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:00:18	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:53 PM		

Index: 23	Source Soundfile Name:						
	[NOISE] Shaking Out Matches.wav						
Structure:	Gesture 2	**Start:**	00:00:53:27	**Source Duration:**	00:00:05:14	**Method:**	Studio
Function:	Onset.1	**End:**	00:00:59:14	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:05:17	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:49 PM		

Index: 24	Source Soundfile Name:						
	[NOISE] Dumping Out Matches - 2.wav						
Structure:	Gesture 2	**Start:**	00:00:58:21	**Source Duration:**	00:00:03:10	**Method:**	Studio
Function:	Continuation.1	**End:**	00:01:02:02	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:03:10	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:48 PM		

Index: 25	Source Soundfile Name:						
	210926_Source-Matches_gesture12_Speed-5._Length-4028.wav						
Structure:	Gesture 2	**Start:**	00:00:58:28	**Source Duration:**	00:00:04:02	**Method:**	Studio
Function:	Continuation.2	**End:**	00:01:02:29	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:04:01	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:07 PM		

Index: 26	Source Soundfile Name:						
	[NOISE] Dropping singular matches - 2.wav						
Structure:	Gesture 2	**Start:**	00:00:59:21	**Source Duration:**	00:00:03:04	**Method:**	Studio
Function:	Continuation.3	**End:**	00:01:02:27	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:03:06	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:48 PM		

Index: 27 **Source Soundfile Name:**
[NOISE] Dropping a few matches - 5.wav

Structure:	Gesture 2	**Start:**	00:01:02:18	**Source Duration:**	00:00:01:11	**Method:**	Studio
Function:	Termination.1	**End:**	00:01:04:06	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:01:17	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:50 PM		

Index: 28 **Source Soundfile Name:**
[NOISE] Dropping a few matches - 5.wav

Structure:	Gesture 2	**Start:**	00:01:02:21	**Source Duration:**	00:00:01:11	**Method:**	Studio
Function:	Termination.2	**End:**	00:01:04:07	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:01:16	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:50 PM		

Index: 29 **Source Soundfile Name:**
210926_Source-Matches_gesture6_Speed-5._Length-1084.wav

Structure:	Gesture 2	**Start:**	00:01:02:29	**Source Duration:**	00:00:01:03	**Method:**	Studio
Function:	Termination.3	**End:**	00:01:04:06	**Source Offset:**	00:00:01:02	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:01:07	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:06 PM		

Index: 30 **Source Soundfile Name:**
[NOISE] Match scrape - 1.wav

Structure:	Gesture 3	**Start:**	00:01:03:05	**Source Duration:**	00:00:10:25	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:01:14:05	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:10:29	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:52 PM		

Index: 31 **Source Soundfile Name:**
[NOISE] Match scrape - 1.wav

Structure:	Gesture 3	**Start:**	00:01:03:06	**Source Duration:**	00:00:10:25	**Method:**	Studio
Function:	Anterior Onset.2	**End:**	00:01:15:03	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:11:27	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:52 PM		

Index: 38 **Source Soundfile Name:**
[NOISE] Dumping Out Matches - 2.wav

Structure:	Gesture 3	**Start:**	00:01:12:22	**Source Duration:**	00:00:03:10	**Method:**	Studio
Function:	Continuation.1	**End:**	00:01:16:04	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:03:11	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:48 PM

Index: 39 **Source Soundfile Name:**
210926_Source-Matches_gesture20_Speed-1.8_Length-3977.wav

Structure:	Gesture 3	**Start:**	00:01:12:23	**Source Duration:**	00:00:04:00	**Method:**	Studio
Function:	Continuation.2	**End:**	00:01:16:27	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:04:03	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	Septemberr 26th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	9:08 PM

Index: 40 **Source Soundfile Name:**
Swoosh 1 freeze.wav

Structure:	Gesture 3	**Start:**	00:01:13:27	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Termination.1	**End:**	00:01:20:15	**Source Offset:**	00:00:01:18	**Means:**	AT 2035
Identity Class:	Metal	**Duration:**	00:00:06:18	**Channels:**	2	**SR:**	44100

Location:	Thoresen Farm	**Date:**	October 5th, 2021
Geolocation:	44.930187, -85.958576	**Time:**	4:20 PM

Index: 41 **Source Soundfile Name:**
[NOISE] Match scrape - 4.wav

Structure:	Gesture 3	**Start:**	00:01:14:00	**Source Duration:**	00:00:04:00	**Method:**	Studio
Function:	Continuation.3	**End:**	00:01:18:04	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:04:03	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:53 PM

Index: 43 **Source Soundfile Name:**
[NOISE] Match scrape - 4.wav

Structure:	Gesture 3	**Start:**	00:01:15:03	**Source Duration:**	00:00:04:00	**Method:**	Studio
Function:	Termination.2	**End:**	00:01:17:27	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:02:23	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:53 PM

Index: 45 **Source Soundfile Name:** [NOISE] Match scrape - 3.wav

Structure:	Gesture 4	**Start:**	00:01:26:20	**Source Duration:**	00:00:04:15	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:01:31:10	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:04:20	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:53 PM		

Index: 46 **Source Soundfile Name:** [NOISE] Match scrape - 3.wav

Structure:	Gesture 4	**Start:**	00:01:26:21	**Source Duration:**	00:00:04:15	**Method:**	Studio
Function:	Anterior Onset.2	**End:**	00:01:32:07	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:05:16	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:53 PM		

Index: 47 **Source Soundfile Name:** [NOISE] Match Ignite - 3.wav

Structure:	Gesture 4	**Start:**	00:01:29:25	**Source Duration:**	00:00:06:07	**Method:**	Studio
Function:	Onset.1	**End:**	00:01:36:07	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:06:12	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:52 PM		

Index: 48 **Source Soundfile Name:** [NOISE] Match Ignite - 3.wav

Structure:	Gesture 4	**Start:**	00:01:29:25	**Source Duration:**	00:00:06:07	**Method:**	Studio
Function:	Onset.2	**End:**	00:01:36:06	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:06:11	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:52 PM		

Index: 49 **Source Soundfile Name:** Bronze Pot freeze.wav

Structure:	Gesture 4	**Start:**	00:01:29:29	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.3	**End:**	00:01:35:05	**Source Offset:**	00:01:29:27	**Means:**	Max
Identity Class:	Bronze	**Duration:**	00:00:05:05	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 50	**Source Soundfile Name:**						
	210926_Source-Matches_gesture27_Speed-0.2_Length-9717.wav						
Structure:	Gesture 4	**Start:**	00:01:30:03	**Source Duration:**	00:00:09:23	**Method:**	Studio
Function:	Continuation.1	**End:**	00:01:39:29	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:09:25	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:10 PM		

Index: 51	**Source Soundfile Name:**						
	210926_Source-Matches_gesture27_Speed-0.2_Length-9717.wav						
Structure:	Gesture 4	**Start:**	00:01:30:22	**Source Duration:**	00:00:09:23	**Method:**	Studio
Function:	Continuation.2	**End:**	00:01:41:26	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:11:03	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:10 PM		

Index: 52	**Source Soundfile Name:**						
	210926_Source-Matches_gesture16_Speed-1.8_Length-2095.wav						
Structure:	Gesture 4	**Start:**	00:01:39:01	**Source Duration:**	00:00:02:04	**Method:**	Studio
Function:	Termination.1	**End:**	00:01:41:09	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:02:08	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:08 PM		

Index: 53	**Source Soundfile Name:**						
	210926_Source-Matches_gesture16_Speed-1.8_Length-2095.wav						
Structure:	Gesture 4	**Start:**	00:01:39:02	**Source Duration:**	00:00:02:04	**Method:**	Studio
Function:	Termination.2	**End:**	00:01:41:11	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:02:09	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:08 PM		

Index: 54	**Source Soundfile Name:**						
	[NOISE] Match scrape - 1 reversed 001.wav						
Structure:	Gesture 5	**Start:**	00:01:44:19	**Source Duration:**	00:00:10:25	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:01:55:18	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:10:28	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:52 PM		

Index: 55 **Source Soundfile Name:**
[NOISE] Match scrape - 1.wav

Structure:	Gesture 5	**Start:**	00:01:45:07	**Source Duration:**	00:00:10:25	**Method:**	Studio
Function:	Anterior Onset.2	**End:**	00:01:56:06	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:10:29	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:52 PM

Index: 56 **Source Soundfile Name:**
[NOISE] Match scrape - 1.wav

Structure:	Gesture 5	**Start:**	00:01:45:07	**Source Duration:**	00:00:10:25	**Method:**	Studio
Function:	Anterior Onset.3	**End:**	00:01:57:09	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:12:01	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:52 PM

Index: 57 **Source Soundfile Name:**
[NOISE] Match scrape - 1.wav

Structure:	Gesture 5	**Start:**	00:01:45:15	**Source Duration:**	00:00:10:25	**Method:**	Studio
Function:	Anterior Onset.4	**End:**	00:01:55:22	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:10:07	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:52 PM

Index: 58 **Source Soundfile Name:**
[NOISE] Match Ignite - 4.wav

Structure:	Gesture 5	**Start:**	00:01:54:17	**Source Duration:**	00:00:07:13	**Method:**	Studio
Function:	Onset.1	**End:**	00:01:58:23	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:04:05	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:53 PM

Index: 59 **Source Soundfile Name:**
[NOISE] Match Ignite - 4.wav

Structure:	Gesture 5	**Start:**	00:01:54:18	**Source Duration:**	00:00:07:13	**Method:**	Studio
Function:	Onset.2	**End:**	00:01:58:11	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:03:22	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:53 PM

Index: 60	Source Soundfile Name: 210926_Source-Matches_gesture11_Speed-5._Length-8509.wav						
Structure:	Gesture 5	**Start:**	00:01:54:26	**Source Duration:**	00:00:08:16	**Method:**	Studio
Function:	Continuation.1	**End:**	00:02:03:16	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:08:19	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:07 PM		

