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UNIVERSITY OF CALIFORNIA SAN DIEGO

Student as Theorist: Embodiment as a Paradigm for Music Theory Pedagogy

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

Doctor of Philosophy

in

Music

by

James Gutierrez

Committee in charge:

    Professor David Borgo, Chair
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2019

The Dissertation of James Gutierrez is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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Chair

University of California San Diego

2019

DEDICATION

I dedicate this dissertation to my family, who nurtured a sense that the core of our being intersects the highest conceivable good in the state of music. The desire to become a Doctor of Philosophy was planted by my father, who embodies a love of wisdom. My study of music began with my mother, my first teacher, who — despite having moved the hearts of countless many through her voice and her guitar — has always denied being a "real musician." I hope to ever extend their approach to music as a service to the listener, to the learner, to the self, and to the transcendent.

EPIGRAPH

"We all have this theory…let's *do* something with it!"

— Lawrence (Butch) Morris

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PREFACE

I will begin by establishing the personal problematic that motivated this dissertation.

A theory intends to explain. Thus, all who orient themselves toward music with a question in mind enter into the music theoretical domain. Any formalized theory — whether a hierarchical system, an analytic method, or a celestial theory of harmony — extends the particularities of the lived experience in which the initial questions arose, inextricable from the plural social, political, and personal meanings that are embodied within musical actions. This is the premise for the various explanations offered within this dissertation, itself overtly an extension of questions cultivated within my own lived experience.

My participation in music-making began as a coping response to witnessing my father's arrest, and his subsequent incarceration. At the time I only knew that my hero was gone, and as days turned to weeks, which turned to months, I didn't know when or if he'd ever be returning. I was compelled to start playing an old organ that was donated to my family after our house had burned down years earlier. Yet, my musical behavior was less about *play* (something mammal young do when they feel safe) than it was concerned with making a compromised environment more bearable, for myself and my mother. My playing was largely structured by imitation (I tried to do with my fingers what my mom did on her guitar) and exploration (gradually processing from random sounds to sounds that I found preferable). Lacking a formal teacher, my mother aided me in deciphering some lesson books for basic technique.

Before long the organ felt not just familiar, but familial. Whenever I might have

normally gone to my father for a story, for comfort, or with a question, I would go to this instrument; and it never failed to deliver a narrative, offer solace, or articulate a suitable explanation. Among the more vivid memories of my childhood was my father's homecoming. After I played for him, the tears in his eyes showed me that he heard more than organized sound, more than a song — he heard *me*. All that I couldn't say and the questions I dared not ask were subsumed by the fact that through music, I could be *heard*. This was a revelation. He immediately began keeping time on his conga drums, and soon my whole family was drawn into this emerging musical space. Altogether, hearing one another, each of us understood, and were understood, without the utterance of a single word. Thereafter we were known as a musical family, although we could not read a note between us. Over the years we became the core of several church music programs, and known throughout the community for the sincere quality of our musical offering.

I wouldn't be formally introduced to music theory until college, and like many theorists throughout history, I studied theory concurrently with theology. I was struck by the parallels between them. Many of the first theorists were, after all, theologians (e.g. Pythagoras, Boethius, Rameau). Both domains have historically sought to understand the transcendent beyond, formulate the ideal, and self-consciously strain to describe the ineffable. In anthropology, both religion and music are considered hallmarks of civilization. In traditional cultures, systems of musical practice are nearly always intertwined with religious practice. Both domains cultivate grand narratives and systems of symbols and metaphors to ensure that ways-of-being and doing can be transferred to subsequent generations. The most compelling parallel, for me, remains that the histories each can be viewed as indices of human attempts to codify supreme values, circumscribe suffering, and

mitigate the vicissitudes of life. Despite various philosophical transformations that have attended music theory over the centuries (as well as my own journey), there is no question in my mind that musical theories today still fundamentally grow in response and relation to this basic human situation. Though while the basic needs may be constant, the cultural — and thus musical — landscape is rapidly evolving. The onus is on theorists to supply the required explanations. But who *are* theorists?

The fact that hardship attended my foray into music is anything but unique. As music emerges from lived experience, so too does music theory. The abiding mysteries, for me, had always been: Why did musical structure feel emergent, rather than learned; and how was music-making so curative a force within myself, my family, and our community? Prior to taking my first music theory class I had been told it was all about 'analyzing musical relationships.' Thus, I naively hoped it would be a space where these mysteries might begin to be addressed. Alas, my assumption was profoundly amiss. Still, I took to it quite naturally, as it provided an explanatory model for the sounds I'd gravitated toward as a nine-year-old. After a degree in theory provided little relief to my questions, I turned toward studies in music cognition. Here I came considerably closer, however the more brain-centered the research, the less connected it seemed to — what I would now call — my embodied experience.

I then approached my questions through interdisciplinary study. It was by integrating various literatures, crossing methodological boundaries, and dialoguing with scholars from disparate fields that refined my questions, reformed my teaching, and transformed my understanding of the value and potential of music theory learning. The chapters that follow document this process.

ACKNOLWEDGMENTS

others.

Before I mention, by name, a few of the individuals who have supported my journey, I must first acknowledge the innumerable nameless, faceless angels who have sustained me anonymously, with no thought of recognition or recompense. These include Toys for Tots, and the many in my community that came to my family's aid after our house burned down. Though I was only a child, you taught me that we are never alone, but are upheld by a mutual responsibility to care for our neighbors as ourselves. Specifically, to the unknown donor of the old keyboard that became my portal to a new universe, I wish you could see the fruit of your simple act of generosity.

Among the cloud of witnesses who have cheered me on, I am privileged to acknowledge a few in particular. I am grateful to my father, mother, and sister, who remained solid in times of uncertainty, and sacrificed so much to grant me life opportunities that they never had, and to my Namma, for whom music was simply a way of being toward the world, and whose 1916 Krakuer piano was my obsession long before I was big enough to climb on the bench. Endless thanks to my departed friend Richard Chambers, who modeled the unbridled joy that comes with embracing music as a gift to celebrate, but even more as a gift to share with childlike abandon. I am supremely grateful to my fiancée, Jennifer Zuk, for providing a constant, loving presence that sustains me like no other, despite the miles between us. Finally, to each and every student for engaging in mutually transformative learning experiences.

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ABSTRACT OF THE DISSERTATION

Student as Theorist: Embodiment as a Paradigm for Music Theory Pedagogy

by

James Gutierrez

Doctor of Philosophy in Music

University of California San Diego, 2019

Professor David Borgo, Chair

Music education at the college level conventionally requires studies in music theory. Given the accelerating shifts in modes of music production and consumption, diversification of teaching and learning technologies, and an increasingly globalized musical landscape, the value of this core study in its present form has been called into question. This dissertation contemplates the potential of theory study in tertiary music education through surveying contemporary curricular reform trajectories, critically examining dualist commitments that underlie theory's pedagogical traditions, and exploring the interdisciplinary lens of embodiment as a paradigm for vitalizing teaching and learning. The result is both a defense of music theory study, in principal, and a detailed proposal for its restoration and renewal.

This study adopts an integrative approach toward the current uncertainty in theory teaching, constructing a linear argument across multiple disciplines — including music theory, sociology, education studies, philosophy of mind, and embodied cognition — and utilizing several research methods — including quantitative and qualitative surveys, ethnographic/contextual interviews, historiographical analysis, and informal experimentation in classroom contexts. It first investigates the perspectives of undergraduate music students and the forces driving curricular reform at the institutional level. Placing these trajectories within a larger sociohistorical context, a historicist reading of three music theoretical traditions — the speculative, regulative, and analytic — is interpolated with a sociology of embodiment and with embodied cognition, illuminating an interdisciplinary framework for conceptualizing theory pedagogy in terms of agency and body-world relations. Butch Morris' Conduction® method — adapted specifically for the theory classroom — is offered as a proof-of-concept application of the embodied approach, as defined.

Students, in this paradigm, are not merely theory learners, but en-actively participate in the production of theory. The proposed pedagogical framework is not a fixed curriculum or methodology, but rather an indeterminate methodological field through which educators, institutions, and curriculum reformers might evaluate and reimagine the potential of theory study. In this way, this dissertation intends to be a resource for all who are invested in twenty-first century music education.

Chapter 1. Introduction

"If you're a student of music and you don't have a question, you're in *trouble*."[1]

— Butch Morris

This dissertation seeks to situate my personal problematic within a wider, interdisciplinary terrain. The introduction states this dissertation's central aims, presents the needs it seeks to address, and provides an overview of the research and arguments presented in Chapters 2-7.

The aim.

It was a fairly conventional day teaching music theory. I was certain that much of the class didn't have the requisite knowledge to meet the day's learning objectives, just as much of the class suspected that our learning objectives bore little relevance to their personal and professional goals. A few students had evidently adopted Donald Hebb's dictum: "If it isn't worth doing, it isn't worth doing well."[2] We were discussing layered rhythmic cycles in the music of the vastly influential twentieth-century composer, James Brown, hoping to excavate some of the hidden complexities of what might be considered 'non-canonical' repertoire. I knew I must have been somewhat successful — perhaps too successful — when a student posed a penetrating question: "He did all *that*, but he didn't know music *theory*?"

It struck me that this student — perhaps the whole class — believed that higher

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1. Morris, Lawrence. 2017. The Art of Conduction: A Conduction® Workbook. Karma.
2. Dennett, Daniel C. 2006. Higher-order truths about chmess. *Topoi*:40.

order musical thinking was confined to the particular symbols, terms, and procedures presented in their textbook and in their two-year theory sequence. 'Theory', for them, had become an object to be attained, rather than a process in which they participated, and through which they might be transformed. It disturbed me to think that I was likely complicit in this confusion. I responded with an appropriately discursive, if off-balanced: "well yes, in a sense, you see…" and "however, not exactly, no." Yet I knew that the student's question was far more complex, more tantalizing, and somehow pointed the way to a critical deficiency of music higher learning, toward something students were increasingly needing it to be.

By writing this dissertation I have sought to understand the explanatory potential of music theory study for music learning today. The result is a strong defense of the curricular space allotted to the study of theory, a critical review of philosophical commitments that underlie traditions of theory pedagogy, and an interdisciplinary exploration of paradigms by which the experiences of music teaching and learning might be renewed and transformed. My hope is that this dissertation will be a resource not just for theorists, instructors, and curriculum reformers, but for all who are invested in the scope and function of music-making in twenty-first century life and culture.

The arguments I present have developed over ten years of experience teaching within conservatories, schools and departments of music, and liberal arts programs. By no means does this dissertation intend to offer a totalizing logic, or a "one size fits all" curricular template, but rather a flexible, indeterminate methodological framework for considering music theory pedagogy through the lens of embodiment. This, I will argue, holds powerful implications for the ethical, political, and psychosocial dimensions of music

education.

My own transformation as an educator echoes that of existential psychologist Carl Rogers, who entered his profession asking the question: "How can I treat, or cure, or change this person?" After a long and devoted career, Rogers rephrased his question in this way: "How can I provide a relationship which this person may use for his own personal growth?"[3] The assumption of one-directional contact was reformed into a process he understood to be *mutually transformative*. The arguments presented throughout this dissertation revolve around this theme, as I develop a framework for (a) understanding what 'mutual transformation' might mean in the context of music learning, and (b) harnessing music theory's unique position to facilitate a learning environment of this quality.

I would like to underscore my aim to contribute understanding of abiding significance, even if it abides only within myself and my teaching practice. In dedicating many pages to exhuming rarified terminology, tracing the influence of philosophies of mind, the politics of corporality, and reviewing emerging perspectives in cognitive science, I have tried to avoid what Daniel Dennett calls "investigating the higher order truths about chmess"— where "chmess" is a made up game, with made up rules, that nobody actually plays.[4] One test to avoid this, he suggests, is to try to teach the ideas in question to uninitiated undergraduates, which I have done. The reception among students, as well as colleagues and professional musicians, suggests that there is, in fact, a need here. For this reason my dissertation begins and ends with — and is fundamentally committed to — the

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3. Rogers, Carl. 1995. On Becoming a Person: A Therapist's View of Psychotherapy. 2nd Ed. Mariner Books. p. 32.
4. Dennett, Daniel C. 2006. Higher-order truths about chmess. *Topoi* (2006) :40.

student.

The need.

The term "music theory" generally conjures thoughts of scales, key signatures, 'do-re-mi', Roman numerals, figured bass, voice-leading and counterpoint, etc. And while it is true that the conventional theory sequence focuses on this particular set of tools, it is often forgotten that music *theory* is more than the sum of these terms and procedures — that since Pythagoras the subject has evolved as a broader subset of philosophical thought[5] concerned with basic musical structures, the relationships between them, and the ways we imagine, experience, and transfer them. Conventional music theory terms, as such, are fixed, determined, regulative, symbolic and (thus) culturally contingent, while the larger music theoretical project flows, questions, speculates, transforms and renews itself, and is openly metaphorical and (thus) the very plural of meaning.[6] In the former sense, James Brown was demonstrably ignorant 'about music theory'. In the latter sense, he was among the most influential speculative theorists of his time. To ascertain the difference, we must reconsider how musical thinking is conceptualized, measured, and represented.

It shouldn't be surprising to see that conventional college theory is struggling to engage the rapidly expanding landscape of musical goals represented by an increasingly diverse body of music students. Nor should it be troubling for educators to investigate ways in which theory might need to adapt in order to engage the musical evolutions of the

5. Lochead, Judy. 2011. Ch. 46: Music Theory and Philosophy. in "The Routledge Companion to Philosophy and Music." Routledge. p. 506.

6. For Roland Barthes, the meaning in music is plural, which is not simply to say that it has several meanings, but that it "accomplishes the very plural of meaning: an irreducible plural…not a co-existence of meanings, but a passage, an overcrossing; thus it answers not to an interpretation, even a liberal one, but to an explosion, a dissemination." Barthes, Roland. 1977. From Work to Text. Image/Music/Text. p. 159.

twenty-first century. However, the attempts to substantively alter music theory curriculum, evidently, is both surprising and troubling to a great many, which is perhaps the most transparent evidence that theory has never merely been about scales and key signatures. Two examples provide the backdrop for my arguments that follow.

In March 2017, *The Harvard Crimson*[7] reported that the Department of Music at Harvard University would eliminate introductory music theory and music history courses from its core requirements for music concentrators (majors). New required courses were put in place, entitled "Thinking About Music" and "Critical Listening." A social media buzz erupted in response as scholars, educators, and artists around the globe blogged, tweeted, and composed editorials of both praise and reproach. Opponents decried it as — among others things — an "embarrassment to Western culture"[8] and "a risky romanticization of musical illiteracy."[9] Even composer John Adams (Harvard alumna) tweeted his initial concern.[10] There were supporters, on the other hand, who praised the move as bold stroke against the "white supremacy"[11] that, allegedly, underlies music theory. While neither reaction engaged the real intentions behind Harvard's restructuring (discussed in Chapter 3), the polarized response brought the hidden sociopolitical significance of music theory to public light.

7. Leifer, V. 2017. "Music Department to Adopt New Curriculum Beginning Fall 2017." The Harvard Crimson. March 22. Retrieved from: https://www.thecrimson.com/article/2017/3/22/music-concentration-changes

8. See Drake, J. 2017. Musical Theory and Musical Judgment—Both Optional at Harvard. Vision and Values. March 8.

9. N.A. 2017. "This romanticization of musical illiteracy is risky." April 5. The Guardian: Music. Retrieved from: www.theguardian.com/education/2017/apr/05/this-romanticisation-of-musical-illiteracy-is-risky. April 10, 2019.

10. Adams, John (HellTweet). "Harvard Music Department's new curriculum requirements..hmmm...need to learn more, but at first glance, they seem a little disturbing." April 1, 2017.

11. Hiser, Kelly (@kellyhiser). "So if you find yourself defending music theory, know that what you're really defending is white supremacy." April 2, 2017. Tweet.

A similarly controversial move came in the form of a widely circulated document in 2014: "Transforming Music Study from its Foundations: A Manifesto for Progressive Change," the College Music Society's report from their Task Force for the Undergraduate Music Major (hereafter TFUMM).[12] This report aimed to "break the logjam" of previous attempts at curricular reform that were merely "masquerading as genuine change."[13] It identified three core deficiencies of what it understands as the conventional mode of music study: (1) the subordination of the creation of new work to the interpretive performance of older work; (2) ethnocentrism; (3) the fragmentation of subjects and skills.[14] In the opinions of TFUMM, addressing each of these deficiencies would not only open paths for progressive change, but "return to the authentic roots of this [classical] heritage."[15]

The Manifesto argues that the conventional model — the Performer-Interpreter model — is increasingly misaligned with the environments in which students find themselves upon graduation. Lead author Ed Sarath argues that this model — which evolved to prepare students for careers in orchestras — is obsolete for two central reasons: (1) As orchestras around the world have been closing at an alarming rate, even as music programs grow, it is far more likely that students will find a career engaging with contemporary and so-called "vernacular" music than with the conventional canon and its values. (2) Given the Afrological roots/contributions to "vernacular" music, music higher education requires a model that bridges these pedagogical traditions.[16] Sarath proposes the

12. Campbell, P.S., et al. 2016. "Transforming Music Study from Its Foundations: A Manifesto for Progressive Change in the Undergraduate Preparation of Music Majors." In Redefining Music Studies in an Age of Change. Routledge.
13. Ibid. p. 59.
14. Ibid. p. 16.
15. Ibid. p. 12.
16. Ibid. p. 39.

alternative Creative-Composer/Improviser model, which integrates the current model with both a multicultural model, while also returning to a pre-industrial European pedagogy. Under this model, students' primary focus shifts from interpretive performance to creative performance, from recreating a known work to crafting their own musical voice as a primary source.

When referring to music theory specifically, the Manifesto suggests that a deep 'reexamination' and 'realignment' must take place. However, its recommendations are vague:

> When the musical goal expands from specialized interpretive performance within a monocultural repertory to contemporary, globally informed improvisation-composition-performance, the impetus for paradigmatic questioning takes on entirely new dimensions and urgency. The point here is not to suggest that conventional approaches to music theory should bear the brunt of reform criticism, but to simply emphasize that if music study is to align itself with the diverse horizons of the musical world, all areas of the curriculum will need to be examined accordingly, and basic musicianship— by its very foundational nature—may well require considerable attention in this regard.[17]

Despite these overtures, the Manifesto received polarized reactions from educators, and a particularly negative review from theorists. Andrew Balio, as one example, published a three-part repudiation, mounting a strong defense of artistic mastery and discipline as core tenets of music education. Responding to the accusation that conventional music education "excludes,"[18] Balio states that it "excludes naturally because it draws only those who strive to go higher and deeper artistically."[19] Concerning theory specifically, Balio chiefly

17. Ibid. p. 37.
18. Ibid. p. 35.
19. Balio, Andrew. 2015. "Political Activism Comes to the American Conservatory." The James G. Martin Center for Academic Renewal. April 15. Retrieved from https://www.jamesgmartin.center/2015/10/political-activism-comes-to-the-american-conservatory

recommends an "implicit obedience to the rules of art, as established by the great masters," and disavows the "false and vulgar opinion that rules are the fetters of genius. They are fetters only to men of no genius."

This dissertation aims to speak directly to this ongoing debate, and so will refer to the TFUMM Manifesto throughout.

Overview

To address the current position of uncertainty in tertiary theory teaching, I have sought to construct a linear argument that integrates multiple disciplines. Part I presents original quantitative and qualitative research gathered to better understand the perspectives of undergraduate music students (Chapter 2) and the forces driving curricular reform at the institutional level (Chapter 3). Part II interpolates a historicist reading of three music theoretical traditions — the speculative, regulative, and analytic — with a sociology of embodiment (Chapter 4) and embodied cognition (Chapter 5) in order to assemble an interdisciplinary framework for interpreting the evolution of body-world relations within theory pedagogy. Part III then articulates how embodiment — an indeterminate methodological field — challenges conventional assumptions of what constitutes theory knowledge and recasts the basic learning objectives of a core theory education (Chapter 6). Finally, I explore Butch Morris' Conduction® — which I have adapted specifically for the theory classroom — as a proof-of-concept application of the embodied approach as I have defined it (Chapter 7).

Part I. Curricular Horizons

Contemporary reform efforts — already reexamining notions of legitimacy and

assumptions of music's fundamentals — are embedded within broader sociocultural forces: the economic imperatives of the modern university (i.e. the adoption of a business model)[20], intensifying political dialogue (i.e. what curriculum signals within the dialectic of progress and conservation), the *ethos* of globalization, and the new digital reality, with its dictum: "In the digital world, he who hesitates is abandoned."[21]

Part I seeks to understand the current curricular trajectories of college level music theory. I begin by taking a closer look at those at the front lines of reform: the students. Undergraduates, while being the subject of calls for curricular transformation, have had remarkably few spaces for asserting their voice within reform debate. How has theory class contributed to the professional lives of recent music program graduates? What aspects of theory class are seen to be the most beneficial, and the most problematic? How do students view the relationship between what is assessed and what is most personally useful?

A detailed online survey was conducted in order to identify prevailing trends in student evaluations of their music theory experience. The survey was distributed online via the social media website Reddit.com, a user-moderated, open-forum, discussion-based medium for special interest communities (i.e. subreddits). Touting itself as the "front page of the internet," Reddit.com has over twenty-four million users in the U.S. alone.[22] The survey targeted recent graduates of music programs in eight relevant subreddits,[23] polling

20. Bunce, Louise (et al.). 2017. The student-as-consumer approach in higher education and its effects on academic performance, *Studies in Higher Education*. 42:11. p. 1958-1978
21. Stringer, Howard. 2011.
"CEO Howard Stringer sees Sony's future in 3-D". Interview with David Lieberman, www.usatoday.com. January 5.
22. Smth, Craig. 2019. "80 Amazing Reddit Statistics and Facts 2019 | By the numbers". DMR: Business Statistics. April 20. Retrieved April 21, 2019. https://expandedramblings.com/index.php/reddit-stats/
23. r/musictheory, r/MusicEd, r/MajoringInMusic, r/Music_Theory_Class, r/music, r/classicalmusic, r/musicians, and r/WeAreTheMusicMakers. (The "r/name" nomenclature is standard shorthand for

students' musical emphasis and primary instrument, their sentiment toward music theory class in general and with regard to specific learning objectives, asked which elements of theory were the most vital for assessment and most relevant to their personal musical goals, and invited open-ended evaluative comments. Chapter 2 presents survey results and quantitative (statistical) and qualitative (textual) analysis.

Quantitative analysis revealed that respondents (n=291) share significant agreement in their evaluation of theory. Results affirm that respondents generally tend to view music theory as a highly valuable subject of study. On a five-point Likert scale, respondents overall 'Agreed' with positive evaluations of theory ($\bar{x} = 4.30$, s = 0.9), and more than 'Disagreed' with negative evaluations ($\bar{x} = 1.73$, s = 0.91). Despite such general positive sentiment, however, 81% of respondents either 'Agreed' or 'Strongly Agreed' with the statement "Music theory class can be improved" ($\bar{x} = 4.02$, s = 0.81). A textual analysis of optional open-ended comments reveals clear trends in what respondents identify as areas most in need of improvement. In total, negative comments outnumbered positive comments 93 - 29, with 12 neutral comments. Respondent discontent revolved around three central issues: integration, diversity, and creativity, in that order.

