

UNIVERSITY OF CALIFORNIA
SANTA CRUZ

MY DISSERTATION

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

DOCTOR OF MUSICAL ARTS

in

ALGORITHMIC COMPOSITION

by

Joseph Davancens

May 2018

The Dissertation of Joseph Davancens
is approved:

Professor Benjamin Leeds Carson, Chair

Professor Larry Polansky

Professor David Evan Jones

Dean Susan Solt

Copyright © by
Joseph Davancens
2018

Table of Contents

List of Figures	iv
List of Tables	v
Dedication	vi
Acknowledgments	vii
I Text	1
1 Introduction - Overview, Poetics and Histories	2
1.1 M	2
2 Chaotic Instrumental Sound Production	3
2.1 Introduction	3
2.2 Organology: Instrumental Physics and Sound Spectra	3
2.2.1 Aerophones	3
2.2.2 Chordophones	3
2.3 Chaos/Predictability	3
3 Positions and Pressures and their Structuring in Time	4
3.1 Musical Material	4
3.2 Forces/Indicators as Material	4
4 Towards a Generalized Prescriptive Notation	5
4.1 Introduction	5
4.2 Staves	5
4.2.1 Plots	5
4.2.2 Tablature	5
4.3 Symbols	5
5 Surge - Design and Implementation	6

II	Appendices	7
A	<i>Heave, Sway, Surge</i> , a Composition for 13 Instruments	8
B	Surge Documentation	9

Abstract

My Dissertation

by

Joseph Davancens

This dissertation discusses the composition of *Heave, Sway, Surge*, a notated musical work for ten acoustic instruments. It will outline the composer's artistic motivations, theorize about its material foundations in performance practice, explain the system of notation used to create its score, and describe the software created to aid in its composition. Included in the appendices are the actual score as well as full documentation of the software.

List of Figures

List of Tables

To myself,

Perry H. Disdainful,

the only person worthy of my company.

Acknowledgments

I want to “thank” my committee, without whose ridiculous demands, I would have graduated so, so, very much faster.

Part I

Text

Chapter 1

Introduction - Overview, Poetics and Histories

1.1 M

otion is a guiding principle in *Heave*, *Sway*, *Surge*, a musical composition for thirteen instruments.

Chapter 2

Chaotic Instrumental Sound Production

2.1 Introduction

2.2 Organology: Instrumental Physics and Sound Spectra

2.2.1 Aerophones

2.2.1.1 Woodwinds

2.2.1.2 Brass

2.2.2 Chordophones

2.2.2.1 Bowed Strings

2.2.2.2 Plucked Strings

2.3 Chaos/Predictability

Chapter 3

Positions and Pressures and their Structuring in Time

3.1 Musical Material

3.2 Forces/Indicators as Material

Chapter 4

Towards a Generalized Prescriptive

Notation

4.1 Introduction

4.2 Staves

4.2.1 Plots

4.2.2 Tablature

4.3 Symbols

Chapter 5

Surge - Design and Implementation

Some text here.

Part II

Appendices

Appendix A

Heave, Sway, Surge, a Composition for 13 Instruments

Appendix B

Surge Documentation