Index: 61	Source Soundfile Name: 210926_Source-Matches_gesture11_Speed-5._Length-8509.wav						
Structure:	Gesture 5	**Start:**	00:01:55:05	**Source Duration:**	00:00:08:16	**Method:**	Studio
Function:	Continuation.2	**End:**	00:02:05:07	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:10:01	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:07 PM		

Index: 62	Source Soundfile Name: [NOISE] Dumping Out Matches - 1.wav						
Structure:	Gesture 5	**Start:**	00:01:58:03	**Source Duration:**	00:00:05:09	**Method:**	Studio
Function:	Continuation.3	**End:**	00:02:03:13	**Source Offset:**	00:00:00:01	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:05:10	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:48 PM		

Index: 63	Source Soundfile Name: [NOISE] Match Box Shake - 1.wav						
Structure:	Gesture 5	**Start:**	00:02:02:03	**Source Duration:**	00:00:03:29	**Method:**	Studio
Function:	Continuation.4	**End:**	00:02:05:23	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:03:20	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:45 PM		

Index: 64	Source Soundfile Name: 210926_Source-Matches_gesture7_Speed-5._Length-17519.wav						
Structure:	Gesture 5	**Start:**	00:02:03:10	**Source Duration:**	00:00:17:17	**Method:**	Studio
Function:	Continuation.5	**End:**	00:02:20:20	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:17:10	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:07 PM		

Index: 65 **Source Soundfile Name:**
[NOISE] Match Box Shake - 1.wav

Structure:	Gesture 5	**Start:**	00:02:03:11	**Source Duration:**	00:00:03:29	**Method:**	Studio
Function:	Continuation.6	**End:**	00:02:29:14	**Source Offset:**	00:00:00:09	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:26:02	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:45 PM

Index: 66 **Source Soundfile Name:**
[NOISE] Shaking Out Matches.wav

Structure:	Gesture 5	**Start:**	00:02:06:10	**Source Duration:**	00:00:05:14	**Method:**	Studio
Function:	Continuation.7	**End:**	00:02:11:27	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:05:16	**Channels:**	1	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	February 6th, 2020
Geolocation:	34.418263, -119.854927	**Time:**	10:49 PM

Index: 71 **Source Soundfile Name:**
210926_Source-Matches_gesture18_Speed-1.8_Length-2608.wav

Structure:	Gesture 5	**Start:**	00:02:11:10	**Source Duration:**	00:00:02:19	**Method:**	Studio
Function:	Continuation.8	**End:**	00:02:14:03	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:02:22	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	Septemberr 26th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	9:08 PM

Index: 75 **Source Soundfile Name:**
210926_Source-Matches_gesture15_Speed-1.8_Length-803.wav

Structure:	Gesture 5	**Start:**	00:02:13:28	**Source Duration:**	00:00:00:25	**Method:**	Studio
Function:	Continuation.9	**End:**	00:02:14:28	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:00:29	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	Septemberr 26th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	9:08 AM

Index: 76 **Source Soundfile Name:**
Voc 2 freeze.wav

Structure:	Gesture 5	**Start:**	00:02:14:12	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Termination.1	**End:**	00:02:23:13	**Source Offset:**	00:02:14:12	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:00:09:00	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5h, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:20 PM

Index: 77	Source Soundfile Name: 210926_Source-Matches_gesture7_Speed-5._Length-17519.wav						
Structure:	Gesture 5	**Start:**	00:02:15:09	**Source Duration:**	00:00:17:17	**Method:**	Studio
Function:	Anterior Termination.2	**End:**	00:02:20:21	**Source Offset:**	00:00:00:03	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:05:11	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:07 PM		

Index: 78	Source Soundfile Name: Swoosh 1 freeze.wav						
Structure:	Gesture 5	**Start:**	00:02:15:10	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Anterior Termination.3	**End:**	00:02:25:01	**Source Offset:**	00:02:15:10	**Means:**	AT 2035
Identity Class:	Metal	**Duration:**	00:00:09:20	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm			**Date:**	October 5h, 2021		
Geolocation:	44.930187, -85.958576			**Time:**	4:20 PM		

Index: 80	Source Soundfile Name: 347447__drfx__blow-torch-version-1.wav						
Structure:	Gesture 5	**Start:**	00:02:15:21	**Source Duration:**	00:00:05:28	**Method:**	Procured
Function:	Anterior Termination.4	**End:**	00:02:20:12	**Source Offset:**	00:00:00:00	**Means:**	Internet
Identity Class:	Matches	**Duration:**	00:00:04:21	**Channels:**	2	**SR:**	44100
Location:	External Source			**Date:**	February 7th, 2020		
Geolocation:	N/A			**Time:**	11:49 PM		

Index: 81	Source Soundfile Name: 210926_Source-Matches_gesture7_Speed-5._Length-17519.wav						
Structure:	Gesture 5	**Start:**	00:02:15:24	**Source Duration:**	00:00:17:17	**Method:**	Studio
Function:	Anterior Termination.5	**End:**	00:02:20:21	**Source Offset:**	00:00:00:19	**Means:**	Max
Identity Class:	Matches	**Duration:**	00:00:04:26	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	9:07 PM		

Index: 84	Source Soundfile Name: Bronze Pot freeze.wav						
Structure:	Gesture 5	**Start:**	00:02:19:24	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Termination.1	**End:**	00:02:25:04	**Source Offset:**	00:02:19:24	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:05:10	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5h, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 85	Source Soundfile Name:						
	[NOISE] Match Ignite - 5.wav						
Structure:	Gesture 5	**Start:**	00:02:19:28	**Source Duration:**	00:00:10:13	**Method:**	Studio
Function:	Termination.2	**End:**	00:02:24:18	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:04:20	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:53 PM		

Index: 86	Source Soundfile Name:						
	Voc 1 freeze.wav						
Structure:	Gesture 5	**Start:**	00:02:20:00	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Termination.3	**End:**	00:02:30:28	**Source Offset:**	00:02:20:00	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:00:10:27	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5h, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:20 PM		

Index: 87	Source Soundfile Name:						
	[NOISE] Match Ignite - 5.wav						
Structure:	Gesture 5	**Start:**	00:02:20:01	**Source Duration:**	00:00:10:13	**Method:**	Studio
Function:	Termination.4	**End:**	00:02:25:08	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Matches	**Duration:**	00:00:05:06	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:53 PM		

Index: 89	Source Soundfile Name:						
	Reaper - WSB_freeze_[NOISE] LinusYuleLog-001.wav						
Structure:	Gesture 6	**Start:**	00:02:20:15	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Onset Termination.1	**End:**	00:02:21:12	**Source Offset:**	00:00:00:09	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:00:26	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 24th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:50 PM		

Index: 90	Source Soundfile Name:						
	Reaper - WSB_freeze_[NOISE] LinusYuleLog.wav						
Structure:	Gesture 6	**Start:**	00:02:20:15	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Posterior Termination.1	**End:**	00:02:33:15	**Source Offset:**	00:00:00:00	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:12:29	**Channels:**	1	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 24th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:49 PM		

Index: 93 **Source Soundfile Name:**
Reaper - WSB_freeze_[NOISE] LinusYuleLog-001.wav

Structure:	Gesture 6	**Start:**	00:02:22:08	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Reactivation.1	**End:**	00:02:23:12	**Source Offset:**	00:00:02:01	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:01:03	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	October 24th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:50 PM

Index: 96 **Source Soundfile Name:**
Reaper - WSB_freeze_[NOISE] LinusYuleLog-001.wav

Structure:	Gesture 6	**Start:**	00:02:26:02	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Reactivation.2	**End:**	00:02:26:27	**Source Offset:**	00:00:05:25	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:00:25	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	October 24th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:50 PM

Index: 97 **Source Soundfile Name:**
211004_Source-Rocks_gesture2_Speed-0.5_Length-9887.wav

Structure:	Gesture 7	**Start:**	00:02:37:24	**Source Duration:**	00:00:09:28	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:02:47:07	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Rocks	**Duration:**	00:00:09:12	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 3rd, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	8:35 PM

Index: 99 **Source Soundfile Name:**
[NOISE] LinusYuleLog.wav

Structure:	Gesture 7	**Start:**	00:02:40:07	**Source Duration:**	00:08:07:29	**Method:**	Procured
Function:	Onset Termination.1	**End:**	00:02:46:13	**Source Offset:**	00:00:23:29	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:06:05	**Channels:**	2	**SR:**	44100

Location:	External Source	**Date:**	February 6th, 2020
Geolocation:	N/A	**Time:**	11:04 PM

Index: 100 **Source Soundfile Name:**
Reaper - WSB_freeze_[NOISE] LinusYuleLog-001.wav

Structure:	Gesture 7	**Start:**	00:02:40:07	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Onset Termination.2	**End:**	00:02:41:09	**Source Offset:**	00:00:20:01	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:01:01	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	October 24th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:50 PM

Index: 101	**Source Soundfile Name:** Reaper - WSB_freeze_[NOISE] LinusYuleLog.wav				
Structure: Gesture 7	**Start:** 00:02:40:08	**Source Duration:** 00:01:10:23	**Method:** Procured		
Function: Posterior Termination.1	**End:** 00:02:46:27	**Source Offset:** 00:00:20:00	**Means:** Internet		
Identity Class: Fire	**Duration:** 00:00:06:19	**Channels:** 1	**SR:** 48000		
Location: Santa Barbara, CA		**Date:** October 24th, 2021			
Geolocation: 34.418263, -119.854927		**Time:** 1:49 PM			