There is, of course, no normative undergraduate music student, just as there is no normative music theory program. Imagining such phantom normates risks contributing to — rather than obstructing — the generation of reductive curricular standards with limited or no significance (or affordance value) to anybody in particular. Yet, there is some insight to be gleaned from polling attitudes that proliferate through social media. The discussions

identifying reddit communities)

10

taking place in Reddit communities are fertile pastures for what Peter Smith describes as the Revolution of "free range learning"[24] in the digital age. One survey comment reflects this precisely:

> I have found that my music theory class at school is extremely dull, and I find tutorials on music theory on youtube to be MUCH more helpful. I feel this is because it's more entertaining, I have an instrument to practice on while I'm learning the theory, and because the theory I learn from youtube is more relevant to the music I make.[25]

The new reality of hyper-focused learning-on-demand, accessible to anyone with an internet connection (89% of adults in the U.S.)[26] is tantalizing to anyone invested in the ideal of universal access to knowledge. For the first time in human history, the spoken word — via podcasts and video sharing platforms — has a further reach than the written word, spawning what appears to be a true Gutenberg moment for education outside the bounds of the institution.[27] Aside from the ethical and political dimensions, the revolution in digital learning presents a systemic challenge to institutions that are organized around the assumption that they are the access point for knowledge. Institutions have responded with e-learning and m-learning (mobile learning) initiatives, transferring much of what was learned in-person to a text/audio/video-based online platform.[28] However, these initiatives only reify the presumption of knowledge-as-information, and the learning experience as a transaction. Since course content is accessible only by paying students, from the purview

24. Smith, Peter. 2018. "Free Range Learning in the Digital Age: The Emerging Revolution in College, Career, and Education." SelectBooks.
25. Comment number 7
26. Pew Research Center. 2018. Internet/Broadband Fact Sheet. Feb. 5. Retrieved from: https://www.pewinternet.org/fact-sheet/internet-broadband/
27. 2019. Spinelli & Dan. Podcasting: The Audio Media Revolution. Bloomsbury Academic.
28. Kumar, B.A. & Chand, S.S. 2019. Mobile learning adoption: A systematic review. *Education and Information Technologies*. Volume 24. Issue 1. p. 471–487.

of future students, these initiatives beg the question: What is the value of a higher education that offers at a cost what can be attained at virtually zero cost? The onus is on the institution to offer learning experiences that transcend the mere acquisition of information.

Situated within these larger shifts in higher education, schools and departments of music throughout the U.S. are increasingly engaged in substantial reexamination of the foundational assumptions of what higher learning of music means. Music theory — the core curricular feature of serious music programs since the 1940's — is a particular focus of curricular reform. Chapter 3 examines four programs engaged in the restructuring of their theory programs, gathering perspectives and insights from reform leaders through personal interviews. My purposes here are to (1) identify predominant reform themes, (2) recognize shades of divergence from mainstream theory curriculum, and (3) present emerging strategies of reform design and implementation as a resource for departments and schools of music considering curricular reforms.

I specifically look at (a) the Harvard University Department of Music, interviewing department chair Suzannah Clark; (b) the University of Miami Frost School of Music, interviewing Juan Chattah, director of Experiential Music Curriculum; (c) the University of California at San Diego Department of Music, interviewing associate chair Anthony Burr; and (d) the University of California at Los Angeles Herb Alpert School of Music, interviewing former director Timothy Rice.

Harvard's music department made waves in 2017 when they announced that music theory would no longer be a required course for undergraduate music majors (i.e. "concentrators"). Two new required courses were introduced: Thinking About Music, and Critical Listening. My interview with Suzannah Clark illuminates much of what was

glossed over in the early media response. For instance, traditional theory *is* required for most specializations, such as composition; theory will remain an elective course; the strong faculty advising role means that most students will be directed to take music theory all the same.

Frost School of Music at the University of Miami recently restructured its entire curriculum, prioritizing experiential learning and entrepreneurship. Frost has garnered national attention for its innovative, integrated program that seeks to prepare students with the skills needed to establish and sustain financial security in today's shifting musical professional landscape. Juan Chattah is one of the architects of a bold, integrated restructuring of Frost's curricular vision introduced in 2016. Chattah was also a member of the College Music Society Taskforce for the Undergraduate Music Major (TFUMM), and a contributing author to their report: the Manifesto for Progressive Change.[29] Chattah talks through the key concepts and research underlying Frost's restructuring (i.e. The Frost Method™), including curricular through-lines, experiential learning, an expanded repertoire, and improvisation requirements.

The music department at University of California San Diego (UCSD) was founded in the 1960's as a progressive department modeled after John Cage's experimental activities at the New School.[30] It aimed not only to extend and cultivate the innovations of the American experimental tradition, but to experiment with a more freeform curricular structure. Recently, in line with the current trend among schools and departments of music,

29. Campbell, P.S., et al. 2016. "Transforming Music Study from Its Foundations: A Manifesto for Progressive Change in the Undergraduate Preparation of Music Majors." In Redefining Music Studies in an Age of Change. Routledge.
30. Obrecht. Guy. 2011. "The Crystallization of the New, New Music at UCSD" College Music Symposium 51. p. 94.

a mandate was given to reduce time-to-graduation by limiting required courses. Anthony Burr discusses how he has approached the design of a one-year (three quarter) theory sequence, half the length of the average program.

In 2015 the University of California at Los Angeles (UCLA) announced that it would move forward with plans to create the UC system's only stand-alone School of Music, following a $30 million endowment from the Herb Alpert Foundation. Ethnomusicologist Tim Rice directed the new school at its founding, implementing some of the progressive change discussed in the TFUMM Manifesto, for which he was a lead author. Rice openly shares not just the vision-casting and the intentions underlying the restructuring, but also moments where his visions struggled to congeal as hoped. As a result, Part I is brought to a fitting close with Rice's perspective developed over his career on the state of music in higher education, the history of failed attempts to integrate diversity into the schools and departments of music, and the roles music theory might — but largely does not — play in diversification.

From a social network perspective, institutions are not fundamentally composed of curricular elements — rubrics, syllabi, learning outcomes, requirements, modules, sequences, mission statements — but of individual actors, each networked within and across institutional boundaries. Themes of curricular reform outlined in Chapter 3 are the cumulative effect of hundreds of these actors engaged in the exchange of social capital[31] through the development of partnerships and the exchange of ideas. Social network

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31. "Social capital is concerned with the resources that exist in social relations (sometimes referred to as 'ties') between individuals as opposed to the resources of a specific individual. This implies that actors must be aware of the assets in their network and take action through social ties to access these resources." Daly, A.J. & Finnigan, K.S. 2010. A bridge between worlds: understanding network structure to understand change strategy. *Journal of Educational Change* 11: 111

theorists study the dynamics of organizational change, looking for ways that patterns of stability and change might be explained by the web of relations through which social capital (ideas, information, resources, influence) flows.[32] In this light, the institutions examined in Chapter 3 are not only examples of ideas being implemented, but of networks organized in such a way that allows social capital to flow effectively.

As an overview of the four institutions I identify fourteen imperatives for curricular reform of music theory set in motion by at least two of the four programs.[33] This list, however, is only a snapshot. So while we emerge from Part I with a clearer view of the perceived problems of conventional pedagogy and emerging alternative pathways, the curricular horizon line remains fuzzy. From my analysis of these fourteen imperatives there appear to be two overarching categories of philosophical concern: (1) epistemological pluralism, and (2) the status of student agency. Acting upon these concerns can reasonably be understood as progress, but reforms fall short of articulating a positive argument for the value of theory study as a core subject, or intelligibly redefining its primary learning objectives. It is also unclear to what extent these reforms can be considered innovations, or recourses to older Rousseauian or Pestalozzian teaching philosophies.[34]

Thus, we need to scale out in order to more fully understand how music theory factors into transformations of twenty-first century music higher education. How do current

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32. Daly, Alan. 2010. Social Network Theory and Educational Change. Harvard Education Press. p. xi.

33. See Table 3 on page 124. Expanded repertoire; Appeal to broader range of students; Reduced notation competency requirement; Reduced unit requirements; Cross-curricular integration; Cross-cultural integration; Contextualizing the Western canon; Assessment: Growth over Proficiency; Introduction to multiple analytic approaches; Emphasis on entrepreneurship; Creative projects; Collaborative projects; Emphasis on concrete application; and Required improvisation.

34. In Rainbow's view, "it was Pestalozzi's achievement to demonstrate that a child's education depended less upon memorizing facts than on the provision of opportunities to make factual discoveries for himself." Marx, A. B. 1997. Musical Form in the Age of Beethoven; Selected Writings on Theory and Method, trans. and ed. S. Burnham, Cambridge University Press.

reforms relate to larger scale shifts in music theory history? What are the histories behind the practices perceived as being reformed, and how are they related to both dualist and non-dualist definitions of "theory"? What might be the hidden conceptual or philosophical underpinnings of these curricular imperatives, and how do these recast and relocate the "theorist"?

Part II. Mutual Transformation: Perspectives of Musical Embodiment.

Part II does not so much seek to provide theory teaching with a unifying philosophy, as it is aims to illuminate the philosophical substrata already at play in curricular reform.

Chapter 4 investigates how music theoretical traditions converge in 'the body' — both the material body, and the 'the body' as a social construct. While the body has rarely been the explicit focus of music theorists, it is nonetheless an ever-present entity, if just a banal fact, at the foundation of theoretical writing. For Socrates, the body was made strong through gymnastics, while music that made the soul "well-arranged."[35] More than a blanket sentiment, *The Republic* is very clear that in order to edify the soul, music first had to be 'purified and purged.'[36] Specifically under review were the *logoi* (songs could not create 'vile images'[37]) and the *lexis* (the correlation between melodic modes and constitutions of state and soul).[38] Thus music theorists of antiquity were driven by an ethical imperative, prescribing well-arranged music as the determinate of the well-arranged soul, a pursuit grounded in the body's capacity to be vile, and to be controlled.

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35. Plato. 1943. Plato's The Republic. New York :Books, Inc.. 401db.
36. Ibid. Laws. 668a6.
37. Ibid. 377e1.
38. Socrates ranks levels of moral constitutions (580a) and correlates them with specific musical modes (398e-399d)

This basic hierarchy — though varying widely in philosophical and theological form — remains intact to the present day in the form of mind-body dualism.[39] I briefly trace its reification in the writings of Boethius, John Case, Hugh Plat, and Descartes, though focus particularly on Rameau and Roland Barthes, whose theories are among the few to lift the status of the body as a component of higher order musical experience, rather than the ensouled machine. I focus specifically on what Rameau termed *le sous-entendu*[40] — literally "the below understanding" or "the under-hearing" — and Barthes' rich descriptions of the "body in a state of music,"[41] particularly his concept of "grain"[42] and his distinction between music's pheno-text and geno-text.[43] These terms attempt to reframe the body as more than a target of power, beyond the "docile body"[44] that Foucault theorized was the center of new scales of political control during the classical age.

The remainder of Chapter 4 aims to develop a framework through which I might understand the role of the body in the production and pedagogy of music theory. To do this I engage a sociology of embodiment as a lens for reconsidering the three discrete music theoretical traditions described by Carl Dahlhaus: the speculative tradition, the regulative tradition, and the analytic tradition.[45] Speculative theory — the oldest of the three,

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39. As James Dewey laments: "Too often […] the older dualism of soul and body has been replaced by that of the brain and the rest of the body." Dewey, John. 1997 (1916). Democracy and education. Free Press. Later Printing Edition.

40. Rameau. 1722. *Traité*, Table des Termes. p. xxi

41. Barthes, R. 1991. The grain of the voice. In *The responsibility of forms: Critical essays on music, art and representation* Berkeley, CA: University of California Press. p. 261.

42. The grain is the precise space between language and voice: neither wholly vocal, nor wholly linguistic; neither sign nor signified. Barthes. 1991. p. 180-189.

43. Pheno-text refers the elements of music that form a semantic communication (style, form, phrase, grammar, cultural references, etc.), which is contrasted with geno-text: musical attributes that can be felt as a bodily sensation of another body through 'sonorous touch.'

44. Foucault, Michel, 1926-1984. (1977). Discipline and punish : the birth of the prison. New York :Pantheon Books,

45. Christensen, Thomas 2002. The Cambridge History of Western Music Theory. Cambridge University

stretching back to Pythagoras — is concerned with basic musical categories and nature of the relationships between them (e.g. cosmological harmony, tetrachords, scales, meter); Regulative theory is concerned with constructing systems of musical practice (e.g. methods for structuring music, including notation, and pedagogy), and (3) Analytic theory is concerned with excavating the forms (or logic) of existing works (e.g. techniques for identifying structures, patterns, and forms).

My operative definition of *embodiment* comes from anthropologist Thomas Csordas, who defines it as "an indeterminate methodological field concerned with the philosophy of perceptual experience, the politics of corporality, and modes of presence and engagement in the world."[46] An embodied approach thus views the construct of 'the body' as fertile ground for the critical analysis of social structures, patterns of agency, and ethical (bioethical) and political (biopolitical) systems. Csordas observes that agency — as variously described by Merleau-Ponty, Bourdieu, and Foucault — has a potential trajectory (vector) in the relationship between 'the body' and 'the world': agency as vectored outwardly from body toward world (Merleau-Ponty), as vectored reciprocally between body and world (Bourdieu), and as vectored from the world toward the body (Foucault).[47]

Building from this analysis, my core argument for Chapter 4 is as follows: (1) The speculative, regulative, and analytic theoretical traditions represent distinct modes of production and pedagogy distinguished by modes of agency: bodily agency as vectored from the body toward the world (speculative), reciprocally between body and world

Press. p. 6.
46. Csordas, Thomas. 2015. Chapter 2: Toward a Cultural Anthropology of Body-World Relations. *Phenomenoloy in Anthropology: A Sense of Perspective.* Indiana University Press.
47. See Figure 4.1 on page 150.

(regulative), and from the world toward the body (analytic).[48] This provides a framework for considering how 'the body' — material and construct — is located and acted upon in the context of music theory production and pedagogy. (2) In the context of curriculum, the speculative, regulative, and analytic modes (and their vectors of agency) have a complimentary dynamic, and when they are balanced — or *equilibrated*, to use Piaget's term — the curriculum is optimized for the *mutual transformation* of student and world. My notion of 'mutual transformation' is informed by education theorist Barbara Rogoff, who describes deep learning as the concurrent, mutual transformation of personal, interpersonal and cultural processes.[49]

Considering today's curricular reform in light of this embodied reading permits us to see 'innovations' through a much broader lens as a reemergence of the speculative tradition — that is, the mode of producing and engaging with theory in which agency proceeds from the body toward the world (e.g. Sarath's proposed Creative Composer/Improviser model). Speculative theory is thus a subset of phenomenological thought, the foundation of a musician's capacity to intentionally "relate to something other than their own mass."[50] On the surface, the proposition of embodiment challenges the theory/practice binary, with its roots in Platonic thought, and Aristotle's dialectical juxtaposition of *theoros* — the act of observation[51] — with *praktike* — an action resulting in a change in some object.[52]

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48. See Figure 4.2 on page 158.
49. Rogoff, Barbara. 1995. Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J. V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind*. p. 156. Cambridge University Press.
50. Merleau Ponty, Maurice. *Nature*: Course Notes from the Collège de France. Compiled with notes by Dominique Séglaard, trans. by Robert Vallier. 2003. Evanston: Northwestern University Press.
51. Pre-Socratic Greek used *theoria* as a visual term, describing the action of a spectator at the theater or games, or a legal dispute. Plato appropriated the term to emphasize the act of witnessing in philosophical inquiry. Aristotle first juxtaposed *theoria* with *praktike.*
52. Ibid. p. 2

Where, then, does *theory* — the thinking and explaining mind — intersect the "body in a state of music"?

Chapter 5 moves on from the sociology of embodiment to explore various emerging perspectives of the embodied mind. Inspired by a variety of sources, including Merleau-Ponty, James Gibson, and George Lakoff, modern day embodied cognition has garnered a wide, pandisciplinary appeal. Generally, embodied cognition is a critique of several assumptions that ground cognitive science and neuroscience, namely: (a) Cartesian dualism; (b) the presumption that the mind is brain-bound; (c) the tendency to ascribe to the brain psychological concepts that only make sense when ascribed to whole organisms (mereological fallacy);[53] (d) a reliance upon computer metaphors in describing the processes of the mind (computationalism); and (e) the view that internal consciousness represents external reality (representationalism). These perspectives collectively seek to offer a non-dualist, non-reductive thought space in response to what is seen as the failure of cognitive science to meaningfully account for the phenomenon of cognition. Alva Noë, for instance, declares that after decades of concerted effort only one proposition about how the brain gives rise to a mind has emerged unchallenged: "...we don't have a clue."[54] This chapter examines the seminal literature, and considers the deep challenges it poses to the study of the musical mind.

Biologists Humberto Maturana and Francisco Varela introduced the concept of *autopoiesis*[55] to the life sciences, complicating the boundaries of an independent living

53. Schaal D. W. 2005. Naming our concerns about neuroscience: a review of Bennett and Hacker's philosophical foundations of neuroscience. *Journal of the experimental analysis of behavior*, *84*(3), 683–692.
54. Noë, Alva. 2009. Out of Heads. Hill and Wang. New York. p. xi.
55. Maturana, H. Varela, F. 1980. "Autopoiesis and Cognition". D. Reidel Publishing Company. Dordrecht, Holland. p. xvi.

system, describing the dynamics of situated sensorimotor coupling with the environment. Varela's later collaboration with Eleanor Rosch and Evan Thompson[56] more explicitly explores the mind as *radically* embodied and enactive, forging a path for other 'radicals' such as Daniel Hutto[57] and Anthony Chemero,[58] as well as less radical enactive perspectives such as those presented by Susan Hurley[59] and Alva Noë.[60] Drawing upon studies by David Kirsh,[61] Andy Clark and David Chalmers[62] argue that cognition is best understood as *extending* beyond the arbitrary bounds of the body. George Lakoff[63] and Mark Johnson's seminal works in cognitive linguistics discussing embodied conceptual metaphor have also been vastly influential. James Gibson's notions of ecological psychology and affordances — potentials for action — have been revived by Neo-Gibsonians, who forward a dynamical systems approach to cognition. Many of these thinkers have drawn inspiration from Merleau-Ponty, himself advancing ideas posed by Heidegger and Husserl.

4E cognition thus problematizes the Platonic *theoros/praktike* binary, and articulates a more complex, dynamic account wherein practice and theory are mutually transformative. Contrary to a cognitivist approach to musical thought, an embodied account describes music perception and musical action not as divorced, but — as forwarded by Eric

56. Varela. Thompson. Rosch. 1992. "The Embodied Mind: Cognitive Science and Human Experience." MIT Press. Revised ed. edition. [authors' statement]
57. Hutto, D. 2011. "Philosophy of Mind's New Lease on Life: Autopoietic Enactivism meets Teleosemiotics". Journal of Consciousness Studies, 18,No.5–6,2011.
58. Chemero, Anthony. 2009. "Radical Embodied Cognitive Science". MIT Press. Cambridge.
59. Hurley S. 1998. Consciousness in action. Harvard University Press, London.
60. Noë, Alva. 2004. Action in perception. MIT Press. Cambridge, Mass.
61. Kirsh, D. Maglio, P. 1994. "On Distinguishing Epistemic from Pragmatic Action." Cognitive Science 18, 514.
62. Clark, A. Chalmers, D. 1998. "The Extended Mind." Analysis 58:10-23.
63. Lakoff, G. Johnson, M. 1999. "Philosophy in the Flesh: the Embodied Mind & its Challenge to Western Thought." Basic Books. NY. p. 3.

Clarke — "perception must be understood as a relationship between environmentally available information and the capacities, sensitivities, and interests of a perceiver."[64] This is related to Gibson's notion of affordances which, simply explained, are perceived potentials for action present in an environment. Aiming to disambiguate the usage of 'affordances' in relation to music, Schiavio introduces the concept of *teleomusical acts* — chains of actions with goal-directedness which constitute a musician's motor knowledge.[65]

In summary, 4E accounts of the musical mind represent a renewal of theory in the speculative tradition, inviting educators and students to rethink the fundamental processes that form and in-form musicality and musicianship. To paraphrase neuroscientist M. R. Bennett, the brain and its activities make it possible for us — not for it — to perceive, think and theorize, to feel emotions, and to form and pursue musical actions.[66] Pedagogy can now turn from the soul, from the mind, and from the brain as the central objects of theory, and toward a more holistic exploration of body-world dynamics that give rise to an embodied mind, and an indeterminate state of musicking.

Part III. Student as Theorist.

Part III glides gently back to *terra firma* with a reformed understanding of music theory's fundaments to more particularly consider the implications of embodiment for

64. Eric Clarke. 2005. Ways of Listening: An Ecological Approach to the Perception of Musical Meaning. Oxford: Oxford University Press. p. 91.
65. Schiavio, Andrea. 2014. "Music in (En) Action: Sense-Making and Neurophenomenology of Musical Experience." Doctoral Dissertation. p. 93
66. "The brain and its activities make it possible for us—not for it—to perceive and think, to feel emotions, and to form and pursue projects." Bennett & Hacker. 2003. Philosophical foundations of neuroscience. Blackwell Publishing. Malden, MA. p. 3.

curriculum and for the student. Here my previous arguments converge toward my central thesis: recasting the theory *student* as *theorist*.

Chapter 6 expands upon an argument introduced in the previous chapter: an embodied perspective nourishes the speculative theoretical tradition already experiencing a reemergence in curricular reform. My understanding of the 'speculative space' follows from Judy Lochhead[67] and Justin London[68] as the subset of philosophical thought concerned with basic musical categories and the nature of the relationships between them. In terms of body-world relations, I have defined the speculative as a theoretical mode in which agency (a la Merleau-Ponty) is vectored from the body toward the world.

The recovery, or reemergence of the speculative is an easily overlooked, but important development. I argue that Helmholtz' influential *Sensations of Tone*[69] was received by educators as a determined, objective basis for music theory, solidifying a dualistic paradigm for theory pedagogy. This determinist foundation meant that the speculative theoretical tradition — the curricular space in which students traditionally made contact with the grounding, conceptual metaphors underlying music's fundamentals — was gradually overshadowed by the imperatives of Modernist education. Believing talent to be innate — that is, biologically-based, rather than mind-based — curricular emphasis was placed on developing students' procedural knowledge (reflected in the

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67. — who argues that music theory, particularly in the speculative mode, represents a subset of philosophical thought· Lochead, Judy. 2011. Ch. 46: Music Theory and Philosophy. in "The Routledge Companion to Philosophy and Music." p. 506.
68. — who describes speculative music theories as those that make arguments regarding basic musical categories, and nature of the relationships between them. London, Justin. 2011. Ch. 45: Musicology. in "The Routledge Companion to Philosophy and Music." Ed. Theodore Gracyk, Andrew Kania. Routledge. p. 502.
69. Helmhotlz, Hermann. 1875. On the Sensations of Tone: As the Physiological Basis for the Theory of Music. Edited by Alexander Ellis. Search. Third Ed. London. p. 346

growth regulative theories) and imitation[70] as mediated by symbolic logic (reflected in the growth of analytic theories).

Despite — or due to — Helmholtz' profound sensitivity and respect for art (contra science), his genuine effort to keep the "regions of physiology and aesthetics sufficiently distinct"[71] widened the chasm that separated Europe's "Two Cultures" of the sciences and humanities.[72] The experimental rigor he brought to bear on music theory's most perennial, speculative questions generated an empirical account so rich, so meticulous, that the need for further speculation (particularly non-scientific speculation) was regarded as superfluous. In the mind of Helmholtz, theory was thenceforth liberated from mystical "dreaming,"[73] and musicians the world over could at long last ascertain "the rule."[74]

At the end of *Sensations* Helmholtz confesses what he sees as the "real difficulty" of musical expression:

> In [musical expression] the properties of sensual perception would of course have a casual influence, but only in a very subordinate degree. The real difficulty lies in the development of the *psychical motives* which here assert themselves.[75]

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70. Or *praeceptum – exemplum – imitatio* (observe, memorize, imitate) McCreless, Patrick. 2002. Ch. 27: Music and rhetoric. Christensen. p. 856.
71. Ibid. p. 8
72. Snow, Charles Percy. 2001. [1959]. The Two Cultures. London: Cambridge University Press.
73. "In the book of the Tso-kiu-ming, a friend of Confucius (B.C. 500), the five tones of the old Chinese scale were compares with the five elements of their natural philosophy- water, fire, wood, metal, and earth. […] Similar references of musical tones to the elements, the temperaments, and the constellations are found abundantly scattered among the musical writings of the Arabs. The harmony of the spheres plays a great part throughout the middle ages. In Athanasius Kircher, not only the macrocosm, but the microcosm is *musica*. Even Kepler, a man of the deepest scientific spirit, could not keep himself quite free from imaginations of this kind. Nay even in the most recent times natural philosophers may still be found who prefer such dreaming to scientific work." Ibid. p. 347
74. "It was [previously] left to the musician himself to obtain some insight into the various effects of the various positions of chords, by mere use and experience. No rule could be given to guide him." Helmholtz. p. 339
75. Helmholtz. p. 578 (emphasis added)

Scholarship in music cognition since the 1990's has contributed much to our understanding of what Helmholtz likely meant by 'psychical', though less so what he meant by 'motives.' Findings include: modeling the experience of prediction response in musical event onset,[76] defining tonal hierarchies and the role of short-term memory in tracking melodic transformation,[77] connecting attributes of musicality to animal behavior,[78] and a substantial literature investigating musical experience using neuroimaging techniques.[79]

Yet, music cognitive science retains that same bifurcated commitment that shaped Helmholtz' measurements: a Cartesian dualism that prevents a more complete picture of musical experience from coming to form, and the parallel anxiety that "what was measured was [itself] produced by the measurement."[80] Dualism, as intimated by Mark Rowlands, is fatally incapable of reincorporating the non-physical mind into the body.[81] If a cognitivist investigation addresses 'psychical' (in Helmholtz' terms), I argue that the lens of embodied cognition goes further toward accounting for the second factor: motive, specifically motivated action. Music theory taught through an embodied lens instead opens up an indeterminate field, one in which students themselves are called to participate as theorists, acting equally within the speculative, regulate, and analytic theoretical spaces.

A valuable parallel is mathematics education, which has undergone a similar

76. Huron, D. 2006b.
77. Krumhansl, Carol. 1985. Perceiving Tonal Structure in Music: The complex mental activity by which listeners distinguish subtle relations among tones, chords, and keys in Western tonal music offers new territory for cognitive psychology. *American Scientist*
Vol. 73, No. 4. July-August. p. 371-378
78. See the work of Ani Patel
79. See the foundational work of Andrea Halpern, Ed Large, Psyche Loui, Laurel Trainor, Isabelle Peretz, Petr Janata, and John Iversen.
80. Schmidgen, Henning. 2014. The Helmholtz Curves: Tracing Lost Time. First Edit. New York: Fordham University Press. [emphasis in the original] p. 4
81. Rowlands, M. 2003. Externalism: Putting Mind and World Back Together Again. Acumen/McGill-Queen's University Press.

curricular reexamination in recent years in the U.S. Music theory and mathematics are intertwined in a legacy of Platonic thought, wherein the objects of study — whether notes or numbers — are (1) assumed to be discovered, not created, (2) seen as existing out there in the world and not the products minds, and (3) presumed to have statements about observations to be either true or false, with no possibility for equally valid alternative forms.[82] Extending Lakoff and Johnson's argument for embodied conceptual metaphor as the basis of human rationality, Lakoff and Núñez explore what this notion suggests about the cognitive structure of mathematical reasoning. Núñez explains that the primary source of confusions in learning mathematics stems from the literal interpretation of conceptual metaphors that underlie mathematical concepts.[83] When the full metaphorical character of these concepts is revealed, such confusions and paradoxes disappear.[84] Núñez:

> …even the most abstract conceptual system we can think of, mathematics(!), is ultimately embodied in the nature of our bodies, language, and cognition. It follows from this that if mathematics is embodied in nature, then any abstract conceptual system is embodied.[85]

Thus many parallels can be drawn between mathematics education and music theory pedagogy. Students who may have demonstrable musical ability but who have little or no theory training often enter a theory classroom to be immediately confronted with enigmas[86]

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82. Lakoff, George, Núñez, Rafael. 2001. "Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into
Being." Basic Books. p. 81.
83. Metaphors such as Numbers Are Points on a Line; Container Schemas grounded in the visual system; (3) Numbers Are Sets. Lakoff & Núñez. 2001.
84. Ibid. p. 6.
85. Núñez, Rafael. 2006. "Do Real Numbers Really Move? Language, Thought, and Gesture: The Embodied Cognitive Foundations of Mathematics." In *Unconventional Essays on the Nature of Mathematics*, edited by Reuben Hersh, 160–81. Springer. (Emphasis in the original)
86. e.g. "So the chordal seventh may resolve up when outer voices move in parallel tenths with the soprano line. What is the *value* of this knowledge to me?"

and paradoxes.[87] Theoretical concepts are presented through symbolic logic[88] as literal truths, and taught procedurally with minimal attention paid to mapping these concepts onto students' lived experience. Theory pedagogy is saturated with image schemas[89] and fictive motion.[90] [91] Consider the prevalence of *container metaphors*[92] — a note exists within a melody, within a rhythm, within a chord, within a key, etc. — and *orientational metaphors*[93] — notes described as objects-in-motion, going up, down, closer together, farther apart, in parallel, isochronous, etc. As Steve Larson observed, the forces we play with and respond to are subjective and imaginative. In the case of Western classical music, grounding metaphors likely grew in conjunction with the rise and reliance upon notated music, that is, when notation began to be colloquially referred in objective terms, as a piece of music.[94]

Here is where adopting an embodied mind perspective may shift theory pedagogy's basic goals. If regulative theory revolves around procedural knowledge, and analytic theory is mobilized through symbolic logic, the core of the speculative tradition can be thought of

87. "If a major seventh interval is a sharp dissonant sonority, and a resolution is a consonant arrival point, then in what sense does a major seventh chord function as a resolution?"
88. Music notation, Roman numerals, figured bass, lead sheet symbols, etc.
89. Image schemas derive from sensory and perceptual experience as we interact with and move about in the world. For example, given that humans walk upright and because we have a head at the top of our bodies and feet at the bottom, and given the presence of gravity which attracts unsupported objects, the vertical axis of the human body is functionally asymmetrical. This means that the vertical axis is characterized by an up-down or top-bottom asymmetry: the top and bottom parts of our bodies are different.
90. Fictive motion is a cognitive mechanism through which we unconsciously conceptualize static entities, e.g. The Equator *passes* through many countries, or the fence *stops* after the tree.
91. A study of university-level calculus instructors revealed that the physical gestures used during lectures showed an overwhelming tendency to match the dynamic meaning evoked via the underlying conceptual metaphors, source-path-goal schemas, and fictive motion. Marghetis, Tyler, & Rafael Núñez. 2013. "The Motion behind the Symbols: A Vital Role for Dynamism in the Conceptualization of Limits and Continuity in Expert Mathematics." *Topics in Cognitive Science* 5 (2): 299–316.
92. A container schema is a prototypical image schema. To use Johnson's example of container metaphors: "You wake *out of* a deep sleep and peer *out from* beneath the covers *into* your room."
93. An orientational metaphor is a metaphor in which concepts are spatially related to each other.
94. Larson, Steve. 2012. "Musical Forces: Motion, Metaphor, and Meaning in Music." Indiana Univ. Press.

as the phenomenological investigation of grounding metaphors. A curriculum that nourishes this space opens the door for mutual transformation; by taking a more en-active role in theory class, students are not so much learners of theory, as they are *co-producers* of theory.

A pragmatic question remains: How is such an embodied approach manifested in a curriculum, in the classroom, and for an individual student? Chapter 7 presents a curricular tool that I have developed as a classroom application, or proof-of-concept of my student-as-theorist thesis. After much experimentation in the music theory classroom, I offer my personal adaptation of Butch Morris' Conduction® as a technique that places students in contact with embodied metaphors underlying musical structure (Chapter 6), promotes embodied and enactive sense-making in an affordance-rich classroom environment (Chapter 5), equilibrates the speculative, regulative, and analytic traditions (Chapter 4), provides a tangible teaching strategy that responds precisely to contemporary calls for curricular reform (Chapter 3), and addresses the primary shortcomings identified by students (Chapter 2) and the "deficiencies" of the conventional approach as described by the TFUMM Manifesto (Chapter 1).

Butch Morris' Conduction® system was created to be a flexible alternative to notation, allowing him to compose in real-time using a vocabulary of directive hand signs and gestures. Conceived in the sphere of American experimental jazz, Butch Morris developed his system as a flexible alternative to notation for structuring a live performance. Conduction is a means of coordinating a musical environment, and in a classroom can be used as a practice domain for any particular competency, or simply ludic exploration. In his words: "It doesn't matter what stylistic, social, cultural background someone comes

from. [Conduction] applies to the individual, how they interpret, how they advance the collective knowledge that we gain."[95]

With an unyielding charisma Morris would implore his ensembles to "Have an idea!", to "Play it like you mean it!," and "We have all this theory, let's *do* something with it."[96] Embodied and enactive sense-making is made substance in the firm pedagogy of Butch Morris. My own trial and error experimentation with this approach in the theory classroom has revealed it to be a powerful heuristic and ludic medium[97] for engaging the *speculative* mode: creative action through which original teleomusical actions are constituted,[98] and embodied sense-making[99] occurs. My adaptation also integrates regulative and analytic theory, toward the aim of equilibration between the three modes.

Conduction makes use of signs and gestures. Signs communicate their directive statically, while the information contained in a gesture is specifically linked to the motion of the Conductor's finger(s), hand(s), arm(s), or baton. Morris's posthumously published guide to this approach, The Art of Conduction,[100] identifies a lexicon of over seventy directives, though my adaptation uses the basic nine, and introduces novel directives. In a classroom context students bring their instruments to class, form an ensemble, and take turns conducting their peers, guided (to varying degrees) to generate music aligned with particular learning objectives (i.e. harmonic minor scales, borrowed chords), and

95. Morris, Butch. 2011. In *Black February*. Produced and Directed by Vipal Monga.
96. Ibid.
97. Moseley, Roger. 2016. Keys to Play: Music as Ludic Medium. University of California Press.
98. See page 197. Schiavio, Andrea. 2014. "Music in (En) Action: Sense-Making and Neurophenomenology of Musical Experience." Doctoral Dissertation. p. 93.
99. See page 176. Thompson, E., & Stapleton, M. 2009. Making Sense of Sense-Making: Reflections on Enactive and Extended Mind Theories. Topoi, 28(1): 29.
100. Morris, Lawrence. 2017. The Art of Conduction: A Conduction® Workbook. Karma.

experiment with musical structure *in situ*. Exercises can be notated, graphic, or purely gestured. Listening skills, structural knowledge, analytical proficiency, and performance technique are all enacted in the three roles students play: individual performer, ensemble member, conductor.

Conduction is thus ideal for fostering what Dylan van der Schyff describes as a phenomenological responsibility.[101] Morris regularly confronted his ensembles with a warning: "If you're a student of music and you don't have a question, you're in *trouble*." Conduction's efficiency as a teaching tool stems directly from its ability to facilitate multiple levels of musical problem-solving. I offer a computer metaphor[102] to illustrate this. As a problem-solving domain (i.e. pursuing musical "questions"), Conduction can be likened to a heuristic approach, as opposed to an algorithmic approach. In computation a classic *algorithm* tells a program how to go from point A to point B with no detours in a manner that is predictable, deterministic, and not subject to chance. A *heuristic* technique instead searches for an answer by defining *how* to look, but not what to find, making its results subject to chance.[103] Conduction can be seen not only as a heuristic, but as a hyper-heuristic — heuristics nested within heuristics — which are used in machine learning as a way of reducing the amount of knowledge required to solve a problem.

In the Interpretive-Performer model, the goal (i.e. 'problem') is the successful performance of a masterwork. In the Creative Composer-Improviser model. So what can

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101. Schyff, Dylan Van Der. 2017. "Improvisation, Enaction & Self-Assessment." In The Oxford Handbook of Philosophical and Qualitative Perspectives on Assessment in Music Education. Oxford University Press.
102. This is not a hypocrisy. While Chapter 5 deconstructed computer metaphors for the mind, in this instance I am self-consciously offering an illustrative metaphor, rather than presenting a metaphor as a literal description.
103. The etymologies clarify this distinction. 'Algorithm' is connected to the Greek *arithmós*, relating to a numerical process, while 'heuristic' is connected to the Greek *heurískō,* translated as "I discover."

we identify as 'the problem' in this creative model? Butch Morris speaks to this directly in his familiar pre-show call-to-action:

> Let's play some very important music. Important to you first, important to the ensemble second, to me third. I want you to call on all of your fantasy, and your creative ability. Take the ensemble someplace.[104]

Thus, the collective 'problem' of Conduction can be seen as the quest to 'go someplace important.' This problem cannot be solved deterministically (i.e. algorithmically) but can be approximated in the cooperation of three independently heuristic levels: the individual, the ensemble, the conductor. A student's evolution over the course of a semester reflects the growth of embodied knowledge — the development of a sensorimotor repertoire[105] — of structures from small scale motifs and clusters to medium scale cycles to large scale form, unifying their aural skills, auditory imagination, fluency on their instrument, and sense of self-efficacy. The cumulative effect is a deeply embodied sense of their musicality, and the identification of musical goals and theoretical strategies. Conventional theory concepts are not abandoned, but animated (in the true sense of *anima*); the *speculative* space is *enacted* in Conduction, in that it places basic musical categories and metaphors literally into students' hands, who then turn to discover the relationships between them heuristically.

Conductions in the classroom can be recorded and analyzed at home. If the goal was to "Have an idea!", recordings document the sounds of mutual transformation, exposing

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104. Morris. *Black February.*
105. As described by Mark Reybrouck perhaps best exemplifies this view. His argument hinges on the coupling between (1) musical experience (auditory perception imbued with an aesthetic connotation), and (2) motor cognition. Reybrouck, M. 2005b. "A biosemiotic and ecological approach to music cognition: Event perception between auditory listening and cognitive economy". Axiomates. An International Journal in Ontology and Cognitive Systems, 15(2), pp. 391-409.

the dynamic overlap of the individual's ideas, the ensemble's ideas, and the conductor's ideas, in their collective journey toward "someplace important." Through analysis students discover patterns within their musicality (understood as an ecological rather than innate phenomenon), patterns which can then be compared and discussed in class. Sense-making is a collaborative endeavor. It can be among the most eye-opening analyses students will do in theory class, as they witness their own artistic transformation over the course of a semester. In terms of agency, Conduction is a tool in which the speculative, regulative, and analytic modes are equilibrated.

This chapter closes by outlining specific Conduction activities for the music theory classroom, including the fundamental level (exploring modes and scales, diatonic triad inversions), intermediate level (improvisations, Neapolitan chord resolutions) and advanced level (common chord modulations, polytonality).

Part I. Curricular Horizons

Chapter 2. A Student Evaluation of Undergraduate Music Theory: Surveying Music

Communities of Reddit.com

 "…for the most part, ethnographic studies have centered on the analysis of the inner intrigues of Western music institutions. Young composers or young performers, who are arguably on the front lines of Western music's rituals of recognition, have rarely, if ever, with the noted exception of prodigies, been at the center of these studies."[1]

— Y. El-Ghadban

This dissertation is centrally interested in pedagogy.[2] We will not begin with a philosophy of education, a psychology of learning, a historiography of music theory, an analysis of the inner intrigues of Western music institutions, or by spinning well-worn narratives of contemporary Western art music 'in crisis.' This will all be addressed in due time, patient reader. We begin this journey at what El-Ghadban calls the "front lines": the student experience. On a longer timeline, the absence of student voices from this multilogue is ironic, perhaps, given that the first music conservatories were founded in orphanages, whose central purpose was not the conservation of a tradition or a canon, but, quite literally, the lives of the young people in their charge, who were, themselves, the *conservati*. [3]

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1. El-Ghadban, Yara. 2009. "Facing the Music: Rituals of Belonging and Recognition in Contemporary Western Art Music." American Ethnologist. 36/1. p. 140

2. Pedagogy would be the study of walking alongside the student as a mentor or teacher. The etymology of the word *pedagogy* is derived from the Greek word *paidagogos*, which refers to a slave who escorted children to school. Thus there is a *pedis* dimension to teaching. To escort or to lead is to walk a learner through a journey. McLaren, Peter. 2014. Life in Schools: An Introduction to Critical Pedagogy in the Foundations of Education. 6th Ed. Routledge. p. xv.

3. Weber, William (et al.). 2001. "Conservatories." Grove Music Online. Oxford University Press. Jan. 10. Retrieved April 10, 2019.
http://www.oxfordmusiconline.com/grovemusic/abstract/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000041225

If institutions are to seriously reimagine music higher learning, it is necessary to hear from those most deeply invested in charting their own musical horizons. What do students today see as the value of theory study? Are students really learning what instructors think they're teaching? What are its primary contributions to their musical goals? How has theory study nurtured or hindered their sense of musicianship, creative practice, and career prospects? Where do students identify room for improvement? Current and former students are the world's foremost experts here, yet, aside from course evaluations and professor rating websites, there exists no medium for a deeper evaluation of the learning experience to take place at the institutional level.

Of course, such evaluations do exist in cyberspace, disseminated though internet communities, discussion forums, and the digital meme complex. To gain a better understanding of student perspectives regarding the character and value of college theory, a detailed online survey was created, inviting any current or former music major who had taken college-level music theory to evaluate their experience. The survey was distributed via the social media website Reddit.com[4] (hereafter Reddit) targeting users in various music-related community groups (known as "subreddits"). The survey included seven multiple choice questions, thirty Likert scale questions, and an open comment question. The survey's primary aims were to: (1) Evaluate student sentiment toward their experience of music theory study, (2) Identify core themes in what students view as the benefits and shortcomings of theory class, and (3) Correlate between and student perspectives with their primary music emphasis and instrument.

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4. https://www.reddit.com

Respondents (n=291) provided valuable insights into the strengths and weaknesses of music theory pedagogy from various student perspectives. A quantitative and qualitative analysis of the results reveal two major trends. First, respondents tended to view theory study as valuable, overall, with the most beneficial outcomes seen as aural skills. Second, there is strong agreement across all majors and instruments that theory classes have room for improvement. Textual analysis revealed three categories of primary concern: integration, diversity, and creativity. This chapter presents and analyzes these results, and discusses the advantages and limitations of Reddit.com as a recruitment source.

The Value of Student Feedback

To become better equipped, educators need more student input, not less. The current forums available to students include end of term course evaluations intended to gauge instructor effectiveness, and occasional student satisfaction surveys for the purposes of marketing and retention. For most universities in the U.S. these represent the only systematized forums in which students can provide feedback for their higher education, despite growing doubt that they even measure what they claim to measure. Braga (et al.)[5] found that teacher effectiveness was negatively correlated with student evaluations, concluding that a significant number of students react negatively to the greater effort demanded by more effective teachers. Another recent study (MacNell, et al.)[6] showed that implicit gender bias plays a role in student ratings, with students giving higher ratings to professors they were told were male, but were identical in all other respects. These biases

5. Braga, Michela, Marco Paccagnella and Michele Pellizzari. 2014. "Evaluating students' evaluations of professors." Economics of Education Review. Volume 41, August.
6. MacNell, Lillian; Driscoll, Adam; Hunt, Andrea. 2015. "What's in a Name: Exposing Gender Bias in Student Ratings of Teaching." Innovative Higher Education, Volume 40, Issue 4, August.

warrant attention, especially as student evaluations play a significant role in the career development of educators. Even given this evidence, to altogether dismiss student feedback would be a grave error.

The issue of student feedback is neither a student problem nor an instructor problem. It is a measurement problem. While instructors are only one part of the educational system for students they necessarily become its face. Students may see individual instructors as ultimately on the hook for any level of dissatisfaction, even if it is a synthesis of a number of frustrations well beyond the instructor's sphere of influence. A student may take legitimate issue with poor curricular design, a toxic classroom climate, a lack of integration between core subjects, a disconnect between learned material to long-term goals, an unfavorable effort-outcome ratio, among many other factors, but have no means of expression outside of course evaluations, which, again, are received as reflection of the instructor. The curriculum is beyond critique.

Without a more holistic student feedback mechanism there is no metric for music programs to reliably evaluate the student perspective of the learning experience. Instructors, administrators, curricular experts, textbook authors, etc. are not equipped to measure the relevance of curricular material to the environment students are preparing to enter. The debate over *how* or *if* music theory in higher education is to change is unlikely to be resolved meaningfully if the student voice remains excluded from the conversation. If the substantive change sought by leaders in education is to be achieved, it must begin by expanding the input domain by including the voices of those it understands itself to be serving.

Reddit as a Recruitment Source

Surveying music students from across the U.S. is now a manageable task thanks to social media platforms, which make targeted polling a faster, more reliable, and more economical process than ever before. This section will discuss why Reddit is an ideal source for recruiting the participants needed for this study.

While initially skeptical, scientific studies are increasingly relying upon online recruiting for surveys. The volume and immediacy of web-based information has made crowdsourcing a powerful tool for researchers across many domains. Sample populations can be targeted, contacted, and polled with incredible speed. But do these benefits come at a cost? Some have understandably called the accuracy of internet surveys into question. The same concerns that underlie all surveys still apply — high dropout rates, repeated participation, and insincere responding, as well as especially web-based issues such as trolls. Social media dramatically inflates in the ease of participating in broader cultural discussion, which, in turn, renders discussion more vulnerable to questionable information. Simply put, increased convenience of participation risks proportionately devaluing the conversation. A prime example of this was seen in 2016, when the U.K.'s Natural Environment Research Council invited the public to help in naming their new, state-of-the-art ocean research vessel via their #NameOurShip Twitter® campaign. To the council's dismay, the winning name was "Boaty McBoatface." With over 27,000 votes, this was the public's choice by a significant margin.[7] The benefit of speedy, targeted recruitment that

7. Rejecting the public's choice the Council elected to name the vessel themselves as the RRS Sir David Attenborough.
Olivennes, Hannah. 2017. "Boaty McBoatface: From Internet Joke to Polar Explorer." New York Times: Europe, March 13.

makes crowdsourcing so valuable also become its liability. Faster and easier recruitment thus, theoretically, carries the cost of lower reliability and quality.