Index: 102	**Source Soundfile Name:** Reaper - WSB_freeze_[NOISE] LinusYuleLog.wav				
Structure: Gesture 8	**Start:** 00:02:46:28	**Source Duration:** 00:01:10:23	**Method:** Procured		
Function: Posterior Termination.1	**End:** 00:02:57:09	**Source Offset:** 00:00:26:21	**Means:** Internet		
Identity Class: Fire	**Duration:** 00:00:10:10	**Channels:** 1	**SR:** 48000		
Location: Santa Barbara, CA		**Date:** October 24th, 2021			
Geolocation: 34.418263, -119.854927		**Time:** 1:49 PM			

Index: 103	**Source Soundfile Name:** Reaper - WSB_freeze_[NOISE] LinusYuleLog-001.wav				
Structure: Gesture 8	**Start:** 00:02:47:01	**Source Duration:** 00:01:10:23	**Method:** Procured		
Function: Onset Termination.1	**End:** 00:02:47:26	**Source Offset:** 00:00:26:24	**Means:** Internet		
Identity Class: Fire	**Duration:** 00:00:00:24	**Channels:** 2	**SR:** 48000		
Location: Santa Barbara, CA		**Date:** October 24th, 2021			
Geolocation: 34.418263, -119.854927		**Time:** 1:50 PM			

Index: 104	**Source Soundfile Name:** [NOISE] LinusYuleLog.wav				
Structure: Gesture 8	**Start:** 00:02:47:01	**Source Duration:** 00:08:07:29	**Method:** Procured		
Function: Posterior Termination.2	**End:** 00:02:57:11	**Source Offset:** 00:00:30:23	**Means:** Internet		
Identity Class: Fire	**Duration:** 00:00:10:09	**Channels:** 2	**SR:** 44100		
Location: External Source		**Date:** February 6th, 2020			
Geolocation: N/A		**Time:** 11:04 PM			

Index: 105	**Source Soundfile Name:** Reaper - WSB_freeze_[NOISE] LinusYuleLog-001.wav				
Structure: Gesture 8	**Start:** 00:02:48:28	**Source Duration:** 00:01:10:23	**Method:** Procured		
Function: Reactivation.1	**End:** 00:02:49:19	**Source Offset:** 00:00:28:21	**Means:** Internet		
Identity Class: Fire	**Duration:** 00:00:00:21	**Channels:** 2	**SR:** 48000		
Location: Santa Barbara, CA		**Date:** October 24th, 2021			
Geolocation: 34.418263, -119.854927		**Time:** 1:50 PM			

Index: 106	**Source Soundfile Name:** 211004_Source-Rocks_gesture15_Speed-0.3_Length-3995.wav						
Structure:	Gesture 9	**Start:**	00:02:54:07	**Source Duration:**	00:00:04:01	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:02:58:10	**Source Offset:**	00:00:04:00	**Means:**	Max
Identity Class:	Rocks	**Duration:**	00:00:04:03	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 3rd, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	8:37 PM		

Index: 107	**Source Soundfile Name:** 211004_Source-Rocks_gesture9_Speed-1.1_Length-3264.wav						
Structure:	Gesture 9	**Start:**	00:02:57:12	**Source Duration:**	00:00:03:09	**Method:**	Studio
Function:	Onset Termination.1	**End:**	00:03:00:25	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Rocks	**Duration:**	00:00:03:12	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 3rd, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	8:36 PM		

Index: 108	**Source Soundfile Name:** Reaper - WSB_freeze_[NOISE] LinusYuleLog-001.wav						
Structure:	Gesture 9	**Start:**	00:02:57:20	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Onset Termination.2	**End:**	00:02:58:13	**Source Offset:**	00:00:37:13	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:00:23	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 24th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:50 PM		

Index: 109	**Source Soundfile Name:** [NOISE] LinusYuleLog.wav						
Structure:	Gesture 9	**Start:**	00:02:57:20	**Source Duration:**	00:08:07:29	**Method:**	Procured
Function:	Posterior Termination.1	**End:**	00:03:06:14	**Source Offset:**	00:00:41:12	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:08:23	**Channels:**	2	**SR:**	44100
Location:	External Source			**Date:**	February 6th, 2020		
Geolocation:	N/A			**Time:**	11:04 PM		

Index: 110	**Source Soundfile Name:** Reaper - WSB_freeze_[NOISE] LinusYuleLog.wav						
Structure:	Gesture 9	**Start:**	00:02:57:21	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Posterior Termination.2	**End:**	00:03:04:27	**Source Offset:**	00:00:37:13	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:07:06	**Channels:**	1	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 24th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:49 PM		

Index: 111	Source Soundfile Name:						
	211008_Source-Torch_gesture14_Speed-0.1_Length-9549.wav						
Structure:	Gesture 10	**Start:**	00:03:01:14	**Source Duration:**	00:00:09:17	**Method:**	Procured
Function:	Anterior Onset.1	**End:**	00:03:10:19	**Source Offset:**	00:00:00:00	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:09:05	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:38 PM		

Index: 112	Source Soundfile Name:						
	211008_Source-Fire_gesture14_Speed-1.42_Length-7868.wav						
Structure:	Gesture 10	**Start:**	00:03:08:07	**Source Duration:**	00:00:07:27	**Method:**	Procured
Function:	Continuation.1	**End:**	00:03:16:07	**Source Offset:**	00:00:00:00	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:08:00	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:24 PM		

Index: 113	Source Soundfile Name:						
	Reaper - WSB_freeze_[NOISE] LinusYuleLog.wav						
Structure:	Gesture 10	**Start:**	00:03:08:07	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Continuation.2	**End:**	00:03:21:22	**Source Offset:**	00:00:48:00	**Means:**	Internet
Identity Class:	Rocks	**Duration:**	00:00:13:14	**Channels:**	1	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 24th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:49 PM		

Index: 114	Source Soundfile Name:						
	Reaper - WSB_freeze_[NOISE] LinusYuleLog-001.wav						
Structure:	Gesture 10	**Start:**	00:03:08:08	**Source Duration:**	00:01:10:23	**Method:**	Procured
Function:	Onset.1	**End:**	00:03:09:02	**Source Offset:**	00:00:48:02	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:00:24	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 24th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:50 PM		

Index: 115	Source Soundfile Name:						
	211004_Source-Rocks_gesture7_Speed-0.14_Length-13329.wav						
Structure:	Gesture 10	**Start:**	00:03:08:09	**Source Duration:**	00:00:13:11	**Method:**	Studio
Function:	Continuation.3	**End:**	00:03:18:21	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:10:12	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 3rd, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	8:36PM		

Index: 116 **Source Soundfile Name:**
[NOISE] LinusYuleLog.wav

Structure:	Gesture 10	**Start:**	00:03:08:09	**Source Duration:**	00:08:07:29	**Method:**	Procured
Function:	Continuation.4	**End:**	00:03:19:05	**Source Offset:**	00:00:52:01	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:10:25	**Channels:**	2	**SR:**	44100

Location:	External Source	**Date:**	February 6th, 2020
Geolocation:	N/A	**Time:**	11:04 PM

Index: 117 **Source Soundfile Name:**
211004_Source-Rocks_gesture4_Speed-2.3_Length-13520 reversed 001.wav

Structure:	Gesture 10	**Start:**	00:03:16:21	**Source Duration:**	00:00:13:17	**Method:**	Studio
Function:	Continuation.5	**End:**	00:03:30:12	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Rocks	**Duration:**	00:00:13:20	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 16th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	1:45 PM

Index: 118 **Source Soundfile Name:**
Rocks 1 freeze.wav

Structure:	Gesture 10	**Start:**	00:03:18:12	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Termination.1	**End:**	00:03:33:03	**Source Offset:**	00:03:18:11	**Means:**	AT 2035
Identity Class:	Rocks	**Duration:**	00:00:14:20	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:20 PM

Index: 119 **Source Soundfile Name:**
Voc 2 freeze.wav

Structure:	Gesture 10	**Start:**	00:03:23:29	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Termination.2	**End:**	00:03:33:03	**Source Offset:**	00:03:23:29	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:00:09:03	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:20 PM

Index: 120 **Source Soundfile Name:**
Swoosh 1 freeze.wav

Structure:	Gesture 10	**Start:**	00:03:25:11	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Anterior Termination.3	**End:**	00:03:35:09	**Source Offset:**	00:03:25:11	**Means:**	AT 2035
Identity Class:	Metal	**Duration:**	00:00:09:27	**Channels:**	2	**SR:**	44100

Location:	Thoresen Farm	**Date:**	October 5th, 2021
Geolocation:	44.930187, -85.958576	**Time:**	4:20 PM

Index: 121 **Source Soundfile Name:**
210926_Source-WSB_og_gesture5_Speed-5.74_Length-4643 reversed 001.wav

Structure:	Gesture 10	**Start:**	00:03:29:13	**Source Duration:**	00:00:04:20	**Method:**	Recycled
Function:	Anterior Termination.4	**End:**	00:03:34:19	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:05:06	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 13th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	10:05 PM

Index: 122 **Source Soundfile Name:**
Rocks 2 freeze.wav

Structure:	Gesture 10	**Start:**	00:03:29:20	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Termination.1	**End:**	00:03:35:01	**Source Offset:**	00:03:29:20	**Means:**	AT 2035
Identity Class:	Rocks	**Duration:**	00:00:05:11	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

Index: 123 **Source Soundfile Name:**
Bronze Pot freeze.wav

Structure:	Gesture 10	**Start:**	00:03:29:27	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Termination.2	**End:**	00:03:35:04	**Source Offset:**	00:03:29:23	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:05:07	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

Index: 124 **Source Soundfile Name:**
Boosh 1 freeze.wav

Structure:	Gesture 10	**Start:**	00:03:29:27	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Termination.3	**End:**	00:03:35:28	**Source Offset:**	00:00:03:00	**Means:**	AT 2035
Identity Class:	Metal	**Duration:**	00:00:06:01	**Channels:**	2	**SR:**	44100

Location:	Thoresen Farm	**Date:**	October 5th, 2021
Geolocation:	44.930187, -85.958576	**Time:**	4:20 PM

Index: 125 **Source Soundfile Name:**
[NOISE] Sink Splooshing.wav

Structure:	Gesture 10	**Start:**	00:03:30:00	**Source Duration:**	00:00:56:16	**Method:**	Studio
Function:	Termination.4	**End:**	00:03:39:07	**Source Offset:**	00:00:04:29	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:09:07	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	October 10th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	2:21 PM

Index: 126 **Source Soundfile Name:**
Voc 1 freeze.wav

Structure:	Gesture 10	**Start:**	00:03:30:00	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Termination.5	**End:**	00:03:40:27	**Source Offset:**	00:03:29:28	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:00:10:26	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:20 PM

Index: 127 **Source Soundfile Name:**
210926_Source-WSB_og_gesture5_Speed-5.74_Length-4643 reversed 001 render 002.wav

Structure:	Gesture 10	**Start:**	00:03:31:14	**Source Duration:**	00:00:00:10	**Method:**	Recycled
Function:	Posterior Termination.1	**End:**	00:03:38:27	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:07:13	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	October 16th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	3:09 PM

Index: 134 **Source Soundfile Name:**
210926_Source-WSB_og_gesture12_Speed-4.52_Length-13205.wav

Structure:	Gesture 11	**Start:**	00:04:12:14	**Source Duration:**	00:00:13:07	**Method:**	Recycled
Function:	Anterior Onset.1	**End:**	00:04:26:04	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:13:20	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	Septemberr 26th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	8:54 PM

Index: 135 **Source Soundfile Name:**
210926_Source-WSB_og_gesture12_Speed-4.52_Length-13205.wav

Structure:	Gesture 11	**Start:**	00:04:12:14	**Source Duration:**	00:00:13:07	**Method:**	Recycled
Function:	Anterior Onset.2	**End:**	00:04:26:03	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:13:19	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	Septemberr 26th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	8:54 PM

Index: 136 **Source Soundfile Name:**
210926_Source-WSB_og_gesture7_Speed-2.2_Length-5205.wav

Structure:	Gesture 11	**Start:**	00:04:23:01	**Source Duration:**	00:00:05:07	**Method:**	Recycled
Function:	Onset.1	**End:**	00:04:28:22	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:05:20	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	Septemberr 26th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	8:53 PM

Index: 138 **Source Soundfile Name:**
210926_Source-WSB_og_gesture25_Speed-1._Length-8463.wav

Structure:	Gesture 11	**Start:**	00:04:23:26	**Source Duration:**	00:00:08:15	**Method:**	Recycled
Function:	Continuation.2	**End:**	00:04:32:27	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:09:00	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	8:56 PM		

Index: 139 **Source Soundfile Name:**
210926_Source-WSB_og_gesture15_Speed-4.52_Length-3362.wav

Structure:	Gesture 11	**Start:**	00:04:30:19	**Source Duration:**	00:00:03:12	**Method:**	Recycled
Function:	Anterior Termination.1	**End:**	00:04:34:16	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:03:27	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	8:54 PM		

Index: 140 **Source Soundfile Name:**
[NOISE] Sink Splooshing.wav

Structure:	Gesture 11	**Start:**	00:04:31:15	**Source Duration:**	00:00:56:16	**Method:**	Studio
Function:	Termination.1	**End:**	00:04:41:07	**Source Offset:**	00:00:30:09	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:09:22	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 10th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	2:21 PM		

Index: 162 **Source Soundfile Name:**
210926_Source-WSB_og_gesture23_Speed-1._Length-5784 reversed 001.wav

Structure:	Gesture 12	**Start:**	00:05:19:11	**Source Duration:**	00:00:05:25	**Method:**	Recycled
Function:	Anterior Onset.1	**End:**	00:05:31:14	**Source Offset:**	00:00:00:01	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:12:02	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 16th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	5:36 PM		

Index: 172 **Source Soundfile Name:**
[NOISE] Sink Splooshing.wav

Structure:	Gesture 12	**Start:**	00:05:29:18	**Source Duration:**	00:00:56:16	**Method:**	Studio
Function:	Onset.1	**End:**	00:05:39:04	**Source Offset:**	00:00:42:21	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:09:15	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 10th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	2:21 PM		

Index: 174 **Source Soundfile Name:**
210926_Source-WSB_og_gesture24_Speed-1._Length-5869.wav

Structure:	Gesture 12	**Start:**	00:05:30:04	**Source Duration:**	00:00:05:27	**Method:**	Recycled
Function:	Onset.2	**End:**	00:05:36:16	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Vocalizations	**Duration:**	00:00:06:12	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	Septemberr 26th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	8:56 PM

Index: 183 **Source Soundfile Name:**
Rocks 1 freeze.wav

Structure:	Gesture 13	**Start:**	00:05:51:26	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:06:07:08	**Source Offset:**	00:05:48:11	**Means:**	AT 2035
Identity Class:	Rocks	**Duration:**	00:00:15:12	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:20 PM

Index: 187 **Source Soundfile Name:**
210926_Source-WSB_og_gesture23_Speed-1._Length-5784 reversed 001.wav

Structure:	Gesture 13	**Start:**	00:05:58:02	**Source Duration:**	00:00:05:25	**Method:**	Recycled
Function:	Anterior Onset.2	**End:**	00:06:04:12	**Source Offset:**	00:00:00:01	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:06:09	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 16th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	5:36 PM

Index: 188 **Source Soundfile Name:**
Swoosh 1 freeze.wav

Structure:	Gesture 13	**Start:**	00:05:58:20	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Anterior Onset.3	**End:**	00:06:08:05	**Source Offset:**	00:08:13:29	**Means:**	AT 2035
Identity Class:	Metal	**Duration:**	00:00:09:14	**Channels:**	2	**SR:**	44100

Location:	Thoresen Farm	**Date:**	October 5th, 2021
Geolocation:	44.930187, -85.958576	**Time:**	4:20 PM

Index: 189 **Source Soundfile Name:**
210926_Source-WSB_og_gesture23_Speed-1._Length-5784 reversed 001.wav

Structure:	Gesture 13	**Start:**	00:05:58:26	**Source Duration:**	00:00:05:25	**Method:**	Recycled
Function:	Anterior Onset.4	**End:**	00:06:04:11	**Source Offset:**	00:00:00:26	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:05:15	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 16th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	5:36 PM

Index: 194 **Source Soundfile Name:**
[NOISE] Sink Splooshing.wav

Structure:	Gesture 13	**Start:**	00:06:02:29	**Source Duration:**	00:00:56:16	**Method:**	Studio
Function:	Onset Termination.1	**End:**	00:06:12:29	**Source Offset:**	00:00:29:29	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:10:00	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	October 10th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	2:21 PM

Index: 195 **Source Soundfile Name:**
Rocks 2 freeze.wav

Structure:	Gesture 13	**Start:**	00:06:03:01	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset Termination.2	**End:**	00:06:08:12	**Source Offset:**	00:05:59:20	**Means:**	AT 2035
Identity Class:	Metal	**Duration:**	00:00:05:10	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

Index: 196 **Source Soundfile Name:**
210926_Source-WSB_og_gesture23_Speed-1._Length-5784.wav

Structure:	Gesture 13	**Start:**	00:06:03:03	**Source Duration:**	00:00:05:25	**Method:**	Recycled
Function:	Onset Termination.3	**End:**	00:06:09:13	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:06:10	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	Septemberr 26th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	8:56 PM

Index: 197 **Source Soundfile Name:**
210926_Source-WSB_og_gesture24_Speed-1._Length-5869 render 004.wav

Structure:	Gesture 13	**Start:**	00:06:05:11	**Source Duration:**	00:00:02:19	**Method:**	Recycled
Function:	Posterior Termination.1	**End:**	00:06:21:05	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:15:24	**Channels:**	2	**SR:**	48000

Location:	Santa Barbara, CA	**Date:**	October 16th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	2:20 PM

Index: 202 **Source Soundfile Name:**
Bronze Pot freeze.wav

Structure:	Gesture 14	**Start:**	00:06:23:23	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:06:30:03	**Source Offset:**	00:06:54:24	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:06:09	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

Index: 203	Source Soundfile Name: Bronze Pot freeze reversed 002.wav						
Structure:	Gesture 14	**Start:**	00:06:24:04	**Source Duration:**	00:00:07:23	**Method:**	Studio
Function:	Anterior Termination.1	**End:**	00:06:37:27	**Source Offset:**	00:00:04:08	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:13:23	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	Ocotober 31st, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	1:06 PM		

Index: 210	Source Soundfile Name: Rocks 1 freeze.wav						
Structure:	Gesture 15	**Start:**	00:06:49:09	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:07:05:04	**Source Offset:**	00:06:53:17	**Means:**	AT 2035
Identity Class:	Rocks	**Duration:**	00:00:15:24	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:20 PM		

Index: 211	Source Soundfile Name: Rocks 1 freeze.wav						
Structure:	Gesture 15	**Start:**	00:06:49:09	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.2	**End:**	00:07:05:09	**Source Offset:**	00:06:53:17	**Means:**	AT 2035
Identity Class:	Rocks	**Duration:**	00:00:16:00	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:20 PM		

Index: 212	Source Soundfile Name: Rocks 1 freeze.wav						
Structure:	Gesture 15	**Start:**	00:06:49:10	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.3	**End:**	00:07:05:07	**Source Offset:**	00:06:53:17	**Means:**	AT 2035
Identity Class:	Rocks	**Duration:**	00:00:15:27	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:20 PM		

Index: 215	Source Soundfile Name: Bronze Pot freeze.wav						
Structure:	Gesture 15	**Start:**	00:07:01:28	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset Termination.1	**End:**	00:07:07:20	**Source Offset:**	00:06:54:25	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:05:21	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 216 **Source Soundfile Name:**
Bronze Pot freeze.wav

Structure:	Gesture 15	**Start:**	00:07:01:28	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset Termination.2	**End:**	00:07:07:28	**Source Offset:**	00:06:54:25	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:06:00	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:21 PM