However, those skeptical of online polling would do well to remember that any act of measurement carries an inherent cost. Measurement, classically defined, is the *estimation* of ratios.[8] The very attempt to quantify a phenomenon assumes a positive benefit/risk assessment of the chosen method of measurement. It has yet demonstrated that the information/misinformation ratio has shifted at all in the Information Age. Several analyses,[9] in fact, demonstrate that surveys conducted over the internet provide results that are at least as valid as traditional methods.

Furthermore, not all social media platforms are equal. Platforms (i.e. Reddit, Wikipedia, Twitter, Facebook etc.) each structure communities differently, centralizing particular aspects of social interaction. Reddit centralizes the open discussion of news and events, stories, and shared links. Users join and follow existing special interest forums (subreddits) which cover an ever-expanding multitude of topics, or create their own subreddit. Community discussion is regulated by users via a rating system of upvotes and downvotes, which affect a post's visibility to the rest of the community.

Reddit's community structure is unique in centralizing the discussion of information, distinguishing it from Wikipedia — where users largely assume the validity of the content as presented and any discussion takes place behind the scenes, from Twitter — which centralizes the contagion of information but makes thoughtful discussion

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8. Michell, J. 1999. Measurement in psychology: a critical history of a methodological concept. New York: Cambridge University Press.
9. Woo, Kim, & Couper, 2015; Wilson & Dewaele, 2010; Birnbaum, 2004; Evans & Mathur, 2005; Miller & Dickson, 2001; Gosling, Vazire, Srivastava, & John, 2000

impractical, and from Facebook — where discussion of any topic remains exclusive to the immediate friend group.

One recent series of experiments demonstrates that Reddit's unique structure incentivizes more accurate information. T. Mills Kelly teaches a course called "Lying About the Past" at George Mason University. In this course students are guided through a careful fabrication of an internet hoax for the purpose of viral internet success and to learn how to sniff out bad information in the process. In 2008 his course invented a historical person, Edward Owens, and using "expert" interviews, fake primary documents and blogs, they built a detailed Wikipedia page in his memory. This character evaded any attention from Wikipedia's governing editors. Edward Owens captured became quite a popular figure; he even landed a spotlight article on USA Today's website. No hint of suspicion ever surfaced.

However, in the next iteration of this course, Kelly decided to target the social media website Reddit. Similar to his previous hoax, Kelly targeted a number of these subreddits, making false claims that stitched together sources which were either elaborately half-true, or verifiably true, including recent yet factual Wikipedia articles. This time, however, the hoax completely flopped. While taking months to plan, it only took twenty-six minutes to deconstruct and falsify at the hands of Reddit users. Reddit succeeded where Wikipedia failed due to the community structure, and the incentive system (upvotes). This structure is better able to centralize the discussion of information, and provide users a greater stake in the accuracy of facts. Reddit communities can form freely around any topic, no matter how broad or narrow, and members share a vested interest in the quality of their shared information to uphold the integrity of their community.

Thus, Reddit not only allows for free and rapid recruitment of large survey sample sizes, it is optimized for the targeting of specific groups whose members exhibit a bias toward the exchange of more accurate information than other social media platforms. Reddit averaged 1.2 billion visits per month between September 2016 and February 2017, and ranks sixth in the world among social media websites by that measure. A 2016 study of the demographics of adult U.S. Reddit users (approximately half of the active users on the site) showed that they are roughly representative of the demographics of the general adult U.S. population, particularly when controlling for age. Some key differences that work in favor of this study are that 90% of users are under age 35, and users are more educated than the general population (36% of users hold a college degree, compared with 28% generally). A follow-up study[10] that compared three previous studies of Reddit demographics concluded that Reddit populations, overall, are as viable as samples recruited by more traditional means (mail, email, survey agency).

Reddit is an ideal source for recruiting participants for this particular study for four reasons: (1) specific subreddits related to music theory, music education, music majors, etc. can be targeted specifically. (2) A large sample size is accessible in a short time span. (3) Reddit communities have been shown to be as reliable as traditional samples, and exhibit a bias for toward accurate exchange of information due to Reddit's community structure. (4) Studies can be conducted for free, as users generally have an interest in participating without monetary incentive, largely due to the preexisting buy-in with their subreddit community.

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10. Barthel, B. Y. M.; Stocking, G., Holcomb, J.; & Mitchell, A. 2016. "Nearly eight-in-ten Reddit users get news on the site." Washington, DC: Pew Research Center.

Methodology

This section follows the Checklist for Reporting Results of Internet E-Surveys developed by Gunther Eysenbach.[11]

To address the need for the student voice in conceptualizing the role of music theory in today's music programs, this survey targeted current or former undergraduate music majors who had completed the music theory core curriculum required by their major. The study had three central research questions: (1) What is the general sentiment toward the experience of music theory study among students? (2) What do students see as the greatest benefits and shortcomings of theory class? (3) Is there a relationship between students' primary major and/or instrument and questions 1 and 2?

The researcher used the web service SurveyMonkey™ (n.d.) to design the survey, generate a hyperlink, and collect responses. The hyperlink was posted on several Reddit.com communities most likely to contain users ("Redditors") from the target population: r/musictheory, r/MusicEd, r/MajoringInMusic, r/Music_Theory_Class, r/music, r/classicalmusic, r/musicians, and r/WeAreTheMusicMakers.[12] The number of users subscribed to of each of these communities varied greatly, from 4,550 (r/MusicEd), to 75,738 (r/musictheory), to over 15 million (r/music). The hyperlink was posted to the message boards of each subreddit. As subscribers to these subreddits, users are able to view community content, post, comment, and discuss content with others who follow that subreddit. As involvement is voluntary, generally only a small percentage of each community views each post. It is not possible to know how many Redditors viewed the

11. Eysenbach, Gunther. 2004. "Checklist for Reporting Results of Internet E-Surveys (CHERRIES)." Journal of Medical Internet Research 6(3): e34.
12. The "r/name" nomenclature is standard shorthand for identifying reddit communities)

invitation to participate in the survey, and therefore impossible to determine an accurate response rate.

Respondents were told the length of time for completion of the survey (5 minutes), the academic affiliation of the researcher (University of California), the purpose of the survey, and that no personal information would be collected. No incentives were offered. The survey remained open from June 2016, to February 2017. Once submitted, respondents were unable to alter any of their answers.

The survey consisted of ten questions. The first section included seven multiple choice questions, which all included an "Other" option. The next two questions were Likert-style on a five-point scale. The first had eleven parts, the second had nineteen parts. The final question was an open comment question. All questions were displayed on a single page. All multiple-choice questions included an "Other" option, and all questions could be skipped voluntarily. The average skip rate was 2%, and all responses were included in the final analysis. The host site uses browser cookies to assign a unique user identifier to each respondent to prevent multiple responses from a single user. No IP addresses were restricted from participating.

Aside from specifying music major emphasis and principal instrument, no identifying questions were asked. Socio-demographic questions (e.g. race, gender, etc.), although of interest, were omitted in order to minimize the length of time it would take to complete the survey, an important factor in attracting and retaining respondents. Another reason for the omission of these questions is the "stereotype threat," i.e., that respondents' answers might change if they know that their socio-demographics are being taken into

account.[13] After collecting the questionnaire responses, the survey was closed, and the researcher analyzed the data by calculating correlations and by coding open-ended responses and identifying emergent categories. This was done through content analysis, which involved the simultaneous construction of categories that capture relevant characteristics.[14]

Results

The survey fielded a total of 291 respondents from eight Reddit.com subreddits. Question 1 asked respondents to specify the emphasis of their music major. The majority (81%) of respondents to this question (who did not choose "Other") were either instrument performance majors, music education majors, or composition majors. Thirty-nine

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13. The "stereotype threat" is defined as the "experience of anxiety or concern in a situation where a person has the potential to confirm a negative stereotype about their social group." Gilovich (et al.). 2006. "Social Psychology." New York: W.W. Norton. p. 467–468.
14. According to the methods outlined in Merriam, S. B. 2009. "Qualitative research: A guide to design and implementation." San Francisco: Jossey-Bass.
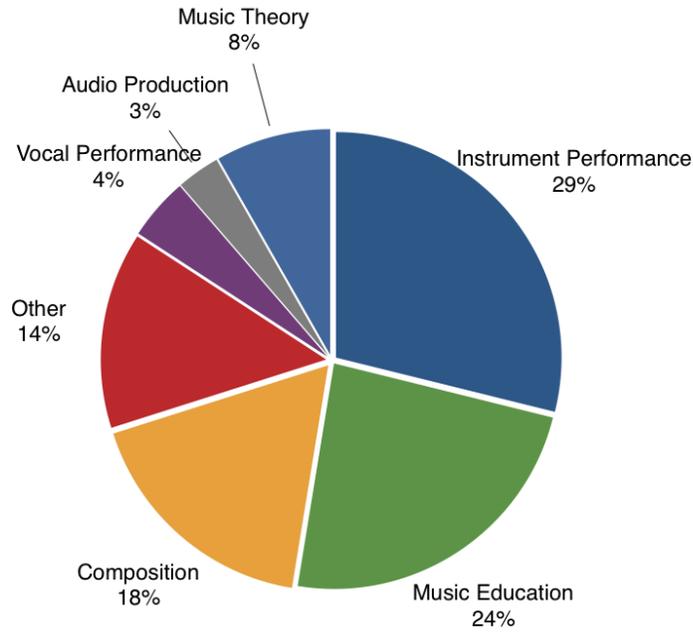
Figure 2.1: Respondents by music emphasis
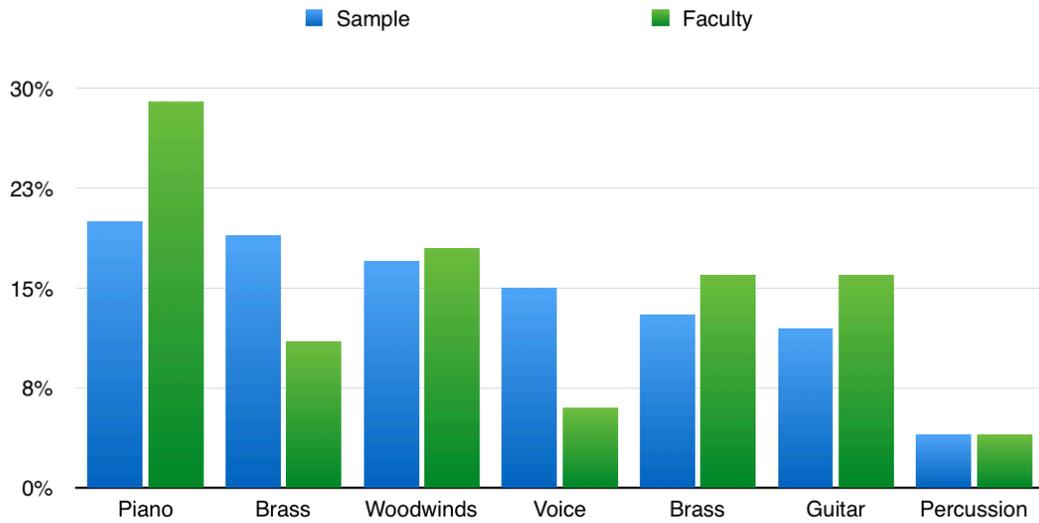
Figure 2.2: Sample emphasis compared with faculty emphasis 45

respondents skipped this question, and fifty-three specified an "Other" undergraduate major.[15] (see Fig. 2.1)

Respondents specified their primary instrument in question 2. While there exists no public record of undergraduate music student emphases or primary instrument, when looking at the Directory of Music Faculties in North America[16] we can see that the survey sample and the instrument faculty population correlate reasonably well (see Fig. 2.2). Assuming that faculty are an index of student demand, the principle instrument population of students in North America should follow proportionately. Differences between instructors and the survey sample can partly be explained by common overlap in instructor roles (i.e. some faculty teach piano although it is not their primary instrument) or by ambiguous terminology (some bass students might choose "Guitar" if they associate more closely with the bass guitar than the contrabass).

Evaluating Student Sentiment toward Music Theory.

The first objective of this survey was to determine student sentiment toward their experience of music theory. The general sentiment reported by the sample population was very positive, as shown through a series of Likert scale questions. It is important to distinguish student perceptions of their theory *class* (evaluations of curriculum, instructor, assessment, etc.) from their perceptions of the value of theory *knowledge* (the utility of understanding, relevance to their goals, contribution to their career, etc.). To do this, to the

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15. "Other" majors included more specific music emphases: music history, jazz studies, computer music, science of music, musicology, ethnomusicology, music industry studies, music technology, jazz and pop music, pre-music therapy, music therapy; as well as non-music majors who either double majored or minored in music: computer science, law, neuroscience, physics, chemistry, biology, mathematics, linguistics, psychology, engineering, accounting, and liberal arts.
16. Directory of Music Faculties in Colleges and Universities, U.S. and Canada. 2016-2017.

extent that it is possible, two complete-the-sentence prompts were posed: Question 8: "Music theory knowledge…", and Question 9: "My music theory class…", each followed by a series of statements to be disagreed with or agreed with on a five-point Likert scale. No statement presented a forced choice, as "Neither" was always an option.

The prompt "Music theory knowledge…" (n=290, 1 skipped) was followed by a random mix of 11 positive and negative statements about music theory. A positive statement is one for which agreement is a positive evaluation (e.g. "Music theory knowledge…has helped me better understand the music I perform") while a negative statement is one for which agreement is a negative evaluation (e.g. "Music theory knowledge…does not apply to my personal musical goals"). Overall respondents more than 'Agreed' with all positive statements ($\bar{x}$= 4.30, s = 0.9), and more than 'Disagreed' with negative statements ($\bar{x}$= 1.73, s = 0.91). Four of the eleven statements had the maximum median response of 5 (Strongly Agree): "…has helped me better understand the music I perform" ($\bar{x}$= 4.53, s = 0.77), "…has improved my experience of classical music" ($\bar{x}$= 4.39, s = 0.84), "…is very beneficial to me" ($\bar{x}$= 4.36, s = 0.85), and "…has had a positive effect on my creativity in music" ($\bar{x}$= 4.23, s = 0.99). For theory teachers, the most encouraging result from this survey might be that only 3.8% of respondents disagreed that theory is "very beneficial." Amidst this very positive sentiment toward theory knowledge, however, enthusiasm for "improved career prospects" was noticeably curtailed in comparison ($\bar{x}$= 3.84, s = 1.12).

The prompt "My music theory class…" (n=290, 1 skipped) was followed by positive, negative, and neutral statements in random order. For positive statements (e.g. "My music theory class…had clear assessment expectations") respondents benignly agreed

(x̄= 3.53, s = 1.09), while negative statements (e.g. "My music theory class…is boring") showed benign disagreement (x̄= 2.31, s = 1.00). The only statement to result in an extreme median (either 1 or 5) was "…is not relevant" (x̄= 1.61, s = 0.94), indicating that despite disagreement over the value of specific aspects of theory courses, respondents overall regard music theory class as highly relevant. Although sentiment was generally positive, when comparing student sentiment between theory knowledge and theory classes, a significant drop-off in positivity can be observed (see Fig. 2.3).

Self-selection bias arises in any situation in which individuals voluntarily enter into a group, making causation difficult to determine. In this case, any number or combination of factors could have compelled Redditors to respond to this survey that would render this sample unrepresentative of an unbiased cross section of the target population.[17] To help gauge the effect of self-selection bias, the statement "Music theory class…is my favorite class" was posed. The median response was 3 (x̄= 3.29, s = 1.24), indicating that the sampled population skewed only slightly toward a positive bias, but not significantly. Still,
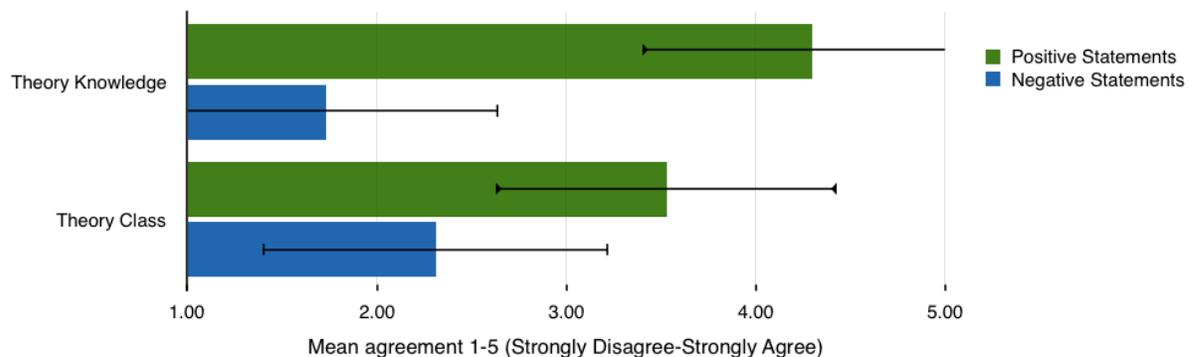
Figure 2.3: Positive and negative sentiment toward theory knowledge versus theory class

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17. Factors influence self-selection bias might include: preexisting favorable or unfavorable sentiment toward their music theory experience, higher-than average interest in contemporary issues of education, the age and relative expendability of time in order to participate in a survey, and the demographic characteristics of Redditors generally.

this presence of bias should be taken into account when interpreting the general positivity of the results.

Perceived Shortcomings of Theory Class.

Despite such positive sentiment, 236 (81%) of respondents agreed with the statement "Music theory class…can be improved" ($\bar{x}$= 4.02, s = 0.81), which was the highest mean and lowest standard deviation of any other statement for question 9 (see Fig. 2.4).
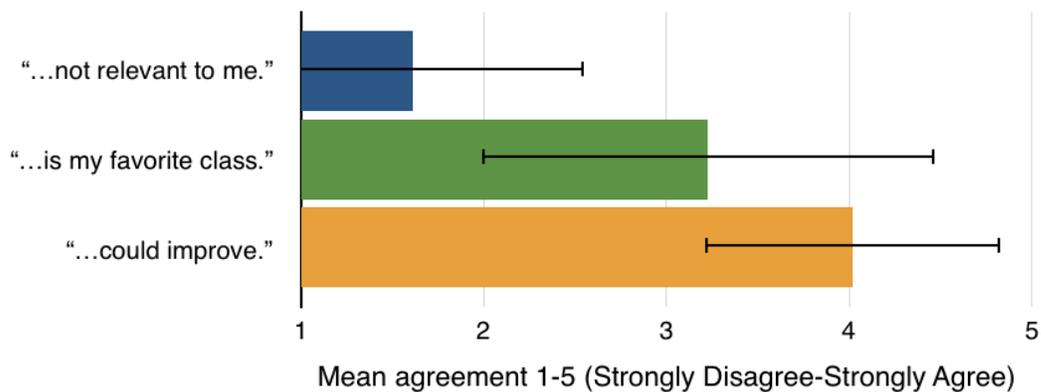
Figure 2.4: Mean agreement with statements following "Music theory class…"

theory classes? While scholars debate about which topics theory curricula do not address sufficiently, such as improvisation and physics of sound, question 9 sought to measure the degree to which students agreed with these content-related concerns. Four "sufficiently discusses" statements (e.g. "My music theory class…sufficiently discusses…) were presented, followed by domains frequently cited as lacking in the curriculum: improvisation, cultural diversity, physics of sound, and music psychology/cognition. Overall responses indicate insufficient discussion of all of these topics in their classes (m

= 2, x̄ = 2.29), with improvisation considered the most insufficiently discussed (x̄ = 2.06). Comparatively, student attitudes toward non-content aspects appear positive, albeit benignly. These include "My music theory class is clear about its…" "…assessment expectations" (x̄ = 3.94), "…purpose for me as a musician" (x̄ = 3.69), "…relationship with other core subjects" (x̄ = 3.69), and "relevance for my instrument" (x̄ = 3.40) [see Fig. 2.5].

Of the 233 respondents who agreed that theory class could be improved, 78 (1/3) "Strongly Agreed." In statistical analyses of Likert scale responses "Agree" (A) and "Strongly Agree" (SA) are generally treated as different by degree, not kind. In this case, given the generally positive evaluations, comparing how these A and SA respondents differed in their other evaluations helps to zero in on areas most in need of improvement, as rated by the most concerned among students. These SA respondents were accordingly correlated with more negative evaluations of theory knowledge and theory class across the board when compared to the A respondents ($r = .435$, $p < .01$). A and SA respondents differed by more than 1/2 a standard deviation on 6 out of 27 statements presented in questions 8 and 9. When comparing these to the other 19% of respondents (those who Disagreed/Neither that theory class can be improved) a clearer image emerges of what students see as areas most in need of improvement. (see 2.6)
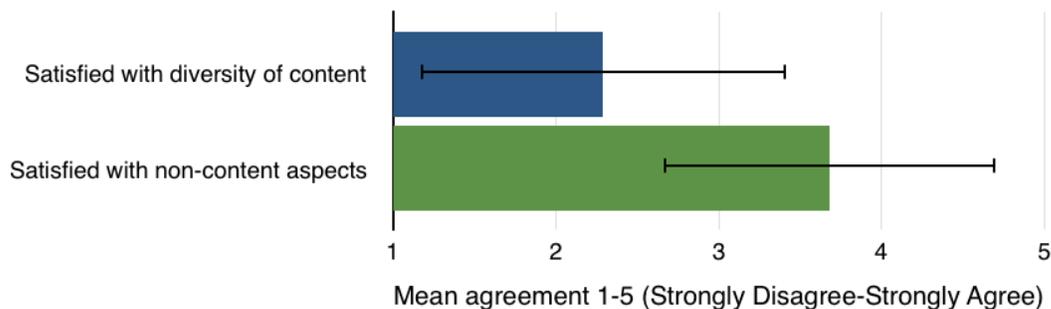
Figure 2.5: Mean agreement with content versus non-content aspects
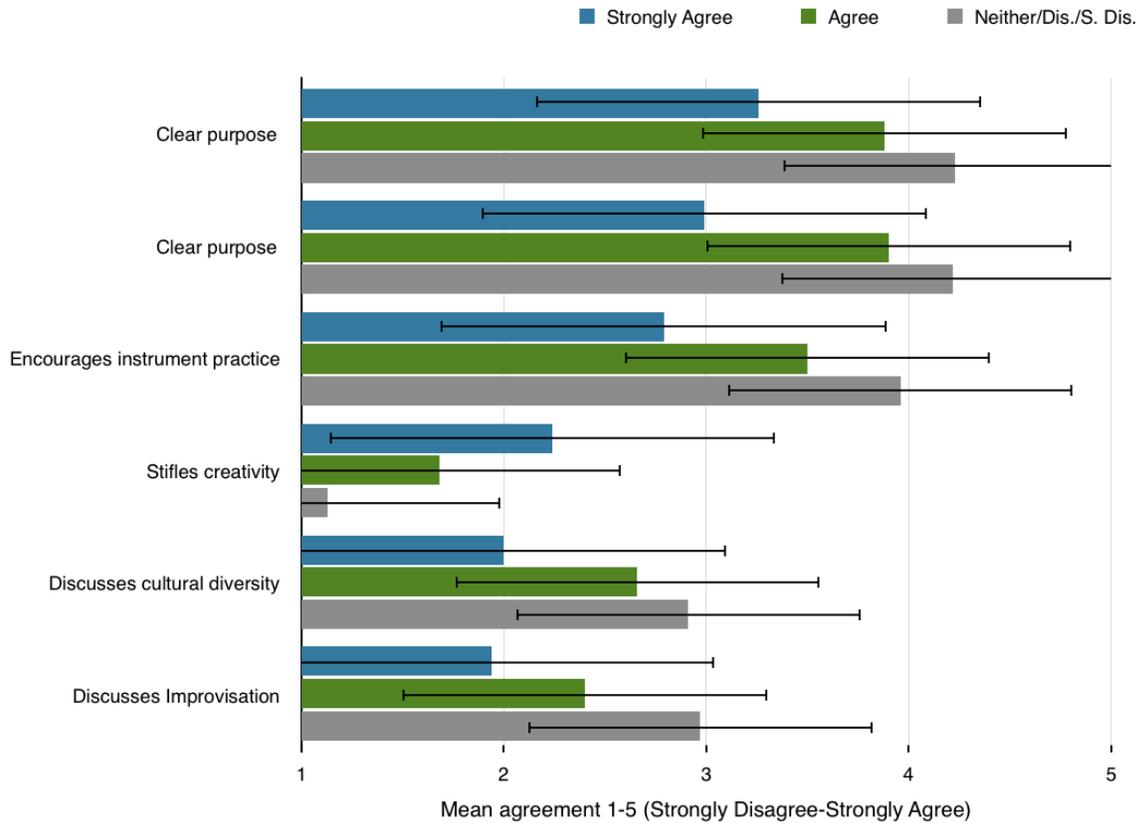
Figure 2.6: Mean agreement on categories by group agreement/disagreement with "…could improve."

Skills: Grades versus Utility.

Students perceive some difference between skills needed to earn a good grade in theory class and skills that are personally useful. Survey questions 4-7 were multiple choice and asked students to specify which skill promoted in the classroom was the (1) most/second most vital for attaining a high grade, and (2) most/second most personally useful. Of the ten skills/activities listed,[18] "Analyzing a Score" (20.4%, n=279) was the most vital skill for attaining a high grade, while "Relating/adapting concepts to goals"

18. Completing textbook exercises; analytic listening; practicing on my instrument; engaging creatively with concepts; memorizing terms, rules, and procedures; analyzing a score; solfegge/hand-signing; reading notation proficiently; relating/adapting concepts to my personal musical goals; keyboard skills

(35.5%, n=287) was the most *useful* skill promoted in the classroom. The skill that was rated most highly across both categories was "Engaging creatively with concepts." 14% of respondents chose "Memorizing Terms and Rules/Procedures" as either the most or second most vital skill for attaining a high grade. However, only 2.1% of respondents indicated it as useful. Similarly, only 9% of respondents regarded "Completing textbook exercises" as the most or second most vital skill for attaining high grades, and 1 respondent (.004%) regarded it as useful. These differences could be slightly deceptive, as it could be argued that "Relating/adapting concepts to goals" is only possible, to some degree, through the memorization of terms and procedures and working through textbook exercises.

All ten options are generally considered important aspects of theory teaching. In curricular terms, skills vital for grades and skills that are the most useful might represent assessment categories and performance objectives.[19] Theoretically, these should be in alignment. However, the struggle to define performance objectives in music theory has perennially been at the center of many of its crises. By comparing responses to questions 4-7, we can determine where assessment and performance objectives are aligned, or at odds, as perceived by students. Figure 2.7 presents the combined data[20] from all four questions shown as percentages of the total times each skill was selected as either grade-vital or useful. Skills that were as likely to be as grade-vital as they are to be personally useful converge at 50% (i.e. the grade/usefulness ratio approaches 1:1), meaning that these skills are the most ideally balanced between assessment focus (good grades) and

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19. In this case, performance objectives are equated with student perceptions of usefulness. This framing privileges practical objectives over those that might be less "useful," but still valuable, such as speculative theory or analysis for understanding and appreciation.
20. Question 4. Most vital for a good grade (n=279). 5. Second most vital for a good grades (n=284). 6. Most personally useful (n=287). 7. Second most personally useful (n=287).

performance objectives (usefulness). The further from center the point of convergence, the more out of balance. For instance, "Completing textbook exercises" is assessment-heavy, but is not at all regarded as useful. "Practicing on my instrument" on the other hand is highly useful, but has little effect on assessment.

No correlation exists between instrument groups/majors and the grade-vital skills. This accurately reflects that all instruments groups participate in the same theory classes and respond to the same assessment criteria. There is a slight indication that monophonic instrument groups tend toward different useful skills ($r = .156$, $p < .05$), but all instruments collectively agreed that the most useful skill promoted in the classroom was to actively adapt the concepts to their own personal goals.
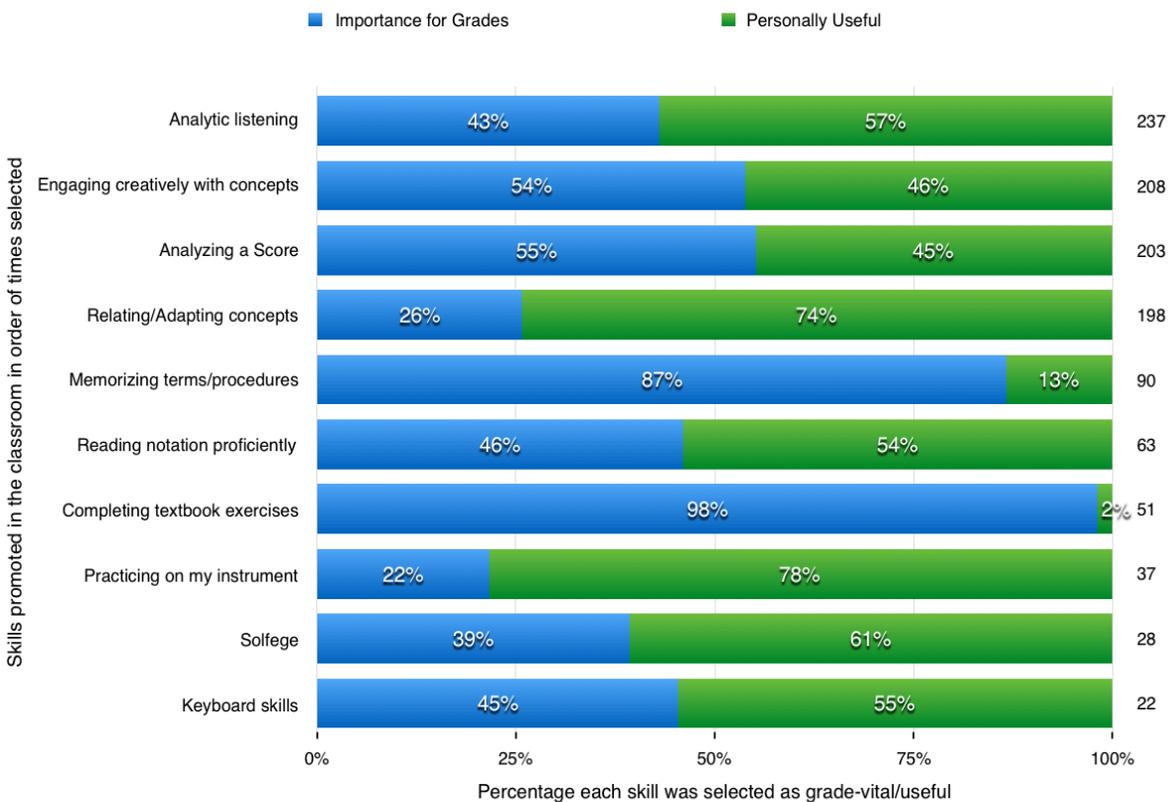
Figure 2.7: Skills rated as grade-vital versus personally useful

Perceived Learning Outcomes.

Often times music students are thought to be confused about the purpose of music theory study. To identify what students perceive to be the intended learning outcome of their theory classes, question 3 asked respondents to complete the statement "Music theory intends to teach me…" by choosing one out of eight statements of purpose[21] commonly offered in music theory textbooks. The choices were not mutually exclusive, but forced respondents to identify most strongly with one option (n=293, 8 skipped). The top four responses were: "…how music works" (28.6%), "…the language of music" (19.8%), "…how to analyze music" (18.7%), and "…how to think about music" (14.1%). These results are an important indication of the perceived metaphorical grounding of music theory (discussed further in later chapters).

A weak correlation exists between perceived intended learning outcome and respondents' primary musical instrument ($r = .209$, $p < .05$), with a stronger correlation for specifically monophonic instruments ($r = .273$, $p < .01$). There was no correlation with specific music majors. Out the eight possible options, Woodwind and String players were highly likely to believe that music theory class intends to teach "…how music works" (40% and 36%, respectively); Vocalists and Percussionists were most likely to choose "…language of music" (44% and 39%, respectively); and Brass players were most likely to choose "…how to analyze music" (30%). Interestingly, Pianists and Guitarists did not tend toward any particular learning outcome, suggesting that the specialized needs of monophonic instrument players factor into the perceived purpose of theory class. While

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21. How music works; The language of music; musical rules; how to analyze music; how to think about music; musical logic; historical practices; how to compose

speculating on the nature of these specializations is tempting,[22] it is beyond the scope of this survey.

Respondents who chose "…how to analyze music" were consistently less positive in their evaluations of theory class than all other intended learning outcomes and were the most likely to write negative comments. This group still generally agreed with the positive statements about music theory knowledge ($x^- = 4.14$), but at half of a standard deviation less than other groups ($x^- = 4.54$)

Concerns by Primary Major and Instrument.

While Pianists and Guitarists might perceive similarly diverse intended learning outcomes, they disagreed somewhat significantly ($r = .285$, $p < .01$) about the relevance of the material to their instrument. In question 9 Pianists were the most likely to agree that "Music theory class…is clear about its relevance for my instrument" ($x^- = 3.82$), while Guitarists were the least likely ($x^- = 3.21$).

Music theory is often related to math class, and one instrument group had significantly stronger feelings about this relationship than all others. 79% of those whose primary instrument was Voice agreed that theory class "Reminds me of math class" ($x^- = 3.60$, $s = .99$), while instrumentalists overall tended to disagree ($x^- = 2.85$), resulting in a small positive correlation ($r = .208$, $p < .01$). Percussionists, as we might expect, were the least likely to be reminded of math class, more than a full standard deviation below

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22. For instance, Vocalists and Percussionists, though opposite in their method of sound production, are the most intuitively performed instrument groups. Both are likely to see the activities of conventional theory as abstract in relation to their instrument, which might explain why they both chose the most metaphorical learning outcome. Brass players , however, pragmatically have the most to gain from music analysis. Understanding precise harmonic relationships contextualizes their part within their section, and guides the auditory representation of the required pitch prior to its performance.

vocalists ($\bar{x}$ = 2.5, s = .81). This opposition is especially interesting considering that both vocalists and percussionists were the most likely instruments to see "Language of music" as the intended learning outcome of theory class.

Some theory classes include a performance component as part of assessment, such as keyboard skills and sight singing. Strangely, there was some disagreement between majors about the presence of this component, particularly between the two best represented majors: instrument performance and music education. When asked if their class "includes a performance component as part of my grade" performance majors were much more likely to disagree (m = 2. $\bar{x}$ = 2.44) than Music Ed. Majors (m = 4, $\bar{x}$ = 3.16), which is a moderately significant difference (r =.348, p < .01). The reasons for this are unclear, as these majors do not differ significantly in any other way. It could be that the term "performance" carries a more specific meaning for performance majors.

Open Comments.

Question 10 offered respondents an opportunity to openly comment in response to the prompt "What have been the benefits and drawbacks of music theory instruction for you? In what ways could curriculum be improved?" 121 respondents (42%) provided their feedback in comments that ranged from four words to 489 words, averaging roughly 75 words per comment. These were first analyzed for sentiment toward their theory experience (positive, negative, neutral). Responses that had a mix of sentiments were separated,[23]

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23. For example, comment 9 was split into 9a and 9b. 9a:
"I   like   knowing   how   things   work.   Having   a   class   that   taught   me   what notes/scales/intervals/chords/progressions turned out to sound and feel like has really helped me to fine tune my musical approach." and 9b: "It seemed that, both the professors and the curriculum portrayed jazz, and other musical evolutions to be illegitimate in some way."

resulting in 135 unambiguous comments pooled as follows: Negative- 94, Positive- 29, Neutral- 12. (. 2.8)

Negative comments expressed clear discontent with one or more aspects of their experience. Most also offered suggestions for improvement. Consistent with the results above, the broad majority of concerns and suggestions fell into one of three categories: integration (40) , diversity (27), or creativity (22). Integration concerns include poor communication of the context and purpose of theory study,[24] piano-centrism and
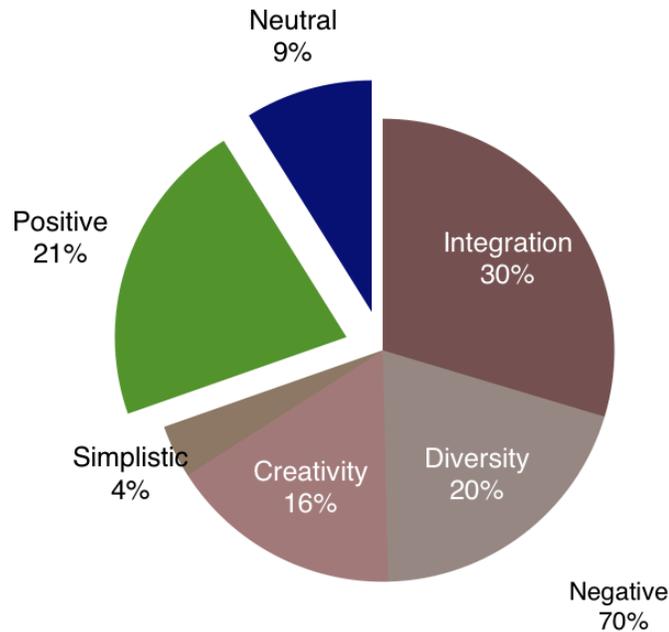
Figure 2.8: Positive, negative, and neutral comments

24. Ex. 13b- "I also think music theory needs to be presented as something that is alive and constantly being updated and information being added to. Too often it is treated and ultimately seen as a published result rather than a field of process, and rarely are major theorists who have contributed information to the way we study theoretical subjects identified and their sources examined. As a result, students often, for no fault of their own, really have no clue as to what is and isn't out there or why they're studying what they're studying or where it comes from, etc."

marginalization of their instrument,[25] a perceived disconnect from student goals,[26] and lack

of integration with other music classes[27] and other related subjects.[28] Those concerned with

diversity were dissatisfied with the exclusive focus on common practice European music[29]

to the neglect of other genres[30] (including modern music[31] and jazz)[32] and the theoretical

systems of other cultures.[33] Comments that centered around a lack of creativity in their

theory experience expressed that curricula overemphasized analysis[34] and

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25. Ex. 30b- "Only complaint, theory classes cater much too heavily to classical musicians especially PIANISTS. Yes piano is a fundamental tool for learning of course, but people are so dismissive of guitar it's just embarrassing how out of touch someone can be. I don't want to learn everything through the lens of piano, translate the lesson to other instruments!"

26. Ex. 47- "I feel like my theory experience focused a lot on specifics that are not very relevant to my work, and in turn I end up forgetting it."

27. Ex. 51b- "Another facet of my music theory education that I felt could be improved upon was its integration into the rest of the curriculum. There was a vague link to aural skills, but nothing else. I think music theory should be integrated into historical and stylistic education."

28. Ex. 45b- "It also lacked the fundamental science involved with music theory like the physics of sound, the overtone series, and how our brains perceive and process sound." 71- "The logic of the curriculum is all wrong. Teaching baroque theory as the central/core form of theory makes no sense in the modern world. I wish more emphasis was laid on the physics of acoustics."

86- "My struggle in college was that so much time was spent teaching antiquated rules without diving into the sonic and cognitive reasons for those rules."

29. Ex. 45a- "My theory classes focussed only on Common Practice "classical" music when in reality it would have benefitted from including different musical genres and music from different cultures."

70b- "Common practice theory should be presented as one of many theoretical frameworks in the music of the world"

30. Ex. 52- "My music theory course focused heavily on classical music, so musical concepts which surfaced more noticeably in more modern styles and genres were not sufficiently addressed, nor was the scientific perspective (audiology, psychology, philosophy, etc.)"

31. Ex. 39b- "Most theory curricula that I've seen do have as their primary weakness a failure to engage sufficiently with modern music, but not the popular kind. Rather, they dwell too heavily on common practice period theory and leave students completely unequipped to approach atonal music with any degree of sophistication."

32. Ex. 75a- "No jazz theory was taught, which is frustrating as it is by far the most industry-relevant category. No lead sheets produced by students and my university were readable."

33. Ex. 106b- "[I] do wish that it had been more inclusive of other cultures. I think my professors did a good job of covering the full scope of western music, but there is a lot that was left out."

34. Ex. 73- "Get rid of busy work (roman numeral analysis, twelve tone mapping, etc) and teach in general scopes that will interest performers and help composers - not to write in a particular style - but to incorporate elements into the music they are writing."

procedures/rules[35] and undervalued improvisation[36] and creative activities in general.[37] In addition to these three categories, five comments were critical of the overly-simplistic approach used by their curriculum.[38] Of these 94 negative reviews, seven focused their negativity on the instructor[39] rather than the subject generally. See Table 2.1 for examples of negative comments.

Table 2.1: Example negative comments

Integration	Diversity	Creativity
51b- "Another facet of my music theory education that I felt could be improved upon was its integration into the rest of the curriculum. There was a vague link to aural skills, but nothing else. I think music theory should be integrated into historical and stylistic education."	70b- "Common practice theory should be presented as one of many theoretical frameworks in the music of the world"	Ex. 119- "Creative and exploratory learning would have helped me more than the 'textbook exercises'; more connection with Aural Skills and musicology curriculum"
Ex. 45b- "It also lacked the fundamental science involved with music theory like the physics of sound, the overtone series, and how our brains perceive and process sound."	Ex. 75a- "No jazz theory was taught, which is frustrating as it is by far the most industry-relevant category. No lead sheets produced by students and my university were readable."	Ex. 120- "The biggest improvement would be to give more opportunities for applying music theory concepts in creative, personal ways."
Ex. 13b- "I also think music theory needs to be presented as something that is alive and constantly being updated and added to. Too often it is treated as a published result rather than a field of process, and rarely are major theorists who have contributed information to the way we study theoretical subjects identified and their sources examined. As a result, students often, for no fault of their own, really have no clue as to what is and isn't out there or why they're studying what they're studying or where it comes from, etc."	Ex. 39b- "Most theory curricula that I've seen do have as their primary weakness a failure to engage sufficiently with modern music, but not the popular kind. Rather, they dwell too heavily on common practice period theory and leave students completely unequipped to approach atonal music with any degree of sophistication."	6- "Transfer knowledge is key. All theory is useless if it cannot be applied or reproduced properly and(!) creatively."

Positive comments, even if accompanied by a suggestion for improvement, centered around three themes: usefulness (16), deeper understanding (8), and instructor-specific

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35. Ex. 119- "Creative and exploratory learning would have helped me more than the 'textbook exercises'; more connection with Aural Skills and musicology curriculum"
36. Ex. 94b- "Improvisation related music theory has been lacking in my experience."
37. Ex. 120- "The biggest improvement would be to give more opportunities for applying music theory concepts in creative, personal ways." 6- "Transfer knowledge is key. All theory is useless if it cannot be applied or reproduced properly and(!) creatively." 7d- "I feel that over-learning music theory is damaging to the creative process, and I feel that my music theory class treats music as if it is another subject like Maths, where everything is formulaic and has to 'sound exactly like this.'"
38. Ex. 31- "All music theory classes I have taken could have been more constructive if the course was constructed to explore the complexities of music theory rather than hand-wave over them."
39. Ex. 50- "My first semester of college, I had a professor who wasn't great at explaining concepts and I felt very behind in my studies to become a music educator. I ended Theory 1 with a C, barely passing, and reconsidering my career choice. However, my second semester I had a wonderful professor and ended with an A. Now that I've had a more attentive professor, I feel like I now understand more of music, but because of my rough start, I still feel behind compared to other music majors in my school."

experiences (5). While the majority of negative comments focused on the inapplicability of their theory experience, the largest pool of positive comments praised theory precisely for its usefulness, be it the contribution to their own creative work,[40] their instrument,[41] musical communication,[42] listening skills,[43] or general musicianship.[44] Other students appreciated the deeper understanding they gained,[45] even if not directly for a practical application.[46] Five comments recognized their individual instructor in their positive experience.[47] See Table 2.2 for examples of positive comments.

Neutral comments were neither positive nor negative,[48] or they directed their sentiment toward non-curricular factors, such as the faults of students themselves.[49]

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40. Ex. 67- "Music Theory has really helped me look at music, see what exactly is happening, and apply it to my own writing. I appreciate all types of music even more now and my own writing has shifted drastically in style."
41. 61a- "Music theory is great, especially as a pianist, it's useful."
42. 95a- "Music theory benefits me in that it lets me put a name to and easily work with functions that I come to intuitively. I may have found great progressions before knowing theory, but I wouldn't know why or how to explain it, and it certainly required trial and error which takes longer. It's a toolset that I find incredibly useful."
43. 43a- "Benefit: I can identify intervals more quickly, which helps me improvise more accurately (violin player)."
44. Ex. 94a- "Music theory, though I've taken limited classes in the subject, have greatly improved all aspects of my musicianship."
45. Ex. 69- "Music Theory was the best class I've ever taken, and I hope to take it again. It has greatly widened my understanding, and creative ideas of, and within music. There is so much good the class has brought me, and none bad."
46. 86a- "I'm fifteen years out of my theory courses. What I find invaluable about theory is the ability to look at a score and understand why it has an impact on me. Why do I get chills at this one particular moment? One of my favorite examples of this is in Mendelssohn's 'Richte Mich Gott.' The Bass/tenor have been singing unison in minor, punctuated by by harmonies from the soprano/alto. Then, about a minute in, bass/tenor explode out onto a major chord in four parts on the words 'send forth your light.'"
47. 1b- "I had a fantastic, intelligent, innovative teacher for theory and the class was one of my favorites ever."
48. 30a- "Musicology + intense theory study worked very well for me."
49. 78- "I think the biggest problem is the lack of enthusiasm music students have to learn and understand these issues."