Index: **Source Soundfile Name:**
0

Structure:		**Start:**	0	**Source Duration:**	0	**Method:**	0
Function:	0	**End:**	0	**Source Offset:**	0	**Means:**	0
Identity Class:	0	**Duration:**	0	**Channels:**	0	**SR:**	0

Location:	0	**Date:**	0
Geolocation:	0	**Time:**	12:00 AM

TEXTURES

Index: 2 **Source Soundfile Name:**
Waves - 4 freeze.wav

Structure:	Texture 1	**Start:**	00:00:06:06	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Anterior Onset.2	**End:**	00:03:25:26	**Source Offset:**	00:00:05:26	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:03:19:20	**Channels:**	2	**SR:**	44100

Location:	Thoresen Beach	**Date:**	October 5th, 2021
Geolocation:	44.931061, -85.964962	**Time:**	4:22 PM

Index: 3 **Source Soundfile Name:**
Waves - 3 freeze.wav

Structure:	Texture 1	**Start:**	00:00:07:01	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Anterior Onset.3	**End:**	00:03:25:25	**Source Offset:**	00:00:07:01	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:03:18:24	**Channels:**	2	**SR:**	44100

Location:	Thoresen Beach	**Date:**	October 5th, 2021
Geolocation:	44.931061, -85.964962	**Time:**	4:22 PM

Index: 4 **Source Soundfile Name:**
Waves - 1 freeze.wav

Structure:	Texture 1	**Start:**	00:00:10:21	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Anterior Onset.4	**End:**	00:00:22:16	**Source Offset:**	00:00:10:21	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:11:24	**Channels:**	2	**SR:**	44100

Location:	Thoresen Beach	**Date:**	October 5th, 2021
Geolocation:	44.931061, -85.964962	**Time:**	4:21 PM

Index: 32 **Source Soundfile Name:**
Waves - 2 freeze.wav

Structure:	Texture 1	**Start:**	00:01:07:01	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Continuation.1	**End:**	00:04:32:14	**Source Offset:**	00:01:07:01	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:03:25:13	**Channels:**	2	**SR:**	44100
Location:	Thoresen Beach			**Date:**	October 5th, 2021		
Geolocation:	44.931061, -85.964962			**Time:**	4:21 PM		

Index: 37 **Source Soundfile Name:**
Waves - 1 freeze.wav

Structure:	Texture 1	**Start:**	00:01:09:19	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Continuation.2	**End:**	00:01:22:03	**Source Offset:**	00:01:09:19	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:12:13	**Channels:**	2	**SR:**	44100
Location:	Thoresen Beach			**Date:**	October 5th, 2021		
Geolocation:	44.931061, -85.964962			**Time:**	4:21 PM		

Index: 94 **Source Soundfile Name:**
Waves - 1 freeze.wav

Structure:	Texture 1	**Start:**	00:02:22:15	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Continuation.3	**End:**	00:04:32:11	**Source Offset:**	00:02:22:15	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:02:09:26	**Channels:**	2	**SR:**	44100
Location:	Thoresen Beach			**Date:**	October 5th, 2021		
Geolocation:	44.931061, -85.964962			**Time:**	4:21 PM		

Index: 5 **Source Soundfile Name:**
Crickets-mg-02.wav

Structure:	Texture 2	**Start:**	00:00:10:23	**Source Duration:**	00:08:14:00	**Method:**	Field
Function:	Onset.1	**End:**	00:02:21:00	**Source Offset:**	00:04:04:09	**Means:**	AT 2035
Identity Class:	Crickets	**Duration:**	00:02:10:06	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 3rd, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	3:52 PM		

Index: 6 **Source Soundfile Name:**
SS 2 freeze.wav

Structure:	Texture 3	**Start:**	00:00:15:05	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Onset.1	**End:**	00:00:34:24	**Source Offset:**	00:06:55:03	**Means:**	AT 2035
Identity Class:	Birds	**Duration:**	00:00:19:19	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 5th, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	4:19 PM		

Index: 7 **Source Soundfile Name:**
Glass 1 freeze.wav

Structure:	Texture 4	**Start:**	00:00:18:01	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:00:53:14	**Source Offset:**	00:00:18:01	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:00:35:13	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:22 PM

Index: 8 **Source Soundfile Name:**
Glass 4 freeze.wav

Structure:	Texture 4	**Start:**	00:00:18:10	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.2	**End:**	00:00:53:14	**Source Offset:**	00:00:18:10	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:00:35:03	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:23 PM

Index: 9 **Source Soundfile Name:**
Glass 2 freeze.wav

Structure:	Texture 4	**Start:**	00:00:19:07	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.3	**End:**	00:00:54:04	**Source Offset:**	00:00:19:07	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:00:34:27	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:22 PM

Index: 10 **Source Soundfile Name:**
Bronze 1 freeze.wav

Structure:	Texture 5	**Start:**	00:00:20:26	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:00:49:12	**Source Offset:**	00:00:20:26	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:28:16	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:23 PM

Index: 18 **Source Soundfile Name:**
Bronze 2 freeze.wav

Structure:	Texture 5	**Start:**	00:00:36:00	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:00:53:04	**Source Offset:**	00:00:36:00	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:17:03	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:23 PM

Index: 14	**Source Soundfile Name:** Voc Pad freeze.wav						
Structure:	Texture 6	**Start:**	00:00:35:10	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:01:03:01	**Source Offset:**	00:00:35:09	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:00:27:21	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:20 PM		

Index: 22	**Source Soundfile Name:** SS 2 freeze.wav						
Structure:	Texture 7	**Start:**	00:00:45:16	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Onset.1	**End:**	00:01:03:16	**Source Offset:**	00:07:25:15	**Means:**	AT 2035
Identity Class:	Birds	**Duration:**	00:00:18:00	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 5th, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	4:19 PM		

Index: 33	**Source Soundfile Name:** Bronze 1 freeze.wav						
Structure:	Texture 8	**Start:**	00:01:07:15	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:04:25:20	**Source Offset:**	00:01:07:15	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:03:18:05	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:23 PM		

Index: 44	**Source Soundfile Name:** Bronze 2 freeze.wav						
Structure:	Texture 8	**Start:**	00:01:21:24	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Continuation.1	**End:**	00:01:43:14	**Source Offset:**	00:01:21:24	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:21:19	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:23 PM		

Index: 67	**Source Soundfile Name:** Bronze 2 freeze.wav						
Structure:	Texture 8	**Start:**	00:02:08:21	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Continuation.2	**End:**	00:04:25:14	**Source Offset:**	00:02:08:21	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:02:16:22	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:23 PM		

Index: 73	**Source Soundfile Name:** Bronze freeze.wav						
Structure:	Texture 8	**Start:**	00:02:13:02	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Continuation.3	**End:**	00:03:27:10	**Source Offset:**	00:02:13:02	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:01:14:08	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:23 PM		

Index: 74	**Source Soundfile Name:** Bronze 4 freeze.wav						
Structure:	Texture 8	**Start:**	00:02:13:09	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Continuation.4	**End:**	00:04:27:21	**Source Offset:**	00:02:13:09	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:02:14:11	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:23 PM		

Index: 95	**Source Soundfile Name:** Bronze freeze.wav						
Structure:	Texture 8	**Start:**	00:02:25:09	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Continuation.5	**End:**	00:04:28:14	**Source Offset:**	00:02:25:09	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:02:03:05	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:23 PM		

Index: 34	**Source Soundfile Name:** Glass 2 freeze.wav						
Structure:	Texture 9	**Start:**	00:01:08:09	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:01:40:17	**Source Offset:**	00:01:08:09	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:00:32:08	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:22 PM		

Index: 35	**Source Soundfile Name:** Glass 1 freeze.wav						
Structure:	Texture 9	**Start:**	00:01:08:24	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.2	**End:**	00:01:40:21	**Source Offset:**	00:01:08:24	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:00:31:27	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:22 PM		

Index: 36 **Source Soundfile Name:**
Glass 4 freeze.wav

Structure:	Texture 9	**Start:**	00:01:09:15	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.3	**End:**	00:01:40:00	**Source Offset:**	00:01:09:15	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:00:30:14	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:23 PM

Index: 42 **Source Soundfile Name:**
Voc Pad freeze.wav

Structure:	Texture 10	**Start:**	00:01:14:03	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:01:41:19	**Source Offset:**	00:01:14:02	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:00:27:15	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:20 PM

Index: 68 **Source Soundfile Name:**
Glass 2 freeze.wav

Structure:	Texture 11	**Start:**	00:02:10:13	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.1	**End:**	00:02:55:22	**Source Offset:**	00:02:10:13	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:00:45:08	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:22 PM

Index: 69 **Source Soundfile Name:**
Glass 3 freeze.wav

Structure:	Texture 11	**Start:**	00:02:10:14	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.2	**End:**	00:03:35:12	**Source Offset:**	00:02:10:13	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:01:24:27	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:22 PM

Index: 70 **Source Soundfile Name:**
Glass 1 freeze.wav

Structure:	Texture 11	**Start:**	00:02:10:24	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.3	**End:**	00:02:52:22	**Source Offset:**	00:02:10:24	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:00:41:27	**Channels:**	2	**SR:**	44100

Location:	Glen Arbor Arts Center	**Date:**	October 5th, 2021
Geolocation:	44.89654336765238, -85.98778027890233	**Time:**	4:22 PM

Index: 72	Source Soundfile Name: Glass 4 freeze.wav						
Structure:	Texture 11	**Start:**	00:02:11:13	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Anterior Onset.3	**End:**	00:03:23:10	**Source Offset:**	00:02:11:13	**Means:**	AT 2035
Identity Class:	Glass	**Duration:**	00:01:11:26	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:23 PM		