Table 2.2: Example positive comments

Usefulness	Deeper Understanding	Instructor
95a- "Music theory benefits me in that it lets me put a name to and easily work with functions that I come to intuitively. I may have found great progressions before knowing theory, but I wouldn't know why or how to explain it, and it certainly required trial and error which takes longer. It's a toolset that I find incredibly useful."	86a- "I'm fifteen years out of my theory courses. What I find invaluable about theory is the ability to look at a score and understand why it has an impact on me. Why do I get chills at this one particular moment? One of my favorite examples of this is in Mendelssohn's 'Richte Mich Gott.' The Bass/tenor have been singing unison in minor, punctuated by by harmonies from the soprano/alto. Then, about a minute in, bass/tenor explode out onto a major chord in four parts on the words 'send forth your light.'"	1b- "I had a fantastic, intelligent, innovative teacher for theory and the class was one of my favorites ever."
Ex. 94a- "Music theory, though I've taken limited classes in the subject, have greatly improved all aspects of my musicianship."		
Ex. 67- "Music Theory has really helped me look at music, see what exactly is happening, and apply it to my own writing. I appreciate all types of music even more now and my own writing has shifted drastically in style."		

Discussion

The results show strong evidence that undergraduate music theory has been a largely positive experience for students, who overall view the subject of music theory as highly beneficial, useful, and as providing a competitive edge for a musical career. Remarkably, however, no fewer than 99% of respondents had something negative to report, with students largely agreeing on the most prominent shortcomings of theory class and curriculum. An analysis of multiple-choice responses, Likert scale questions, and open comments all pointed to three primary areas of discontent. They are, in order of presence: integration, diversity, and creativity.

Overall, the classroom shines when it emphasizes creative engagement and applicability to students' personal musical goals. Students who saw personal engagement as the core purpose of theory were the most positive in their evaluations. Theory class becomes frustrating when its scope is limited to keyboard-driven and common practice music with minimal explanation of its historical, cultural, and scientific contexts. Students

who saw analysis as the primary purpose were significantly more negative in their evaluation.

Results also reveal a perceived mismatch between assessment and student objectives, where the most assessed activities are often the least valuable to students, and *vice versa*. Importantly, however, assessment and objectives are balanced ideally in three areas: engaging creatively with the material, analytic listening, and score analysis. Contrary to the claim that contemporary students (and progressive scholars) tend to "romanticize musical illiteracy" (Pace, 2017), these results suggest that students really do find value in analysis and listening skills, even as they pertain to common practice music. However, the value is profoundly enhanced when students are engaged actively, creatively and personally.

Musical experience is inextricable from the process of learning musical theory. Results affirm that the variability of student experience not only accounts for variations in its application (i.e. why a brass player would find analysis more useful than a percussionist), but also for variations in the perception of what music theory intends to teach them at all. This variation was especially evident for players of monophonic instruments (including voice). This evidence supports that there is a real danger in instructors placing the cart before the horse, to borrow from educationalist David Borgo, who states: "…we only err when we place the cart of music theory before the horse of musical experience — or, more accurately, when we conceptualize them as entirely distinct from one another."[50]

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50. Borgo, David. 2007a. "Free Jazz in the Classroom: An Ecological Approach to Music Education." *Jazz Perspectives* 1 (1): p. 78.

But at what level does such integration begin? Is the onus on curriculum, on the instructor, or on the administration to tailor course content to these diverse musical experiences? For instance, should special consideration be given to vocalists, who are more likely to associate music theory with math class? Should performance majors be assessed more on performance, and music education majors based on teaching demos? While standardized music theory curricula were never intended to offer personalized accommodation, online learning and the flipped-classroom model has made an individualized experience in a classroom more accessible than ever before. The results of this survey offer no evidence that students are asking for such specialized attention. They neither demand or expect a theory class fully customized to their own goals and interests. Rather, they ask for a class that leaves room for their experiences to play a more central role in the in-formation process.

Even in critiquing its narrow focus, students are not calling for the wholesale abandonment of common practice theory. The global importance of common practice music is undeniable, and it deserves to be explored in depth, but can be done so without the implying notions of objective superiority to other rich theoretical systems[51]. The keyboard also allows the abstractions of music theory to be made accessible visually, audibly, and haptically, with minimal technical demands placed on the student. Its replacement as the world's *de facto* musical instrument is highly unlikely for the foreseeable future.

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51. For example: Tuning systems of Balinese gamelan, rhythmic studies of North Indian tabla, and Afrological streams of influence: African and African American models of musicking, with their diasporic expressions such as Afro-Cuban, Afro- Columbian, Afro-Brazilian, Afro-Bolivian, and Afro-Mexican styles.

There is also a reason for the mismatch between assessment and student objectives. The most valuable aspects of theory class (according to survey data) center around creative engagement, and no one has yet figured out how to fairly or reliably measure musical creativity. Creativity is metric averse, and for the time-being there appears to be no way around this. Curricula must, in the words of Pamela Burnard, reject the "simple linear conception of a single creativity for one super-genre, 'music'" and instead allow for (not cater to) "a multiplicity of musical creativities deriving from the complexity of the social world in which the musician is located."[52]

Recommendations

One reasonable recommendation might be to adjust existing curricular standards at the level of the accrediting agency, such as National Association of Schools of Music (NASM). However, recent evidence suggests that such top-down guidelines have remarkably little impact on the music theory classroom. Vicky Johnson discovered that none of the accredited institutions in her state were operating in compliance with the standards and mandates of either NASM or the state certification boards.[53] Completely in step with student reports in this study, these institutions deviated from standards primarily in their lack of emphasis on (1) creative activities and (2) music outside the common practice period. Furthermore, professors and instructors who were surveyed considered skills and competencies related to reading music to be the most important, and those related

52. Burnard, Pamela. 2012. Musical Creativities in Practice. Oxford University. Birnbaum. p. 3.
53. Johnson, Vicky. 2015. "Competencies, Curricula, and Compliance: An Analysis of Music Theory in Music Education Programs in Texas." Dissertation. Boston University College of Fine Arts.

to creating music to be the least important for both freshman music majors and in-service school music teachers. Since it seems then that top-down standards have been ineffective, perhaps the voices of the students calling for essentially the same changes currently 'mandated' might apply the needed pressure to faculty and instructors to continue progressing toward substantive change.

An Ecological View: Beyond "Exploratory Learning".

Carl Rogers often spoke of "attitudinal qualities" in learning environments:

> The facilitation of significant learning rests upon certain attitudinal qualities which exist in the *relationship* between the facilitator and the learner. […] To free curiosity; to open everything to questioning and exploration; to recognize that everything is in process of change — here is a [learning] experience I can never forget.[54]

The results overall are remarkably in phase with a paradigm that has experienced a resurgence in cognitive science, education studies, and even recent music scholarship. James Gibson's ecological view of perception argues that sensory perception develops in response to action-directed opportunities (affordances) that exist in the relationship between an organism and its environment (Gibson, 1983). Organisms, in this view, perceptually map their environment in response to, and explore their world in search of, these opportunities to act. Through exploration one discovers *affordances* — a knob affords twisting, a cord affords pulling, a piano affords two-handed polyphony. As a relation, an

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54. Kirschenbaum, H.; Henderson, V. L. (eds.). 1990. "The Carl Rogers Reader." London: Constable. p. 305.

affordance exhibits the possibility of some action, and is not a property of either an organism or its environment alone. This dissertation will continue on to consider a music theory class from an ecological perspective, a dynamic system of inter-relationships between a domain (the music theoretical space), a hierarchy (instructor/student), incentives (grades), time constraints (exams, semester), conceptual constraints (curricula), goals (learning objectives), the known (prior musical experience), and the unknown (the unknown). How might integration, creativity and diversity be better represented in this environment?

The first step is to understand that no class is an isolated ecosystem, which is contrary to what is suggested by the standard practice of treating courses as discrete blocks of tangibly related information. Rather, each course represents only a small domain within which learners might identify affordances that help them both to achieve their existing goals and to define new goals within the context of their own ecological situation (musical experience, culture, instrument, style, career interests, etc.). Interpreting the survey through this lens, the overall positive feedback reflects that most students found theory class to be rich in affordance potential, that is, in 'theory' (appropriately). The negative feedback reflects that the action potential offered "in theory" was not always converted into to actions that aligned with student goals. The lack of "integration" reported by students can be seen as precisely this disconnect between the affordances assumed by the curriculum and instructors, and the affordances sought by learners. Chapters 5 and 6 will explore this perspective further.

There is also a growing literature exploring how an open, creative, improvisational engagement can unfold in a theory classroom, and nurture the ability to create without the

aid of notation.[55] Once an integral skill for performers of the western classical tradition, this ability is beneficial not only for the understanding and performance of common practice music, but also equips and empowers students to collaborate and create with musicians from non/differently notated traditions. The key element of this scholarship is the development of student agency, and critical reflection as both process and outcome in education, with the knowledge developed being, as Borgo puts it, "capability-in-action" rather than "stored artifacts."[56] The focus on capabilities-in-action not only serves to bridge analysis with creativity and performance, but also brings about new modes in which musical analysis can be done. For instance, the use of non-linear dynamical systems approaches (Demos, et al.) recently demonstrated empirically what has long been suspected but impossible to model: musicians' expressive bodily movements reflect musical structure.[57] Or, stated another way, musical structure is embodied, and can be analyzed as such.

Technology: Friend or Foe?.

Arthur C. Clarke allegedly once commented: "Any teacher who can be replaced by a machine should be." One student comment from this survey beautifully summarizes exactly how the computer effectively mediates learning and how it is used to compensate for what their class lacks:

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55. Heble, Improvisation in Music Education
56. Borgo, "Free Jazz in the Classroom," 62.
57. Demos, Alexander P., Roger Chaffin and Topher Logan. 2017. "Musicians Body Sway Embodies Musical Structure and Expression: A Recurrence-Based Approach." *Musicae Scientiae*. 1–20.

I have found that my music theory class at school is extremely dull, and I find tutorials on music theory on youtube to be MUCH more helpful. I feel this is because it's more entertaining, I have an instrument to practice on while I'm learning the theory, and because the theory I learn from youtube is more relevant to the music I make.[58]

When quality instruction from leading educators is available for free, unshackled from the constraints of the conventional classroom ecosystem, with content made entertaining, the affordances of the conventional theory classroom are rightly called into question. In economic terms, even as tuition costs continue to rise, the primary commodity of the academy — expertly articulated knowledge — has seen its value plummet along with its scarcity. Rather than feeling threatened by this inescapable new reality, the central task now should be to use this wide availability of information to fundamentally alter the character of the classroom. The areas for improvement that students have identified align with what Peter Smith describes as the revolution of "free range learning"[59] of the digital age. Instead of competing with technologies, instructors should be farming them, noting teaching styles that are optimized for diverse student goals and learning styles, and filtering through them, pointing out common misconceptions. If a flipped model is used, many lectures could be relegated to at-home study (watching videos and practicing on their instrument), freeing up class time for developing capabilities-in-action through exploration, collaboration, and dialogue in ways that can only be accomplished in the bodily presence of a class and the guidance of a knowledgeable instructor.

58. Comment number 7
59. Smith, Peter. 2018. "Free Range Learning in the Digital Age: The Emerging Revolution in College, Career, and Education." SelectBooks.

Conclusion

Through this survey, former music theory students on <u>Reddit.com</u> have conveyed two key insights that speak directly to the current debate over the place and character of music theory in the undergraduate music program. First, students' overall experience of music theory has been strongly positive. Even accounting for self-selection bias, music theory study in its current form has been "very beneficial" for the wide majority of respondents, particularly for nurturing skills in analytic listening and understanding common practice music. Students found the greatest value in courses that encouraged creative engagement with course material. In light of this, there is no evidence that music theory study is generally no longer relevant to today's students, as some have suggested.

Secondly, students were exceedingly clear that there is room for improvement, and largely agree about what these areas are. Of greatest concern was the poor integration of course content with related subject areas, leaving many questions about its larger context routinely unanswered. Glossing over the myriad cultural, physical, psychological, and metaphorical claims makes it difficult for students to integrate musical theories into their larger musical experience. Over-dependence on the keyboard was a common concern, made more important by the evidence that instruments groups may view the purpose of theory study differently. Diversity was a common area of stated concern, especially the neglect of non-common practice genres, non-notated traditions, and the theoretical systems of other cultures. Finally, theory classes that encouraged creative engagement were the most beneficial and most useful, while those in which creativity was lacking were the most

frustrating, least beneficial, least useful, and were correlated with decreased optimism for a musical career. These classes overemphasized analysis and procedural rules, and undervalued improvisation and creative activities in general. Students perceived some mismatch between assessment and the learning objectives they find most valuable.

Overall, student critiques circumambulated the question of agency in theory study, questioning whose theories, exactly, are being presented, and what their role in the process might be. Or, in the words of respondent 13b:

> I also think music theory needs to be presented as something that is alive and constantly being updated…Too often it is treated and ultimately seen as a published result rather than a field of process, and rarely are major theorists who have contributed information to the way we study theoretical subjects identified and their sources examined. As a result, students often, for no fault of their own, really have no clue as to what is and isn't out there or why they're studying what they're studying or where it comes from.[60]

In listening to student voices, we can enrich the current academic discourse surrounding the curricular reform of music theory. Having engaged the "front lines" of undergraduate music's shifting identity, Chapter 3 will step back to examine how four very different programs are actively making strides toward substantive change.

Chapter 2, in part, is a reprint of the material as it appears in College Music Symposium 58, 2018. Gutierrez, James. The dissertation author was the primary investigator and author of this paper.

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60. Comment number 13b.

Chapter 3. Breaking the Logjam: Four Cases of Curricular Change in Music Theory

> "Changing a college curriculum is like moving a graveyard — you never
> know how many friends the dead have until you try to move them!"[1]

— Calvin Coolidge

Music theory entered higher study of music in the U.S. in the 1940's, and its curriculum became standardized in the 1960's.[2] In recent years departments and schools of music across the country have begun to deeply reconsider the character and identity of music theory study, diversifying conceptions of theory's basic value. This chapter closely examines curricular reform strategies currently being implemented. The purpose here is to: (1) identify common reform themes; (2) recognize shades of divergence from mainstream theory curriculum; and (3) provide a resource for departments and schools of music considering curricular reforms, and seeking ways to transcend the crisis narrative that so easily, and so frequently stifles growth.

This chapter examines four programs in detail, and offers perspectives and insights from reform leaders within each program, gathered through personal interviews. These programs are: (a) the Harvard Department of Music, conversing with department chair Suzannah Clark; (b) the University of Miami Frost School of Music, with Juan Chattah,

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1. Coolidge, Calvin. "Changing a college curriculum is like moving a graveyard-you never know how many friends the dead have until you try to move them!" Ward-Steinman. 2016. Advances in Social-Psychology and Music Education Research. Routledge.
2. Girard, Aaron. 2007. "Music Theory in the American Academy." Ph.D. Dissertation. Harvard University. p. 351

director of Experiential Music Curriculum; (c) the University of California at San Diego Department of Music, with associate chair Anthony Burr; and (d) the University of California at Los Angeles Herb Alpert School of Music, with former director Timothy Rice. These programs represent four organizational structures: a liberal arts model, an entrepreneurial model, a research institution, and a traditional fine arts model (a-d, respectively).

At the macro level these programs are situated within the larger construct of Arts and Humanities in higher education, itself undergoing tectonic reform across the country. Humanities programs face steep declines in enrollment post-recession, and competition with STEM fields for students and for funding. Both trends appear strongly related to the gradual corporatization of the American university since the 1980's[3]. In this climate curricular reform is an extension of larger-scale institutional rebranding efforts,[4] further entrenching institutions in a paradigm that figures the student-as-consumer.[5] Notably, of the many components of a university's brand — post-graduation employability, academic reputation, sports program, general ambiance, etc. — marketing directors in the early 2000's intensified their concentration on one message: the institution's pursuit of a widening participation agenda and the degree of diversity of its student body.[6]

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3. Newfeld, Christopher. 2016. The Great Mistake: How We Wrecked Public Universities and How We Can Fix Them. Johns Hopkins University Press.
4. Judson, Kimberly M. (et al.). 2008. Building a University Brand from Within: University Administrators' Perspectives of Internal Branding, *Services Marketing Quarterly*. 30:1, 54-68
5. Bunce, Louise (et al.). 2017. The student-as-consumer approach in higher education and its effects on academic performance, *Studies in Higher Education*. 42:11. p. 1958-1978
6. Ali-Choudhury, R., Bennett, R. & Savani, S. 2009. "University marketing directors' views on the components of a university brand." *International Review on Public and Nonprofit Marketing*. 6: 11

Therefore it's difficult to know to what extent reforms in music theory are compelled by the branding efforts of a corporatized university, by a response to shifting student priorities and organized calls for change, or by larger philosophical tectonic shifts. By exploring these individual programs in finer detail, a dynamic collage of narratives comes to the fore, uncovering processes of negotiation between the many forces at play. It is through curricular reform that the institution balances its histories with its need to adapt, its elevated vision with its pragmatic constraints, and the unique composition of its faculty with the rapidly evolving student body.

Interviews.

Interviewees were selected based on two criteria: (1) they occupy a faculty position within a music program that is either actively or has recently implemented substantive curricular changes in the area of music theory, and (2) they were instrumental, in whole or in part, in crafting the reform's structure and narrative. Interviews followed an ethnographic/contextual approach, which invites subjects to describe their behaviors and goals in the context of their environments. This approach (a) focuses on goals first, tasks second, (b) avoids a fixed set of questions, and (c) encourages storytelling.[7] The analysis below presents a high-level summary of these interviews.

Social Networks and Curricular Reform.

Curricular elements — rubrics, syllabi, learning outcomes, requirements, modules, sequences, mission statements —are superstructures of the institution, bounded by its

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7. About Face 2.0: The Essentials of Interaction Design. John Wiley & Sons, Inc. 2003.

organization frame, its unique histories, marketing practices, target student body, funding model, etc. Yet the institution is not the sum of these structures, but is fundamentally comprised of individual actors, each networked across institutional boundaries, each building social capital[8] through the development of partnerships and the exchange of ideas. Social network theorists study these dynamics, looking for ways that patterns of stability and change might be explained by the web of relations through which social capital (ideas, information, resources, influence) flows.[9] Networks that facilitate the exchange of ideas (including beliefs about curricular change) can be either formal — such as academic societies and accrediting agencies — or informal — nested interactions of trust between actors with shared interests, such as advice-giving and problem-solving. Formal networks are often comprised of weaker (low density, professional) ties, permitting the exchange of more standardized information, while informal networks more often consist of stronger, higher density social ties, which can mediate the flow of more complex, non-routine information, and lead to more highly coordinated efforts.[10]

Thus, rather than telling four different stories of legislative mandates and restructuring processes in individual schools and departments of music, this chapter views curricular reform of music theory as a socially networked phenomenon. This approach allows us to contextualize reform claims within the larger flows of ideas embedded within

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8. "Social capital is concerned with the resources that exist in social relations (sometimes referred to as 'ties') between individuals as opposed to the resources of a specific individual. This implies that actors must be aware of the assets in their network and take action through social ties to access these resources." Daly, A.J. & Finnigan, K.S. 2010. A bridge between worlds: understanding network structure to understand change strategy. *Journal of Educational Change* 11: 111
9. Daly, Alan. 2010. Social Network Theory and Educational Change. Harvard Education Press. p. xi.
10. These principles are well-established in the field of social network theory and analysis. Refer to Burk (et al., 2007), and Coburn (et al., 2008)

formal and informal networks of social relations. Effective curricular change, from a social network perspective, doesn't come into being in its formal instantiation at the institutional level, but evolves when strong formal networks leverage the informal social relations embedded within it, as well as the extension of these actors beyond organizational boundaries.[11] Social network theory, according to Alan Daly, "provides insight into the motives of resistors to change, spheres of social influence, and the multiple social worlds that must be negotiated when change is enacted."[12]

Negotiations between social worlds are frequently punctuated by trigger events that, while benign in isolation, become rallying points for various spheres of influence — with their nested social networks —to play out their collective, mutual resistance. The Introduction mentioned two such punctuations that will again surface throughout this chapter as particularly influential nodes of idea exchange: First, the "Manifesto for Progressive Change" offered by the College Music Society's Task Force for the Undergraduate Music Major (TFUMM), and second, the highly publicized changes recently introduced by Harvard's department of music. This chapter documents how these shifts evolve from interactions between highly networked actors, influencers who mobilized their social resources both formally (in the case of TFUMM) and informally (through national conversations prompted by Harvard's actions) to catalyze a broader negotiation within the social networks that comprise music higher education.

Suzannah Clark, Music Department Chair, Harvard University

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11. Ibid. p. 260.
12. Ibid. p. 3.

We didn't so much make the curriculum changes to have more students, as to ensure the students that we were shutting out of the concentration in the past were no longer shut out. — S. Clark[13]

Music theory was a surprising casualty among the core requirements when the Music Department at Harvard University restructured their curriculum in 2017. The announcement to eliminate the music theory requirement for undergraduate music concentrators (majors), needless to say, attracted strong reactions of adoration and ire from scholars, educators, and bloggers from inside and outside the discipline, culminating in the discipline's inaugural social media frenzy. Dissenting voices[14] characterized Harvard's move as shameless moral posturing, accusing faculty of trying to boost enrollment at the expense of academic rigor, the legitimization of mediocrity. It was the latest moral failure of an institution estranged from its grounding maxim "*Veritas*," the death knell of a civilization in collapse. Even composer John Adams, Harvard alumna, tweeted his initial concern.[15] For admirers[16] of the move, Harvard's move represented a bold attack on centuries-old academic Eurocentrism. Yet, the predominant response was that of the largely silent majority, the department chairs and faculty who now curiously and intently monitor what fates lie down this path.

The frenzy was short lived in large part due to some timely interventions by the minds behinds the restructuring: Suzannah Clark, Alexander Rehding, and Anne Sheffler.

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13. Clark, Suzannah. 2017. Personal interview. October 13.
14. See Drake, J. (2017) Musical Theory and Musical Judgment—Both Optional at Harvard. Vision and Values. March 8.
15. Adams, John (HellTweet). "Harvard Music Department's new curriculum requirements..hmmm...need to learn more, but at first glance, they seem a little disturbing." April 1, 2017.
16. Hiser, Kelly (@kellyhiser). "So if you find yourself defending music theory, know that what you're really defending is white supremacy." April 2, 2017. Tweet.

They argued that the majority of the initial responders to Harvard's announcement were blinded by the headlines,[17] failing to see the finer curricular details and to consider how Harvard's music department is uniquely situated to allow for such a shift.[18] Still, why had faculty chosen to make this move at that particular moment? What was the catalyst? What is the vision for the short and long term? What are the conditions for success or failure? In what ways might Harvard's direction serve as a model for other institutions seeking avenues for change? And, perhaps most boggling of all, how did they manage to unify *all* faculty members behind such a decisive, potentially destabilizing action?

Sitting down with music department chair Suzannah Clark was essential to accurately understand this new trajectory. Outlined below are previously undiscussed paradigms, objectives, and mechanics of the restructuring.

Music Theory as Elective.

By 2015 conversations around Harvard's music department led to a realization: Their interests as a faculty were getting broader and broader, while it had been years since the curriculum had seen a change. Students only had room for two electives, which meant that the range of faculty interests and expertise was not accessible. To explore possible solutions, Alexander Rehding and Carol Oja chaired the committee that asked: What curriculum could be designed whereby, given the range of classes, students could (1) follow their interests and also (2) broaden the breadth of their study?

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17. Sheffler, A.– "A lot of the social media discussion unfortunately devolved around the concept of standards, which is a very amorphous and ideology-laden concept." in Robin, William. 2017. "What Controversial Changes at Harvard Mean for Music in the University." April 25. https://nationalsawdust.org
18. Clark, S. –"It's an organic move for the times, from both where the field is going generally, but also where we are as faculty." Ibid.

The resulting curriculum took one year to design, and a second year to be approved. The curriculum was designed to equalize theory, history, composition, performance, and musicology. Despite the early public reactions that highlighted the elimination of requirements, the central focus of the new design was to increasing flexibility. The previous curriculum once had as many as six required courses in theory, and three semesters each of history and of musicology. In the new curriculum, each of these is considered an *elective*. The same music theory is being taught, but students have a greater flexibility as to *when* they take it, and *what* elements of the theory program they take.

Students can now come to music, and to the aspects of theory, through the different ways in which they might experience music. Some would be classical, some would be more jazz or pop music oriented, and in that sense music theory is still a staple course, but it is not where students enter the concentration as they once would. This also means that a new student, perhaps lacking a background in notation, could begin with the courses that are relevant to them, and then later on complete more traditional theory at a more appropriate time. According to Clark, although it is not required, it is still highly likely that most students will be taking some form of theory.

True to the fears of many critics of this direction, it is now entirely possible for a music concentrator to graduate without knowing how to read notation. But Clark has a response to this as well:

> It's a little bit like when language and literature courses switched more to a cultural studies paradigm, and detractors asked, 'how can you do a German degree and not know German?' If you do it properly, that's extremely unlikely. Also, you shouldn't design a system based on what you think students are going to avoid. Because actually, they don't. In that sense, we're not worried. If all these anxieties come true, we'll simply add a requirement.

Thinking About Music and Critical Listening.

While the six-to-eight semesters of theory and history are now electives (that most students will still likely take over their course), Harvard has created two new classes that they believe capture the heart of what the core curriculum has fundamentally been about: Thinking About Music and Critical Listening. Thinking About Music explores how it is that music invites you to think, and what it invites you to think about. It critically examines the traditions of thinking about music, and the discipline itself. Critical Listening desires to deepen student awareness and fluency in "what musicians do," and what makes music unique within the humanities: the temporal art of listening.

In these courses students are primarily guided through an interrogation of their own listening, and tangentially with how their thinking [planning, imagining, reasoning, predicting] sharpens their listening, creative action, and musicality. These new courses, then, intend to require students to actively build their musicianship in their own contexts, to sense-make in process toward their own goals, and, in due course, to author their own musical theories.[19]

Inroads for New Contexts.

Those familiar with the history of music theory were the least surprised to witness music theory emerging as a battle ground for today's culture wars, or culture skirmishes, at the very least. The record of a clear relationship between musical structure, moral signaling, and political narratives stretches back as Plato's *Republic*. Change always yields

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19. This shift echoes a similar movement in mathematics education, K-12 as well as higher education. This will be discussed further in Chapter 6. See page 202.

a response, and if there was no response, according to Clark, *that* would be cause for alarm. Today's theory, as in countless times in its history, has gained a host of new contexts. Harvard seeks to legitimize these contexts by equipping students with a more flexible, but just as rigorous set of theoretical tools that enable them to think through their own musical situation, be it classical, jazz, dance, experimental, hip hop, or beyond.

Clark teaches Shenkerian theory and Neo-Riemmanian theory because she believes that students should have a solid knowledge base whether they do classical music or not.

> When a student asks, 'why are we learning this anyway?' That's not actually a question about Shenker, that's a question you're posing because that's what the field is posing. But the answer isn't 'let's forget that knowledge that humanity once had because there's something wrong with the perspective,' which there isn't, in my opinion. But thinking of that as the only way to understand music, that's a problem.

Faculty Unification.

During the year-long approval process there were lots of discussions about the trajectory and technical details. From a social network perspective, Clark and Rehding entered this process not wanting to impose a viewpoint, but to strengthen ties, formal and informal, maximizing the flow of complex ideas both within and extending beyond the department. Consultants visited from different institutions, meetings were held with graduate students, and by the end everybody had the opportunity to weigh in. As a result of equalizing the core requirements under elective status, all faculty were now equally represented. Amazingly, by the time all questions and points of disagreement had finished, the decision to move forward from the faculty was "unanimous *and* enthusiastic."[20]

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20. Clark. October 13, 2017.

The remaining anxiety from faculty was whether or not students would now opt *not* to take their previously required courses. In Clark's view, requirements are not a good way to make students come to your class. This is where Harvard is able to rely on the excellence of their faculty to attract, rather than compel, student to their classes. Calming these worries is the fact that after the announcement was made the registered numbers are exactly in line with previous years.

Some of the pushback, from within and outside the department, surrounded the question of how to conceive of a *rigorous* program without music theory. And again, in Harvard's view, the quality of teaching is such that any course cannot possibly be anything other than rigorous. Distinguished as the Harvard's faculty most certainly is, the rigor of their coursework is supplemented by an additional feature which many schools would find challenging to replicate.

Emphasis on Advising.

Undergraduates in Harvard's music department are very closely advised by faculty. Students receive individual attention as they develop their study plan, and faculty aid them in assessing and addressing their strengths and weaknesses. Clark admits that this capacity to invest so heavily in personalized advising was a critical factor in their restructuring, and one that many programs simply would not have as an option. Required courses often function as a substitute for advising, providing a channel, or series of channels, through which students acquire the essential skills and knowledge base demanded by their goals. At least, this is the intent. Harvard's unique position, and capacity for risk tolerance, allows

a difficult balance between embracing a more diverse class of student goals, with the capacity to influence students toward electives with the best fit for those goals.

Most undergraduate music programs admit more students than could be conceivably advised on a personal level. Departments are overseen by administrators who impose recruitment goals, and the rigid curricular structure to standardize quality control over larger classes of students. This rigid structure inhibits the department's capacity to advise and graduate a more diverse class of student trajectories, in turn, limiting the department's ability to *attract* a diverse class of students. For Clark, a more diverse class is required to represent the eclecticism of today's musicians to-be.

Critics have pointed out that Harvard is fiddling with the curriculum that produced John Adams, who was most certainly required to take music theory. Clark, again, relies on strong advising to intercede on the side of student potential: "If we have a young version of John Adams, and he or she comes up to us and says 'I want to be a composer,' then we say, 'You go take theory, and then counterpoint.' But not all of our concentrators want to be composers; people have their various ways one can work in the world."[21]

Authority.

Clark recalls that after studying Shenkerian analysis for years, it suddenly struck her that "there was a *person* behind this theory!" Once Clark grasped that Heinrich Shenker came about at a particular time, in a historical and cultural context, she realized that the textbooks of today had authors, had theorists, and no longer read theories "as they were and had always been," but reading the theories of other people who put their own stamp on

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21. Clark.

the traditions and ideas they had inherited. If theory can be reduced to naturalistic laws, then there should not really have be an author. But, "of course, they do," admits Clark. "If you take how curricula has traditionally been designed, where students get to learn from monophonic repertoires from 800 to the present day, it's actually about enshrining the past. Now these other courses are more about questioning what music is all about."

A search for an authority has been at the heart of music theory's project at least as far back as the mathematics of the monochord, linking the ratios that are found in music to the cosmos, the hand of God in tuning. And while contemporary theorists avoid consciously constructing grand narratives, the question of authority looms in the subtext. For example, theories which tend toward mathematical or geometric paradigms, such as PLR cycles, or hexatonic cycles, are authored by theorists who are certainly aware that these are historically and culturally contingent. Yet, every once in a while the prose will imply an ontology, that the design has to come from…somewhere else. Clark offers Richard Cohn's Neo-Reimannian scholarship as an example:

> Richard Cohn uses the language that the hexatonic cycles have a 'very special pedigree' because they're a cycle, and so is the circle of fifths. And so it's the issue of the cycle that becomes pedigreed, and it's almost as if you can't just have a hexatonic cycle without something else to give it authority.

This question that catalyzed Clark's scholarship in music theory, the critical untangling of author and authority that was never presented to her as an undergraduate, has become the question she challenges her own students to take on in their own musical and academic journeys. Where does the authority to think in a particular way come from? How are these ideas rooted in their cultural and historical context? Even something that has a

natural component, like the physics of sounds, in the end always has an apostrophe somewhere. It's always someone's version of that physics. Harvard's recent shift demonstrates the department's commitment to this same question when designing a curriculum: Where does the authority of deciding what a particular group of people ought to study come from? According to Clark, all you can know is that you can't create the perfect curriculum. You can create the one you can "believe in" in the day you happen to live.

Summary.

The task to provide students better access to the range of faculty interests and expertise resulted in the equalization of core requirements, their reassignment as electives, and the creation of two new required courses. These courses present a new kind of core, one that centralizes Thinking and Listening over conventional learning outcomes of reading, writing, description and analysis. While early reactions to this shift underscored the scandal of de-skilling at the surface, little attention was paid to the re-skilling at the center of the restructuring, with the intent to equip students not only with an awareness of musical thought and the contexts in which they arose, but, more importantly, to imbue them with the authority to author the theory that best fits the musical context in which they themselves are situated.

Other institutions should take note of the uniquely intimate level of advising that faculty at Harvard are able to provide to students. Departments with favorable student-faculty ratios can more effectively advise and graduate a more diverse class of students. This advising can take place in lieu of requirements only because faculty assume students

will voluntarily take courses they need. Independent of class size issues, some departments may struggle to place that much trust in students.

Juan Chattah, Director of Experiential Music Curriculum, Frost School of Music, University of Miami

> We envision every single course containing facets of experiential musicianship. This means introducing theory within large ensembles, musicology within studio classes, improvisation in theory courses, etc. — J. Chattah[22]

The Frost School of Music at the University of Miami has built a reputation firmly on an entrepreneurial model, and the Frost Method™ is the latest curricular iteration coined by Frost faculty. Frost has bloomed under the leadership of Dean Shelly Berg, garnering national attention for its innovative, integrated program that promises to prepare students with the skills needed to establish and sustain financial security in today's shifting musical professional landscape. Frost represents another faculty that was able to achieve an uncommon unity and commitment to full cooperation behind a plan that asks them to change what they teach, and when, to a point that most faculty would likely consider it to be an unreasonable intrusion. This is also a feat from the standpoint of accreditation, which is more of a concern for a school of music than it would be for a department of music.

Conventionally schools of music consult the standards upheld by NASM[23] when considering altering any aspect of their curriculum. Although accreditation from NASM is not necessary for a school of music, the Higher Learning Commission (HLC) has

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22. Chattah, Juan. 2018. Personal interview. February 16. 2017.
23. Accrediting agency National Association of Schools of Music

traditionally deferred to NASM's accreditation designation. However this is decreasingly the case, as several high-profile schools of music have elected to leave the NASM. Oberlin School of Music, Yale School of Music, New England Conservatory, and the University of Southern California have all withdrawn since 2010, joining Mannes College of Music, Manhattan School of Music, Rice University's Shepherd School of Music, and the Juilliard School. These schools remain fully accredited, though now directly by the HLC, whose accreditation processes have evolved significantly in recent years.[24]

Departing from NASM has become emblematic for schools of music who brand themselves as innovative, and the snow ball effect of high-profile programs furnishes inviting company. Below the surface, such a departure also saves the school from a second set of accreditation procedures and annual reporting obligations required for continued NASM membership. Frost remains, for the time being, fully accredited by NASM, though not without a touch of irony. It appears in NASM's best interest to remain in good standing with Frost, so as not to further erode its legitimacy as an accrediting agency.

Professor Juan Chattah is one of the architects of a bold, integrated restructuring of Frost's curricular vision introduced in 2016. Chattah was also a member of the College Music Society Taskforce for the Undergraduate Music Major, and contributing author to their incendiary report, the Manifesto for Progressive Change.[25] Beginning as an endeavoring film composer in Los Angeles, Chattah recognized a need for change in conventional theory pedagogy as a graduate student when attending conferences in the

24. Higher Learning Commission. 2018. https://www.hlcommission.org/About-HLC/strategic-plan.html
25. Campbell, P.S., et al. 2016. "Transforming Music Study from Its Foundations: A Manifesto for Progressive Change in the Undergraduate Preparation of Music Majors." In Redefining Music Studies in an Age of Change. Routledge.

discipline. A Schenkerian or a Neo-Riemannian approach was essential for his research to be considered serious. As film music does not lend itself well to be analyzed under those paradigms, Chattah felt out of line with the mainstream concerns of music theory. It was at Florida State University that Chattah was mentored by "forward-thinking" theorists who allowed him to study semiotics, pragmatics, cognitive theory, and other disciplines that were, in the early nineties, "alien to academic music theory."

Frost and the Manifesto.

There is a tight link behind the TFUMM Manifesto and the direction Frost has taken. As much as the document was visionary, it was vague with regard to its application to music theory. Its basic goal, according to Chattah, was to provide a flexible paradigm that could be adapted for the needs of specific institutions. Yet a loftier goal aimed to ease tensions between top-down and bottom-up approaches to curricular transformation. Should the restructuring be led by deans? Should it emerge from faculty? Should students themselves engage as partners in curricular transformation? If the vision could somehow spark a movement across the hierarchy, TFUMM's progressive change would proceed without resistance. Certainly no one expected this to happen overnight, but programs such as Frost, and Harvard, show that unity of vision backing substantive change is possible.

Programs with an entrepreneurial emphasis aim to prepare students not just for "the future," but a future that is emerging faster than texts can be published and in too many simultaneous directions for any curriculum to map. As programs gradually acknowledge that the needs of a music student are remarkably different than they were just five years ago, strategies, in their embryonic stage, vary by institution and the students they target.

Not unlike Harvard's announcement to remove their theory requirement, the TFUMM Manifesto was read through several lenses, and used to support various agendas before the ink was dry. Chattah brought to Frost, and the Manifesto, the realization that while many music graduates still enter music and teaching positions, in line with a conventional curricular design, an increasing number of graduates opt for a completely different career trajectory, from design and technology, to computer and medical sciences. Thus Frost's approach now claims to improve students' overall marketability, musically and extramusically, emphasizing critical thinking skills, cognitive synthesis, and knowledge transfer.

Frost's most recent changes, according to Chattah, would be categorized as top-down approaches to curricular transformation. While unifying faculty commitments was not always a tranquil road, for reasons that will be discussed, Frost has successfully implemented a curriculum that integrates core subjects (theory, history, aural skills), musical competency, and entrepreneurial skills with remarkable cohesion.

The Frost Method™.

The Frost School of Music has not only shifted direction, it has trademarked its approach to curriculum. In an about face from a conservatory approach that traditionally emphasizes aesthetic mastery over careerism, employability is the cornerstone of the Frost Method™, promising students (and hesitant parents) that they will receive "more than just an exceptional education," they will "join the ranks of 88% of graduates who get a job

- Improvisation
- Arranging
- Composing
- Critical Thinking
- Keyboard
- Music History
- Engineering
- Digital Recording
- Audience Engagement
- Music Technology

- Music Business
- Marketing
- Communications
- Marketing Plan
- Contract Negotiations
- Producing EPKs (electronic press kits)
- Music Videos Production
- Grant Applications
- Writing Donor and Patron Letter
- And so much more...

Figure 3.1: Undergraduate skills nurtured at Frost School of Music, as advertised

within six months of graduation or go on to graduate school."[26] The method, so described, ensures that all students, regardless of major or focus, attain artistic, technological, and entrepreneurial skills (Fig. 3.1).

While students in most programs today have the opportunity to learn the majority of the skills listed above if they elect to, they are generally not required to. Frost can advertise a unique ability to create a more complete "musician for today" by requiring all majors to be exposed, at some point, to these skill areas, as well as by expanding the repertoire. In the category of "artistic" skills, in addition to conventional applied lessons all students must meet an improvisation proficiency in a variety of styles on their instrument, both solo and in an ensemble setting. The emphasis placed on action crosses into the commercial category as well, with all students developing skills in contract

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26. 2018. "The Frost Method." University of Miami, Frost School of Music.
https://www.frost.miami.edu/about-us/the-frost-method/index.html

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negotiation, grant writing and donor-letter writing, expanding on the mere awareness of music business conventions that most programs offer.

The sentiments and suggestions offered by the TFUMM Manifesto are translated into the promise of the Frost Method™, where "there are no barriers between disciplines," where students might become "more than an external musician who reads music and interprets, but also an internal musician who understands and creates music from the inside out." The dualistic language is very attractive, but the Frost student, developed to critically think per the program's aim, is sure to ask, "what does it mean to understand music from the inside out?" "What does a musicianship without barriers look like?" Juan Chattah offers some insight into how Frost approaches its Through-lines between courses and disciplines.

Through-lines.

According to Chattah, the notion of the Through-Lines came from dean Shelton Berg in early 2015, seen as an organic continuation from implementing the 'Frost Method' in aural skills. Frost instituted its Experiential Music Curriculum in 2011 in its ear-training courses, and as of 2015 new Through-lines are intended to extend this to and through every course in the school. The method envisions every single course containing facets of experiential musicianship, introducing theory within large ensembles, musicology within studio classes, improvisation in theory courses, etc. Presented as a reaction to an overly compartmentalized course sequence, this approach intends to weave a common, cohesive musical experience through the length of the curriculum, from Creativity to Employability.

Through-lines attempt to address a number of concerns over integration discussed in the Manifesto and elsewhere: music theory without historical context; a music history

that exclusively highlights European art music; performance ensembles tailored to the performer-interpreter tradition; and neglect of creativity in any course outside of jazz. Distancing themselves from a positivist approach to music theory, Frost posits that all students need a solid background in musicology to not only speak intelligently about music, but to engage meaningfully with music theory. In the words of Juan Chattah, students need to be equipped to "reach beyond the notes, contextualize the music, so to speculate why composers use a particular structure."

C.R.E.A.T.E. Through Lines

Artistic, technological, and entrepreneurial skills to thrive in the 21st century

CREATE is an acronym for a set of "through lines," or key themes, that are now being integrated into the Frost School's curriculum. These through lines were collaboratively developed by Dean Berg and the Frost faculty to help students develop the varied skills they will need to succeed in the rapidly changing world of professional music. The skill sets that the initiative was created to build are:

Create | Music Literacy: Compose, Improvise, Arrange and Keyboard
Relate | Context: Historical, Theoretical, and Cultural
Engage | Communication: Stage Presence, Speaking and Writing
Analyze | Critical Thinking: Understand, Evaluate, and Apply
Teach | Pedagogy: Deepen Understanding for Self, Facilitate Understanding in Others
Employ | Career Development: Technology, Entrepreneurship, and Business Skills

EMBED IT **OR** FORGET IT

Figure 3.2: The Frost Method's™ C.R.E.A.T.E Through Lines

Delivering upon the C.R.E.A.T.E. model (Fig. 3.2) in practice requires continuous and flexible collaboration of all faculty. Even though the general components of the acronym appear in each course's stated goals and learning outcomes, the specific Through-lines change every semester with the performance repertoire, especially for core courses. Theoretically, when the symphony orchestra is preparing Haydn's Symphony No. 94, ear-training courses enhance student reading and recognition of various themes, theory courses analyze the counterpoint, theme variation, and form of the second movement, and history courses cover the significance of Haydn's first visit to London in spreading the influence of the growing Viennese school, the subtleties of court humor in the eighteenth-century, and musical analogues of 'surprise' in the present day.

Example Student Learning Outcomes in Frost's Aural Skills curriculum:[27]

- Engage Aural Skills within a performative situation.
- Aurally identify common features between music (or sound objects) as these relate to other arts or disciplines.
- Evaluate the suitability of musical gestures in a non-musical context.
- Synthesize musical parameters manifested in a piece/genre/style, to emulate (improvise or create) new music.

Underlying the acronyms and branding, Frost's emphasis on experiential and integrative learning builds upon a genuine engagement with a growing corpus of literature in learning cognition. Citing scholarship in cognition (Damasio, 2000; Edelman & Tononi, 2000) Chattah explains that the construction of knowledge structures result from a dynamic interaction with the environment, where information and experience are intimately

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27. Example SLO (Student Learning Outcomes) Chattah, Juan. 2012. "Redefining the Aural Skills Courses Within the Experiential Music Curriculum at the University of Miami – Frost School of Music." *NASM National Meeting 2012* 88th Annual (703): 13–19.

interlaced.[28] Therefore, the notion of experiential education, defined by Luckman as a "process through which a learner constructs knowledge, skill and value from direct experience"[29] has become the driving force of Frost's curriculum.

Expanded repertoire.

According to Chattah, a commitment to experiential learning demands a far broader instructional repertoire than is conventionally used. Aural skills and theory courses at Frost begin by tracing concepts and structures within works that students already know, and branch out to compare how musical structures function within different repertoires — for instance, the function of a pentatonic scale within film music, common practice music, pop music. "Once students are better able to see similarities and differences across repertoires, they apply this knowledge while composing, while performing, and while critically thinking about music." Chattah encourages students to bring to class examples of structures they find in the music that aligns with their career goals. Examples are shared, analyzed, discussed, performed, and improvised upon by the whole class.

Such activities bridge key concepts with students' musical contexts, encouraging the development of a situated skillset, and an awareness of music structure that is panstylistic. If conservatories have been slow to embrace film or video game music as legitimate domains of musical art, Frost's fundamental aim to boost the employability of its graduates promotes active engagement with developing trends, and emboldens students

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28. Ibid. p. 13
29. Defined by Luckman as a "process through which a learner constructs knowledge skill and value from direct experience."
Luckman, C. 1996. "Defining experiential education," Journal of Experiential Education, 19(1). 6-7.

to identify multiple niches in profitable areas. Video game revenue is projected to top $137 billion in 2018, dwarfing the $43 billion posted by the film industry in 2017, prompting entrepreneurial programs like Frost to pay very close attention. The immersive program at Frost aims to equip tomorrow's musical leaders with a diachronic familiarity with music structure, exposing students to music outside their own musical context in order to broaden the creative foundation for the music they make in context.

Growth over Proficiency.

When it comes to assessing student success, highly interdisciplinary and integrative programs face a particularly steep challenge in identifying learning outcomes that can applied generally. The longstanding debate between a Growth or Proficiency-based approach to assessment received national attention in February 2017, when Betsy DeVos – – yet-to-be confirmed Secretary of Education — was lambasted by Senator Al Franken for demonstrated little to no awareness of the issue. The contention between growth and proficiency models became politically charged in the wake of No Child Left Behind, a federal education reform bill introduced in 2001 which implemented a proficiency-based model, setting nation-wide standardized achievement benchmarks that did not account for regional or socioeconomic context. Under this policy schools were assessed via the raw test score performance of their students, prompting a generation reared by a teaching-to-the-test, the antithesis of an integrated, experiential learning experience. In 2016 a bipartisan report from the National Conference of State Legislatures declared the No Child

Left Behind reform efforts to be unsuccessful,[30] validating the shifting attitudes among educators toward a growth-centered model for assessing a school's success.