Index: 79	Source Soundfile Name: Voc Pad freeze.wav						
Structure:	Texture 12	**Start:**	00:02:15:19	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:03:46:22	**Source Offset:**	00:02:15:18	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:01:31:03	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:20 PM		

Index: 82	Source Soundfile Name: big fire.wav						
Structure:	Texture 13	**Start:**	00:02:18:06	**Source Duration:**	00:00:51:02	**Method:**	Procured
Function:	Anterior Onset.1	**End:**	00:03:08:00	**Source Offset:**	00:00:00:00	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:49:23	**Channels:**	2	**SR:**	48000
Location:	External Source			**Date:**	October 3rd, 2021		
Geolocation:	N/A			**Time:**	7:15 PM		

Index: 83	Source Soundfile Name: big fire.wav						
Structure:	Texture 13	**Start:**	00:02:18:09	**Source Duration:**	00:00:51:02	**Method:**	Procured
Function:	Anterior Onset.2	**End:**	00:03:08:05	**Source Offset:**	00:00:00:00	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:49:26	**Channels:**	2	**SR:**	48000
Location:	External Source			**Date:**	October 3rd, 2021		
Geolocation:	N/A			**Time:**	7:15 PM		

Index: 88	Source Soundfile Name: [NOISE] +C_Dump-scratch-pick-up.wav						
Structure:	Texture 13	**Start:**	00:02:20:05	**Source Duration:**	00:10:00:05	**Method:**	Studio
Function:	Onset.1	**End:**	00:03:29:19	**Source Offset:**	00:01:18:00	**Means:**	AT 2035
Identity Class:	Fire	**Duration:**	00:01:09:14	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	February 19th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	6:14 PM		

Index: 91 **Source Soundfile Name:**
[NOISE] LinusYuleLog.wav

Structure:	Texture 13	**Start:**	00:02:20:16	**Source Duration:**	00:08:07:29	**Method:**	Procured
Function:	Continuation.1	**End:**	00:03:30:01	**Source Offset:**	00:00:04:08	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:01:09:14	**Channels:**	2	**SR:**	44100
Location:	External Source			**Date:**	February 6th, 2020		
Geolocation:	N/A			**Time:**	11:04 PM		

Index: 92 **Source Soundfile Name:**
[NOISE] LinusYuleLog.wav

Structure:	Texture 13	**Start:**	00:02:20:16	**Source Duration:**	00:08:07:29	**Method:**	Procured
Function:	Continuation.2	**End:**	00:03:30:01	**Source Offset:**	00:00:04:08	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:01:09:14	**Channels:**	2	**SR:**	44100
Location:	External Source			**Date:**	February 6th, 2020		
Geolocation:	N/A			**Time:**	11:04 PM		

Index: 98 **Source Soundfile Name:**
big fire.wav

Structure:	Texture 13	**Start:**	00:02:39:09	**Source Duration:**	00:00:51:02	**Method:**	Procured
Function:	Continuation.3	**End:**	00:03:28:16	**Source Offset:**	00:00:00:10	**Means:**	Internet
Identity Class:	Fire	**Duration:**	00:00:49:06	**Channels:**	2	**SR:**	48000
Location:	External Source			**Date:**	October 3rd, 2021		
Geolocation:	N/A			**Time:**	7:15 PM		

Index: 128 **Source Soundfile Name:**
[NOISE] Sink Splashing.wav

Structure:	Texture 14	**Start:**	00:03:31:20	**Source Duration:**	00:03:02:14	**Method:**	Studio
Function:	Onset.1	**End:**	00:04:31:05	**Source Offset:**	00:00:01:15	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:59:15	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 10th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	2:24 PM		

Index: 129 **Source Soundfile Name:**
Sand freeze.wav

Structure:	Texture 15	**Start:**	00:03:33:14	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:04:09:10	**Source Offset:**	00:05:37:23	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:35:25	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 130	**Source Soundfile Name:** Sand freeze.wav						
Structure:	Texture 15	**Start:**	00:03:33:21	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.2	**End:**	00:03:56:22	**Source Offset:**	00:05:37:23	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:23:00	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 131	**Source Soundfile Name:** Sand freeze.wav						
Structure:	Texture 15	**Start:**	00:03:33:27	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.3	**End:**	00:04:33:17	**Source Offset:**	00:05:37:24	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:59:20	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 132	**Source Soundfile Name:** Voc Pad freeze.wav						
Structure:	Texture 16	**Start:**	00:03:57:23	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:04:33:11	**Source Offset:**	00:03:57:22	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:00:35:17	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:20 PM		

Index: 133	**Source Soundfile Name:** Reaper - WSB_freeze_Whale L.wav						
Structure:	Texture 17	**Start:**	00:04:09:10	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Onset.1	**End:**	00:04:33:02	**Source Offset:**	00:00:00:00	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:23:21	**Channels:**	2	**SR:**	48000
Location:	Bellingham, WA			**Date:**	October 16th, 2021		
Geolocation:	48.73772892031931, -122.49270026669443			**Time:**	5:18 PM		

Index: 142	**Source Soundfile Name:** Reaper - WSB_freeze_Whale HM-001.wav						
Structure:	Texture 17	**Start:**	00:04:32:01	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Continuation.1	**End:**	00:07:08:09	**Source Offset:**	00:00:25:29	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:02:36:08	**Channels:**	2	**SR:**	48000
Location:	Bellingham, WA			**Date:**	October 16th, 2021		
Geolocation:	48.73772892031931, -122.49270026669443			**Time:**	5:02 PM		

Index: 143	**Source Soundfile Name:** Reaper - WSB_freeze_Whale H.wav						
Structure:	Texture 17	**Start:**	00:04:34:15	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Continuation.2	**End:**	00:05:22:08	**Source Offset:**	00:00:28:12	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:47:22	**Channels:**	2	**SR:**	48000
Location:	Bellingham, WA			**Date:**	October 16th, 2021		
Geolocation:	48.73772892031931, -122.49270026669443			**Time:**	5:03 PM		

Index: 144	**Source Soundfile Name:** Reaper - WSB_freeze_Whale LM.wav						
Structure:	Texture 17	**Start:**	00:04:35:16	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Continuation.3	**End:**	00:04:53:07	**Source Offset:**	00:00:29:14	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:17:20	**Channels:**	2	**SR:**	48000
Location:	Bellingham, WA			**Date:**	October 16th, 2021		
Geolocation:	48.73772892031931, -122.49270026669443			**Time:**	5:03 PM		

Index: 153	**Source Soundfile Name:** Reaper - WSB_freeze_Whale LM.wav						
Structure:	Texture 17	**Start:**	00:04:59:29	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Continuation.4	**End:**	00:06:14:16	**Source Offset:**	00:00:53:27	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:01:14:16	**Channels:**	2	**SR:**	48000
Location:	Bellingham, WA			**Date:**	October 16th, 2021		
Geolocation:	48.73772892031931, -122.49270026669443			**Time:**	5:03 PM		

Index: 165	**Source Soundfile Name:** Reaper - WSB_freeze_Whale L.wav						
Structure:	Texture 17	**Start:**	00:05:21:21	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Continuation.5	**End:**	00:06:07:00	**Source Offset:**	00:01:15:18	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:45:08	**Channels:**	2	**SR:**	48000
Location:	Bellingham, WA			**Date:**	October 16th, 2021		
Geolocation:	48.73772892031931, -122.49270026669443			**Time:**	5:18 PM		

Index: 170	**Source Soundfile Name:** Reaper - WSB_freeze_Whale H.wav						
Structure:	Texture 17	**Start:**	00:05:27:21	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Continuation.6	**End:**	00:05:45:19	**Source Offset:**	00:01:21:19	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:17:28	**Channels:**	2	**SR:**	48000
Location:	Bellingham, WA			**Date:**	October 16th, 2021		
Geolocation:	48.73772892031931, -122.49270026669443			**Time:**	5:03 PM		

Index: 181 **Source Soundfile Name:**
Reaper - WSB_freeze_Whale H.wav

Structure:	Texture 17	**Start:**	00:05:50:07	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Continuation.7	**End:**	00:06:37:04	**Source Offset:**	00:01:44:04	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:46:26	**Channels:**	2	**SR:**	48000

Location:	Bellingham, WA	**Date:**	October 16th, 2021
Geolocation:	48.73772892031931, -122.49270026669443	**Time:**	5:03 PM

Index: 204 **Source Soundfile Name:**
Reaper - WSB_freeze_Whale L.wav

Structure:	Texture 17	**Start:**	00:06:25:03	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Anterior Termination.1	**End:**	00:06:47:11	**Source Offset:**	00:02:19:00	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:22:08	**Channels:**	2	**SR:**	48000

Location:	Bellingham, WA	**Date:**	October 16th, 2021
Geolocation:	48.73772892031931, -122.49270026669443	**Time:**	5:18 PM

Index: 205 **Source Soundfile Name:**
Reaper - WSB_freeze_Whale LM.wav

Structure:	Texture 17	**Start:**	00:06:26:25	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Anterior Termination.2	**End:**	00:07:05:08	**Source Offset:**	00:02:20:23	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:38:12	**Channels:**	2	**SR:**	48000

Location:	Bellingham, WA	**Date:**	October 16th, 2021
Geolocation:	48.73772892031931, -122.49270026669443	**Time:**	5:03 PM

Index: 209 **Source Soundfile Name:**
Reaper - WSB_freeze_Whale H.wav

Structure:	Texture 17	**Start:**	00:06:43:03	**Source Duration:**	00:03:03:02	**Method:**	Recycled
Function:	Termination.1	**End:**	00:07:02:27	**Source Offset:**	00:02:37:00	**Means:**	Legacy Source
Identity Class:	'The Deep'	**Duration:**	00:00:19:23	**Channels:**	2	**SR:**	48000

Location:	Bellingham, WA	**Date:**	October 16th, 2021
Geolocation:	48.73772892031931, -122.49270026669443	**Time:**	5:03 PM

Index: 137 **Source Soundfile Name:**
211008_Source-Linus_gesture14_Speed-0.1_Length-10150.wav

Structure:	Texture 18	**Start:**	00:04:23:14	**Source Duration:**	00:00:10:05	**Method:**	Procured
Function:	Onset.1	**End:**	00:04:33:28	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:10:14	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 8th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:32 PM

Index: 141 **Source Soundfile Name:**
211008_Source-Linus_gesture1_Speed-0.1_Length-12158.wav

Structure:	Texture 18	**Start:**	00:04:31:24	**Source Duration:**	00:00:12:06	**Method:**	Procured
Function:	Continuation.1	**End:**	00:04:44:12	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:12:18	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 8th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:30 PM

Index: 145 **Source Soundfile Name:**
211008_Source-Torch_gesture4_Speed-0.1_Length-867.wav

Structure:	Texture 18	**Start:**	00:04:39:29	**Source Duration:**	00:00:00:27	**Method:**	Procured
Function:	Continuation.2	**End:**	00:04:44:11	**Source Offset:**	00:00:00:26	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:04:11	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 8th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:36 PM

Index: 146 **Source Soundfile Name:**
211008_Source-Linus_gesture16_Speed-0.1_Length-11782.wav

Structure:	Texture 18	**Start:**	00:04:40:04	**Source Duration:**	00:00:11:25	**Method:**	Procured
Function:	Continuation.3	**End:**	00:04:52:03	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:11:28	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 8th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:32 PM

Index: 147 **Source Soundfile Name:**
211008_Source-Linus_gesture16_Speed-0.1_Length-11782.wav

Structure:	Texture 18	**Start:**	00:04:45:11	**Source Duration:**	00:00:11:25	**Method:**	Procured
Function:	Continuation.4	**End:**	00:04:57:09	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:11:28	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 8th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:32 PM

Index: 148 **Source Soundfile Name:**
211008_Source-Linus_gesture18_Speed-1._Length-15749.wav

Structure:	Texture 18	**Start:**	00:04:48:21	**Source Duration:**	00:00:15:24	**Method:**	Procured
Function:	Continuation.5	**End:**	00:05:05:01	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:16:09	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 8th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:32 PM

Index: 149	**Source Soundfile Name:**						
	[NOISE] Match scrape - 1.wav						
Structure:	Texture 18	**Start:**	00:04:51:20	**Source Duration:**	00:00:10:25	**Method:**	Studio
Function:	Continuation.6	**End:**	00:05:35:00	**Source Offset:**	00:00:00:00	**Means:**	AT 2035
Identity Class:	Fire	**Duration:**	00:00:43:10	**Channels:**	1	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	February 6th, 2020		
Geolocation:	34.418263, -119.854927			**Time:**	10:52 PM		

Index: 150	**Source Soundfile Name:**						
	211008_Source-Linus_gesture18_Speed-1._Length-15749 reversed 001.wav						
Structure:	Texture 18	**Start:**	00:04:52:06	**Source Duration:**	00:00:15:24	**Method:**	Procured
Function:	Continuation.7	**End:**	00:05:08:16	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:16:10	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 31st, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	4:21 PM		

Index: 151	**Source Soundfile Name:**						
	211008_Source-Linus_gesture10_Speed-0.1_Length-1600.wav						
Structure:	Texture 18	**Start:**	00:04:52:14	**Source Duration:**	00:00:01:19	**Method:**	Procured
Function:	Continuation.8	**End:**	00:04:57:18	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:05:04	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:31 PM		

Index: 152	**Source Soundfile Name:**						
	211008_Source-Linus_gesture14_Speed-0.1_Length-10150.wav						
Structure:	Texture 18	**Start:**	00:04:59:16	**Source Duration:**	00:00:10:05	**Method:**	Procured
Function:	Continuation.9	**End:**	00:05:09:26	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:10:09	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:32 PM		

Index: 154	**Source Soundfile Name:**						
	211008_Source-Linus_gesture5_Speed-5._Length-1690.wav						
Structure:	Texture 18	**Start:**	00:05:02:13	**Source Duration:**	00:00:01:22	**Method:**	Procured
Function:	Continuation.10	**End:**	00:05:07:10	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:04:27	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:30 PM		

Index: 155 **Source Soundfile Name:**
211008_Source-Linus_gesture14_Speed-0.1_Length-10150.wav

Structure:	Texture 18	**Start:**	00:05:04:22	**Source Duration:**	00:00:10:05	**Method:**	Procured
Function:	Continuation.11	**End:**	00:05:15:02	**Source Offset:**	00:00:10:04	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:10:09	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 8th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:32 PM

Index: 156 **Source Soundfile Name:**
211008_Source-Linus_gesture8_Speed-2._Length-5699.wav

Structure:	Texture 18	**Start:**	00:05:07:14	**Source Duration:**	00:00:05:22	**Method:**	Procured
Function:	Continuation.12	**End:**	00:05:13:23	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:06:08	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 8th, 2021
Geolocation:	34.418263, -119.854927	**Time:**	1:31 PM

Index: 157 **Source Soundfile Name:**
211008_Source-Linus_gesture8_Speed-2._Length-5699 reversed 001.wav

Structure:	Texture 18	**Start:**	00:05:10:28	**Source Duration:**	00:00:05:22	**Method:**	Procured
Function:	Continuation.13	**End:**	00:05:17:07	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:06:08	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 31st, 2021
Geolocation:	34.418263, -119.854927	**Time:**	4:28 PM

Index: 158 **Source Soundfile Name:**
211008_Source-Linus_gesture15_Speed-0.1_Length-7171.wav

Structure:	Texture 18	**Start:**	00:05:12:18	**Source Duration:**	00:00:07:06	**Method:**	Procured
Function:	Continuation.14	**End:**	00:05:19:29	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:07:10	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 31st, 2021
Geolocation:	34.418263, -119.854927	**Time:**	4:28 PM

Index: 159 **Source Soundfile Name:**
211008_Source-Linus_gesture6_Speed-8._Length-1643 reversed 001.wav

Structure:	Texture 18	**Start:**	00:05:13:16	**Source Duration:**	00:00:01:21	**Method:**	Procured
Function:	Continuation.15	**End:**	00:05:18:26	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:05:10	**Channels:**	2	**SR:**	44100

Location:	Santa Barbara, CA	**Date:**	October 31st, 2021
Geolocation:	34.418263, -119.854927	**Time:**	4:28 PM

Index: 160 **Source Soundfile Name:**
211008_Source-Linus_gesture15_Speed-0.1_Length-7171.wav

Structure:	Texture 18	**Start:**	00:05:17:25	**Source Duration:**	00:00:07:06	**Method:**	Procured
Function:	Continuation.16	**End:**	00:05:25:05	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:07:10	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:32 PM		

Index: 161 **Source Soundfile Name:**
211008_Source-Linus_gesture1_Speed-0.1_Length-12158.wav

Structure:	Texture 18	**Start:**	00:05:17:29	**Source Duration:**	00:00:12:06	**Method:**	Procured
Function:	Continuation.17	**End:**	00:05:30:21	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:12:21	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:30 PM		

Index: 163 **Source Soundfile Name:**
211008_Source-Linus_gesture5_Speed-5._Length-1690 reversed 001.wav

Structure:	Texture 18	**Start:**	00:05:19:16	**Source Duration:**	00:00:01:22	**Method:**	Procured
Function:	Continuation.18	**End:**	00:05:25:08	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:05:22	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 31st, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	4:24 PM		

Index: 164 **Source Soundfile Name:**
211008_Source-Linus_gesture1_Speed-0.1_Length-12158 reversed 002.wav

Structure:	Texture 18	**Start:**	00:05:21:13	**Source Duration:**	00:00:12:06	**Method:**	Procured
Function:	Continuation.19	**End:**	00:05:34:04	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:12:21	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 31st, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	4:21 PM		

Index: 167 **Source Soundfile Name:**
211008_Source-Linus_gesture16_Speed-0.1_Length-11782.wav

Structure:	Texture 18	**Start:**	00:05:27:08	**Source Duration:**	00:00:11:25	**Method:**	Procured
Function:	Continuation.20	**End:**	00:05:39:07	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:11:28	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:32 PM		

Index: 168	**Source Soundfile Name:** 210926_Source-WSB_og_gesture22_Speed-7._Length-18942.wav						
Structure:	Texture 18	**Start:**	00:05:27:09	**Source Duration:**	00:00:18:29	**Method:**	Recycled
Function:	Continuation.21	**End:**	00:05:46:11	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:19:02	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	Septemberr 26th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	8:55 PM		

Index: 171	**Source Soundfile Name:** 211008_Source-Torch_gesture4_Speed-0.1_Length-867.wav						
Structure:	Texture 18	**Start:**	00:05:29:13	**Source Duration:**	00:00:00:27	**Method:**	Procured
Function:	Continuation.22	**End:**	00:05:34:16	**Source Offset:**	00:00:00:26	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:05:03	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:36 PM		

Index: 175	**Source Soundfile Name:** 211008_Source-Linus_gesture16_Speed-0.1_Length-11782.wav						
Structure:	Texture 18	**Start:**	00:05:32:14	**Source Duration:**	00:00:11:25	**Method:**	Procured
Function:	Anterior Termination.1	**End:**	00:05:44:23	**Source Offset:**	00:00:11:23	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:12:08	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:32 PM		

Index: 177	**Source Soundfile Name:** 211008_Source-Linus_gesture18_Speed-1._Length-15749.wav						
Structure:	Texture 18	**Start:**	00:05:36:17	**Source Duration:**	00:00:15:24	**Method:**	Procured
Function:	Anterior Termination.2	**End:**	00:05:52:27	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:16:09	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:32 PM		

Index: 178	**Source Soundfile Name:** 210926_Source-WSB_og_gesture24_Speed-1._Length-5869 render 004.wav						
Structure:	Texture 18	**Start:**	00:05:38:03	**Source Duration:**	00:00:02:19	**Method:**	Recycled
Function:	Anterior Termination.3	**End:**	00:06:03:28	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:25:24	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 16th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	2:20 PM		

Index: 179 **Source Soundfile Name:**
211008_Source-Linus_gesture18_Speed-1._Length-15749 reversed 002.wav

Structure:	Texture 18	**Start:**	00:05:40:02	**Source Duration:**	00:00:15:24	**Method:**	Procured
Function:	Anterior Termination.4	**End:**	00:05:56:12	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:16:10	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 31st, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	4:21 PM		

Index: 180 **Source Soundfile Name:**
211008_Source-Linus_gesture14_Speed-0.1_Length-10150.wav

Structure:	Texture 18	**Start:**	00:05:47:29	**Source Duration:**	00:00:10:05	**Method:**	Procured
Function:	Anterior Termination.5	**End:**	00:05:58:09	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:10:09	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:32 PM		

Index: 184 **Source Soundfile Name:**
211008_Source-Linus_gesture14_Speed-0.1_Length-10150.wav

Structure:	Texture 18	**Start:**	00:05:53:05	**Source Duration:**	00:00:10:05	**Method:**	Procured
Function:	Anterior Termination.6	**End:**	00:06:03:25	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:10:19	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:32 PM		

Index: 185 **Source Soundfile Name:**
211008_Source-Linus_gesture8_Speed-2._Length-5699 reversed 002.wav

Structure:	Texture 18	**Start:**	00:05:57:18	**Source Duration:**	00:00:05:22	**Method:**	Procured
Function:	Anterior Termination.7	**End:**	00:06:03:27	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:06:08	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 31st, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	4:21 PM		

Index: 186 **Source Soundfile Name:**
211008_Source-Linus_gesture8_Speed-2._Length-5699.wav

Structure:	Texture 18	**Start:**	00:05:57:20	**Source Duration:**	00:00:05:22	**Method:**	Procured
Function:	Anterior Termination.8	**End:**	00:06:03:29	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Fire	**Duration:**	00:00:06:09	**Channels:**	2	**SR:**	44100
Location:	Santa Barbara, CA			**Date:**	October 8th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	1:31 PM		

Index: 166	**Source Soundfile Name:** Bronze freeze.wav					
Structure:	Texture 19	**Start:**	00:05:23:20	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:06:16:01	**Source Offset:**	00:02:24:13	**Means:**	AT 2035
Identity Class:	Bronze	**Duration:**	00:00:52:10	**Channels:**	2	**SR:**	44100

Location: Glen Arbor Arts Center — **Date:** October 5th, 2021
Geolocation: 44.89654336765238, -85.98778027890233 — **Time:** 4:23 PM

Index: 173	**Source Soundfile Name:** [NOISE] Sink Splashing.wav						
Structure:	Texture 20	**Start:**	00:05:29:19	**Source Duration:**	00:03:02:14	**Method:**	Studio
Function:	Onset.1	**End:**	00:06:38:24	**Source Offset:**	00:00:08:29	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:01:09:04	**Channels:**	2	**SR:**	48000

Location: Santa Barbara, CA — **Date:** October 10th, 2021
Geolocation: 34.418263, -119.854927 — **Time:** 2:24 PM

Index: 190	**Source Soundfile Name:** SS 4 freeze.wav						
Structure:	Texture 20	**Start:**	00:06:00:10	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Continuation.1	**End:**	00:06:44:25	**Source Offset:**	00:06:00:10	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:44:15	**Channels:**	2	**SR:**	44100

Location: Thoresen Farm Field — **Date:** October 5th, 2021
Geolocation: 44.929758, -85.960449 — **Time:** 4:19 PM

Index: 208	**Source Soundfile Name:** SS 3 freeze.wav						
Structure:	Texture 20	**Start:**	00:06:38:00	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Continuation.2	**End:**	00:07:33:21	**Source Offset:**	00:06:58:24	**Means:**	AT 2035
Identity Class:	Water	**Duration:**	00:00:55:21	**Channels:**	2	**SR:**	44100

Location: Thoresen Farm Field — **Date:** October 5th, 2021
Geolocation: 44.929758, -85.960449 — **Time:** 4:19 PM

Index: 169	**Source Soundfile Name:** Voc Pad freeze.wav						
Structure:	Texture 21	**Start:**	00:05:27:21	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:06:16:16	**Source Offset:**	00:05:27:20	**Means:**	AT 2035
Identity Class:	Vocalizations	**Duration:**	00:00:48:25	**Channels:**	2	**SR:**	44100

Location: Glen Arbor Arts Center — **Date:** October 5th, 2021
Geolocation: 44.89654336765238, -85.98778027890233 — **Time:** 4:20 PM

Index: 176	**Source Soundfile Name:**						
	210926_Source-WSB_og_gesture24_Speed-1._Length-5869 render 004.wav						
Structure:	Texture 22	**Start:**	00:05:33:13	**Source Duration:**	00:00:02:19	**Method:**	Recycled
Function:	Onset.1	**End:**	00:06:06:10	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:32:26	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 16th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	2:20 PM		

Index: 182	**Source Soundfile Name:**						
	210926_Source-WSB_og_gesture24_Speed-1._Length-5869 render 004.wav						
Structure:	Texture 22	**Start:**	00:05:50:18	**Source Duration:**	00:00:02:19	**Method:**	Recycled
Function:	Continuation.1	**End:**	00:06:05:23	**Source Offset:**	00:00:00:00	**Means:**	Max
Identity Class:	Metal	**Duration:**	00:00:15:04	**Channels:**	2	**SR:**	48000
Location:	Santa Barbara, CA			**Date:**	October 16th, 2021		
Geolocation:	34.418263, -119.854927			**Time:**	2:20 PM		

Index: 191	**Source Soundfile Name:**						
	Sand freeze.wav						
Structure:	Texture 23	**Start:**	00:06:02:10	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:06:37:22	**Source Offset:**	00:00:31:16	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:35:11	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 192	**Source Soundfile Name:**						
	Sand freeze.wav						
Structure:	Texture 23	**Start:**	00:06:02:10	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.2	**End:**	00:06:26:17	**Source Offset:**	00:00:31:15	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:24:06	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 193	**Source Soundfile Name:**						
	Sand freeze.wav						
Structure:	Texture 23	**Start:**	00:06:02:11	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.3	**End:**	00:06:44:03	**Source Offset:**	00:00:31:16	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:41:22	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 198	**Source Soundfile Name:** Cricket pad 2 freeze.wav						
Structure:	Texture 24	**Start:**	00:06:07:20	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Onset.1	**End:**	00:07:36:04	**Source Offset:**	00:06:30:18	**Means:**	AT 2035
Identity Class:	Crickets	**Duration:**	00:01:28:14	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 5th, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	4:19 PM		

Index: 200	**Source Soundfile Name:** Crickets freeze.wav						
Structure:	Texture 24	**Start:**	00:06:16:19	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Onset.2	**End:**	00:07:08:09	**Source Offset:**	00:06:40:09	**Means:**	AT 2035
Identity Class:	Crickets	**Duration:**	00:00:51:19	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 5th, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	4:19 PM		

Index: 206	**Source Soundfile Name:** Cricket Pad 1 freeze.wav						
Structure:	Texture 24	**Start:**	00:06:28:01	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Onset.3	**End:**	00:07:35:07	**Source Offset:**	00:06:50:29	**Means:**	AT 2035
Identity Class:	Crickets	**Duration:**	00:01:07:06	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 5th, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	4:19 PM		

Index: 207	**Source Soundfile Name:** Cricket Pad 1 freeze.wav						
Structure:	Texture 24	**Start:**	00:06:28:01	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Onset.4	**End:**	00:07:35:07	**Source Offset:**	00:06:50:29	**Means:**	AT 2035
Identity Class:	Crickets	**Duration:**	00:01:07:06	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 5th, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	4:19 PM		

Index: 213	**Source Soundfile Name:** SS 2 freeze.wav						
Structure:	Texture 25	**Start:**	00:06:50:04	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Onset.1	**End:**	00:07:04:04	**Source Offset:**	00:07:00:23	**Means:**	AT 2035
Identity Class:	Birds	**Duration:**	00:00:14:00	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 5th, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	4:19 PM		

Index: 214	Source Soundfile Name: Sand freeze.wav						
Structure:	Texture 26	**Start:**	00:07:01:18	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.1	**End:**	00:07:29:25	**Source Offset:**	00:06:30:03	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:28:06	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 217	Source Soundfile Name: Sand freeze.wav						
Structure:	Texture 26	**Start:**	00:07:02:00	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Onset.2	**End:**	00:07:31:18	**Source Offset:**	00:06:30:04	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:29:17	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 218	Source Soundfile Name: Sand freeze.wav						
Structure:	Texture 26	**Start:**	00:07:03:12	**Source Duration:**	00:08:14:00	**Method:**	Studio
Function:	Termination.1	**End:**	00:07:27:21	**Source Offset:**	00:06:30:04	**Means:**	AT 2035
Identity Class:	Sand	**Duration:**	00:00:24:09	**Channels:**	2	**SR:**	44100
Location:	Glen Arbor Arts Center			**Date:**	October 5th, 2021		
Geolocation:	44.89654336765238, -85.98778027890233			**Time:**	4:21 PM		

Index: 219	Source Soundfile Name: SS 2 freeze.wav						
Structure:	Texture 27	**Start:**	00:07:14:22	**Source Duration:**	00:08:14:01	**Method:**	Field
Function:	Onset.1	**End:**	00:07:33:11	**Source Offset:**	00:07:25:10	**Means:**	AT 2035
Identity Class:	Birds	**Duration:**	00:00:18:19	**Channels:**	2	**SR:**	44100
Location:	Thoresen Farm Field			**Date:**	October 5th, 2021		
Geolocation:	44.929758, -85.960449			**Time:**	4:19 PM		