Frost sets the pace for the overtly pro-growth model music program. Rather than holding all students to an identical course sequence, "students are all on different paths and timelines," according to Chattah. Compare the skills students develop in written theory, sight-singing, aural skills, and improvisation. With any particular structure, a Neapolitan Sixth for instance, written skills will come before aural recognition for most students. After they can recognize the Neapolitan aurally, and produce when they read, then students learn to produce it in a form of improvisation. Learning the Neapolitan is not just the written skill, but it's the aural recognition, the solfege, and the improvisation. These skill areas are not going to be learned simultaneously at the same level by every student at a synchronized point in time. According to Chattah, even students who try to improvise and aren't particularly successful, but by simply attempting, their understanding of a given structure will be improve over having just seen it on paper. "They will start thinking in a different way that will help them overall. We've seen it make a huge difference."

While the longer-term rewards of a growth model may be self-evident to an instructor or curriculum theorist, students generally have an easier time conceptualizing their own success when the benchmarks are clear, tasks are sequenced, and their cohort is developing relatively uniformly. Even at Frost, where undergraduates are invested in the vision of a more integrated musicianship, the transition to a growth-model was not embraced unanimously by the student population. Chattah admits, "Naturally, some

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30. 2016. No Time to Lose. NCSL's Study Group on International Comparisons in Education. National Conference of State Legislatures.

students were disoriented at first, realizing that we are teaching in a completely different way. But new generations of students come to Frost because they are drawn to this innovative approach. That said, we take students' feedback very seriously, which helps inform future curricular directions."

Summary.

Frost presents itself as the financially-responsible musician's choice for an artistic, technological, and entrepreneurial education tailored for the twenty-first century. It grounds this in a body of research that favors a growth-model of learning over proficiency-based assessment, and an embodied, embedded perspective of what constitutes knowledge over a discretized, standardized curriculum that synchronizes student trajectories irrespective of student background, or goal. By linking courses together through continuous faculty collaboration across disciplines (Through lines), Frost offers music students the opportunity to understand music "from the inside out" (The Frost Method™). By emphasizing extra-musical skills, such as grant-writing and situated critical thinking, Frost attracts a student base through the prioritization of graduate employability.

Music theory, through the lens of entrepreneurship, emphasizes a practical, creative skillset applicable to a broad range of repertoire. Students are advised to identify their career goals and the technical competencies and theoretical fluency demanded by these goals. By identifying links to the past, connecting Bach with jazz, and the 12-tone series with film music for instance, Frost's theory sequence aims to present an integrated, diachronic perspective for the twenty-first century musician.

Anthony Burr, Music Department Associate Chair, U.C. San Diego

> Half the trouble with teaching theory is to teach them how to make conscious contact with what they already know how to do, on some level.[31] — A. Burr

The music department at the University of California San Diego (UCSD) was founded with a commitment to experimentalism, both musically and pedagogically. Students and faculty alike nurture an artistic curiosity over entrepreneurship. Consequently, the type of innovation cultivated at UCSD is historically far less invested in curricular fads. This is not to say that UCSD neglects students' career ambitions, but that "encouraging students to find his or her own path" has been written into the department's mission since its founding in 1966. The deemphasis of entrepreneurship makes this department unique among others examined in this chapter. Yet the same pressures faced by many departments, such as a mandate to reduce time-to-graduation by limiting required courses, has catalyzed a similar curricular restructuring of core courses, including music theory. Without NASM or HCL accreditation to appease, the department is able to respond with remarkable flexibility and creativity.[32]

UCSD's Department of Music was founded by experimental composers Will Ogdon and Robert Erickson, who envisioned a progressive department, free not only to extend the musical innovations of the Darmstadt school, but to experiment with a more freeform curricular structure: "We wanted to make a rather different music department, one without the usual packaging into degrees, units, grades and other trivia," Erickson

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31. Burr, Anthony. 2018. Personal interview. March 15.
32. The university does require a more general accreditation from the Western Association of Schools and Colleges (WASC).

recalled.[33] Within this model students maintain a greater level of independence in honing their craft. When a music theory sequence was set in place, it maintained a high level of flexibility in responding to shifting student and faculty interests. Thus the discussion of music theory's function and value is, by design, ongoing and irresolute. Without a specialized theory department or chair, leadership cycles through faculty, with each individual shaping the goals and key concepts that reflects their interests and those of the given student body. This allows learning outcomes to drift over time organically, alongside student and faculty musical experimentation. Occasionally a larger-scale restructuring occurs in order to recalibrate the department's vision, as well as to align it with university policy.

Quarter System Theory Sequence.

Familiar forces lie behind the departmental restructuring of 2018, such as the mandate to cut down the number of required courses in an effort to shrink an overloaded curriculum. Operating within the quarter system, UCSD's academic year is divided into three, ten-week quarters. This setup favors UCSD's STEM colleges, allowing courses to be more focused, granting students a more streamlined degree path shaped around technical skills. While the quarter system is a significant constraint for many Arts and Humanities courses (students have two-thirds of the time to produce a quality research paper, for instance) it allows a reformed music theory sequence to be completed in just one academic year. This was previously a two-year, six-course required sequence, beginning with species

33. Erickson, Robert. Quoted in Sutro, D. UC San Diego Music Department History. https://music-cms.ucsd.edu/about/history.html#History

counterpoint first quarter (101A), four-part harmony a-la Bach second quarter (101B), and classical form and analysis third quarter (101C). The three upper level courses in the second year centered on the twentieth century onward. Similar to Harvard's approach, these upper level courses will still be offered, just no longer required. Previously all music majors were required to take theory 101A and 101B (henceforth A, B) before switching to divergent streams at 101C (C). Following the restructuring all students take the A-B-C track, wherein theory C has been reformed into a more wide-ranging course that will be detailed in a following sections.

Anthony Burr has taken the lead in reforming the current theory sequence, undertaking the task of determining which general skills and concepts would best serve students within just three, ten-week quarters. Burr's career as a clarinetist and audio engineer leans heavily in the experimental sphere, collaborating with composers such as Alvin Lucier, John Zorn, and Brian Ferneyhough. Burr also has an extensive classical background, and an abiding respect for the Western canon.

The emphasis on traditional voice leading and counterpoint on the surface seems at dissonance with the iconoclastic history of a department rooted in the musical and curricular indeterminacy of John Cage, and at odds with the its founding faculty's commitment to "establish a department dedicated to the ever-newness of new music…without the prejudices and social pressures that develop over time.[34]" In its early days, extending Cage's New School meant that music majors were not only guided to author music sans the fundamental "requisite skills" (in the eyes of established pedagogy)

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34. Obrecht. Guy. 2011. "The Crystallization of the New, New Music at UCSD" College Music Symposium 51. p. 94.

but assigned to construct their own methods for organizing music, including instruments, notational systems, and participational activities.[35] Founding faculty Will Ogdon, speaking of an introductory music course called Nature of Music, once stated "A course of this nature could flourish only in an environment of experiment and creativity; it could not be grafted onto a traditionalist commitment."[36] The "Nature" in this introductory course was seen as a restoration to the more fundamental, universal material of sound, untangled from the vast web of Eurocentric teleologies. The theory program was grounded in a constructionist paradigm, with novices defining their own path from sound to music through experience and experimentation, set in a curriculum determined to be a music education for the "Everyman."[37] Learners in this environment would, drawing from Cage, "begin again, assuming abundance, unemployment, a field situation, multiplicity, unpredictability, immediacy, the possibility of participation,"[38] or, in other words, contra the constrained, profession-oriented, enclosed, monolithic, derivative, incremental, and exclusionary situation one would find in a conservatory environment.

Yet for Burr, spotlighting voice leading and counterpoint isn't a departure from departmental history, nor does it spring from a belief in their inherent supremacy as methods. His preference is both pragmatic and historiographic, and he's careful to contextualize these concepts within the Enlightenment ideals in which they are embedded.

> [Voice leading and counterpoint] are totally artificial, and you have to keep
> talking to [students] about the bigger picture in the background, but I think

35. Tinkle, A. 2015. The Expanding Universal: Participation and Pedagogy in Experimental Music. Dissertation. UC San Diego.

36. Silber, J. 1969. "Preface" from "A Report on an Experimental General Music Program." Mandeville Special Collections RSS1225, Box 4, Folder 16.

37. Ogdon, "A New Music Education for Everyman?"

38. Cage, J. 1967. "A Year from Monday: New Lectures and Writings." Middletown: Wesleyan University Press.

doing it in and of itself is not necessarily a bad thing. We do this not because it's true, or right, but because it has this interesting position in the historiography of classical music, as well as jazz. I'm not one of those people that thinks we should just throw it all out. Part of me thinks that sometimes. But I really don't think that's very useful because its influence is completely pervasive, including in music which has nothing whatsoever to do with that tradition. So, if you really want to engage in some kind of meta-decolonizing project, you actually have to know what the history is.

Since he began using these traditional methods Burr has found that his students not only understood the concepts fairly intuitively, but consistently seemed to enjoy the concrete guidelines and stacked gradations of exercises, the hallmarks of traditional counterpoint, which allow students to measure their own progress systematically. Discrete steps, without proper contextualization, can foster the illusion that the substance of music is reducible to clean, objective structures. "It's all really, really contingent. But it's really hard to teach that to students. They really want it to work out the way their programming class does."

Burr's theory course C, then, functions to massage the objectivities that may have hardened within courses A and B. Envisioned as a broader course discussing form and analysis, further contextualizing concepts in a broader history, and geography, of musical practice.

Historical Contingency.

Whenever a piece of music is discussed and analyzed, Burr begins by introducing its reception history, because "that's where the canonization happens." Examining the history of the work up to the present day, even briefly, refocuses the attention on music as serving a particular function at a particular moment, and dissuades a more Romantic idealization, or fetishization, of works and their composers. Generally, the extent to which

theory classes contribute to "the sense of the canonic"[39] is underestimated. The *mythos* constructs itself, in a sense, as a result of the work's privileged position as an object of study. This is where the discipline of placing works and composers in a social and historical context can intervene.

Discussions of, for example, the social ambitions of the German bourgeoisie that formed in the late eighteenth century[40] may seem out of place in a theory class, and many instructors may not feel prepared to contextualize in sufficient detail, or willing to invest the class time required. Burr simplifies this task with an eloquent outline: "It is just some person, in some context, trying to make some music, or trying to get paid." By offering students materialist explanations, a closer-to-the-ground historiography, Burr illuminate the pragmatic, heuristic function of the musical structures being taught, while also humanizing their composers.

Situating musical theories within a historical context also exposes young musicians to metanarratives that drive the evolution of musical structures. For example, students familiar with a classical repertoire are often surprised to learn that no concrete teleology exists linking Bach with Mozart and Beethoven. The German National Movement[41] in the early nineteenth century was ideologically motivated to construct a continuous narrative of great German music, and their stature in the present day owes — at least in part — to these nationalist ambitions. Such identity production can also occur at the local level. Vienna is a prime example. When young Beethoven threatened to accept an offer from King Jerome

39. Samson, Jim. 2018 "Canon (iii)." Grove Music Online www.oxfordmusiconline.com/subscriber/article/grove/music/40598 (accessed Dec., 2018)

40. Goehr, Lydia. 1992. The Imaginary Museum of Musical Works. Oxford University Press.
41. German: *Deutschnationale Bewegung*, starting with the revolutions of 1848.

Bonaparte to relocate to Westphalia, Viennese nobility offered Beethoven a contract guaranteeing payment of 4,000 florins a year and other benefits for the rest of his life if he stayed in Vienna.[42] Time has proven this to be a prudent investment in the construction of a geographic legacy, and an insight into the extra-musical maneuvers underlying the *mythos* of storied locations.

Decanonization and Artificial Intelligence.

Such accounts are not trivial. They link the evolution of harmony not just to times and places, but to relatable, flesh and blood motivations. The rules of voice leading and species counterpoint are also given life when treated as scaffolding, stepping stones toward attending to one's immediate sonic landscape. As a demonstration of the insufficiency of presenting rules without context, Burr offers the compelling case of David Cope's Experiments in Musical Intelligence (Emmy).

Beginning in the late 1970's at UC Santa Cruz, Cope produced computer generated compositions in the style of various canonical composers — Bach, Mozart, Beethoven, Chopin, Rachmaninov, etc. Cope confesses that his entry into musical A.I. was motivated by a severe bout of "composer's block" when struggling to get a commissioned opera off the ground. Cope's first approach was to create a computer program that would produce tones that followed fundamental theoretical rules. As basic part-writing constitutes one of the primary superstructures of traditional tonal music, this seemed a reasonable starting point for the decision trees that might approximate functional music. This resulted in,

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42. Kagan, Susan. 1992. Archduke Rudolph, Beethoven's Patron, Pupil, and Friend: His Life and Music. Pendragon Press.

according to Cope, a "kind of vanilla music" that was "lifeless and without much musical energy."[43]

Cope changed his approach. What separates great composers from the rest of us, he says, is their ability to accurately compile a database of the sounds they prefer, and manipulate it into new patterns.[44] According to this logic, this is a task that a computer should be able to do with enormous efficiency. In a pre-MIDI era, Cope began by coding all of Bach's chorales into a database, voice by voice, pitch by pitch, with note duration, and temporal position. The program then distilled the database into a composite 'piece' based on the most probable harmonic and rhythmic combinations. Cope simplifies Emmy's complex process into three-steps: (1) Deconstruction: analyze and separate into parts, (2) Signatures: retain that which signifies style, and (3) Compatibility: recombine into new works.[45] He was astounded by the results, which were more convincing than the previous rule-based approach by orders of magnitude. And beyond its astounding accuracy, Emmy was prolific. In the time it took Cope to grab lunch, Emmy extrapolated from 250 chorales to produce over 5,000 original derivations.

As the results generally require a bit of finessing to be truly convincing, Cope considers the compositions to be a collaborative effort between himself and Emmy. Although, since Cope has never released his source code, his exact process haven't been transparent. According to Cope, he will feed in a musical phrase, and Emmy will respond

43. Biography of David Cope. http://artsites.ucsc.edu/faculty/cope/experiments.htm
44. Wilson, Chris. 2010. I'll Be Bach. Slate; Music.
http://www.slate.com/articles/arts/music_box/2010/05/ill_be_bach.html. Accessed Dec. 10, 2018.
45. Cope, David. 2014. Experiments in Musical Intelligence, 2nd Edition. A-R Editions.

with its own understanding of what should happen next. Cope either accepts or declines the formula. As Cope describes:

> It is a bit like dealing with a small child; the program is an empty pot and I dribble small bits of music into it, and it responds to what I have put in…it's a process of carrots and sticks, really. I think it is producing good results but it takes a lot of time.[46]

The commissioned opera, a project he had struggled to initiate for seven years, saw its finishing touches in only two weeks with Emmy at his fingertips. When *Cradle Falling* debuted in Richmond in 1989, Cope hadn't told anyone about the work's unique collaborative origins. The performance garnered the best reviews of his career, extolled as a "supreme dramatic moment," "most moving,"[47] an "artistic zenith" and "unquestionably…a modern masterpiece."[48] The program came to true form in Emmy's successor, Emily Howell, which produced music in the style of other canonical composers such as Palestrina, Chopin, Mozart, Rachmaninov, and many others. many audiences have heard its output in the styles of classical composers.

According to Burr, Cope's later iterations incorporated lesser known composers that were known to have influenced the work of canonical composers. Expert audiences, much to their chagrin, struggled to distinguish between Emily's distillations of canonical composers from lesser-known composers who influenced them. Cope's experiments demonstrate the extent to which composers are conditioned much more by what they hear than by any internalized rule-based approach.

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46. Adams, Tim. 2010. "David Cope: 'You pushed the button and out came hundreds and thousands of sonatas.'" The Observer: Artificial Intelligence. July 10. Retrieved from https://www.theguardian.com/technology/2010/jul/11/david-cope-computer-composer.
47. Church, F. 1989. Richmond News Leader. December 1.
48. McKay, J. 1989. Richmond Times-Dispatch. December 1.

Anyone who plays jazz understands this contingency. In terms of the decanonization, sentiments of Mozart being transcribed by God, or presenting Bach's improvised fugues as a superhuman feat, while certainly remarkable, if you actually listen to any music, if you listen to Freddie Hubbard, or Charlie Parker, or Joni Mitchel, or flamenco or South Indian songs, it's clear that people can learn to improvise highly complex structures. You just have to learn how to do it. With canonization there's a certain disconnect from the music being made today that's not being dealt with it *at all*.

The premise of Cope's experiments in musical intelligence — that the computer is just a tool with which we can extend even the most hallowed of human minds — challenges the Romantic myth of creative genius, and pokes at the mythic pillars of western culture. While it's true some audiences have been delighted by the works of Emmy (and Emily), the delight may stem more from the novelty of its source, the amusement at the automoton's almost-music. Cope has confronted just as many who have been provoked, unsettled, even angered by his project. These listeners attribute this disgust reflex to a form of musical 'uncanny valley,'[49] a rejection of the soulless machine, or an absence of genuine humanity, have really missed Cope's point.

> [When] people tell me they don't hear soul in the music, I pull out a page of notes and ask them to show me where the soul is. We like to think that what we hear is soul, but I think audience members put themselves down a lot in that respect. The feelings that we get from listening to music are something we produce, it's not there in the notes. It comes from emotional insight in each of us, the music is just the trigger.[50]

Yet the listener's desire to detect a "soul" may have a more dynamic intersubjective layer than Cope assumes. Listening to music understood as either human-produced or

49. Reichardt, Jasia. 1978. Robots: Fact, Fiction, and Prediction. Penguin Books.
50. Adams. 2009.

computer-produced appear to be fundamentally different experiences, and even distinguishable at the neural level. In an fMRI study[51] subjects listened to an excerpt of Arnold Schoenberg. The researchers told on group of listeners that the music had been composed by a human, and a second group that it had been composed by a computer. The former group showed activity in multiple brain regions associated with theory of mind[52] (the anterior medial frontal cortex [aMFC]), while the latter group didn't display this same kind of processing. This study concludes that there are indirect social signals inherent to human artifacts, and listeners' brains operate as if interacting with another person. The thought of the music originating from a computer disrupts this interpersonal dimension.

Cross-Cultural Studies.

In 101C Burr places 101A and B in conversation with theoretical systems that evolved independently of the canonical composers and their works. Michael Tenzer's book *Analytical and Cross-Cultural Studies in World Music*[53] is an especially accessible resource to draw upon. With chapters exploring South Indian music, Chinese opera, polyphonic singing in Central African cultures (i.e. Pygmy cultures), flamenco forms, as well as highly individual styles of composers such as Elliot Carter, students are exposed to ways of thinking about music that not only expand beyond Western exemplars, but demonstrates that sophisticated practices of voice leading and counterpoint do not exclusively belong to the West. For example, the chord progression i-VII-VI-V, known by theorists as the *Romanesca*, appears independently in traditional musics from Spain to

51. Steinbeis N., Koelsch S. 2009. Understanding the intentions behind man-made products elicits neural activity in areas dedicated to mental state attribution. *Cerebral Cortex*. Mar;19(3):619-23.
52. The recognition of the presence of another mind/agent.
53. Tenzer, M. 2011. Analytical and Cross-Cultural Studies of Music. Oxford University Press.

South India and Japan, in various forms. Discussing these occurrences in their own terms broadens the focus beyond mere chord progressions to cycled bass patterns, song forms, variation form and traditional improvisational structures, interplay between melody and bass line, etc. Even brief forays into cross-cultural gray zones introduce students to the remarkable similarities between theoretical systems around the globe, the many levels of "sameness," a la Kofi Agawu's postcolonial critique,[54] while also highlighting the diversity of nuances each system has heuristically contributed to related theoretical issues. "It's very useful to get them to think comparatively, instead of just about chords. Instead of 'analyze *this*,' asking them 'What does it mean to make music based on *this*?'"

Discussions that compare musical structures between cultures also act as a foil to the anachronistic tendency to spotlight composers, while minimizing the cultural influence and pragmatic needs that shaped their practice. Orienting analyses around the decontextualized musical work fuels Romantic myths of *ex nihilo* creation, as well as modernist myths that there exists a zero degree, 'underneath' culture.[55] Both myths advance a level of detachment from musical culture as the proper starting place for creativity. While the celebration of intellectual heroes upholds specialized interests, such as the previously discussed veneration of Bach and Mozart's stature within nineteenth century nationalism, comparative music theory can work to deconstruct[56] these narratives, and introduce students to historiographic thinking.

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54. Agawu, Kofi. 1992. Representing African Music. Critical Inquiry. 18 (2): 245-66.
55. Tinkle, Adam. 2015. Sound Pedagogy: Teaching Listening since Cage. *Organised Sound.* 20 (02): 222–230.
56. Comparative studies of music are not free of special interests and myth-making. See: Witzleben, J. L.. 1997. "Whose Ethnomusicology? Western Ethnomusicology and the Study of Asian Music." Ethnomusicology
Vol. 41, No. 2, Special Issue: Issues in Ethnomusicology (Spring - Summer, 1997), pp. 220-242

Multiple Analytical Approaches.

Burr draws from Robert Gjerdingen's comprehensive look at musical practice in the Galant style.[57]

> [Gjerdingen presents] an unbelievably detailed historiography of what they were actually doing in the seventeenth through the nineteenth centuries. The portamento books at the time formalized tactics of stringing together little clichés in this very pragmatic, almost jazz-like way. There were hundreds of ways bass lines could be harmonized, and categories of metaphorical meaning. They're not really chord sequences, as typically analyzed in theory class, but are quite inexact by our standards. You've got a bass line that does 'this,' and the melody does 'this' against it, but in a hodge-podge way.

Highlighting the inexactitude of common period practice transitions well into looking at Bach and Mozart. Beyond merely presenting their mastery of formalized tactics, Burr underscores their own instances of 'hodge-podge,' or what Burr calls a "contingent collage." Looking at Bach's chorales, for example, it's useful to point out multiple uses of the same bass line, or the appearance of the same melody in several chorales with varying harmonizations. Such moments can seem like cheating to students who expect bottom up, *sui generis* originality from every beat. Chord by chord chorale analysis "doesn't explain what's actually going on in this contingent collage."

This is where Burr shows students that there's a method for pruning away extraneous detail by focusing on longer and medium-length patterns. While short of demanding full Shenkerian analyses, the simple exposure to alternate analytical approaches interrupts what is often the totalizing logic of a harmonic analysis. Shenkerian analysis is

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57. Gjerdingen, R. 2007. Music in the Galant Style. Oxford University Press.

based on the notion that music can be reduced to a fundamental framework, and everything else in the work revolves around this unitary reduction. The extent to which this reduction is possible is what proves the work's efficacy and its perfectibility of structure. This is a different skill than 'how would you make something like this.' Thus, the exposure to Shenkerian analysis also introduces an element of subjectivity to the analytic mode, which orients the theory classroom beyond the replication of forms and structures, and toward the study of multiple possible interpretations and the production of meaning. In other words, exposure to multiple analytical perspectives is a precondition for understanding musical sounds as fundamentally referential in nature, rather than as fixed[58] within a canonical landscape.

Assessment and Team Analysis.

Modes of assessments should measure learning outcomes, that is, students ought to be engaged in the work pertinent to the course goals deemed most valuable by the instructor, department, and institution. The TFUMM Manifesto argued that the guiding model for student learning outcomes in music higher education — the Performer-Interpreter model — is increasingly out of alignment with the environment students find themselves in upon graduation. The question for today's instructor is: What competencies, skills, perspectives, are best suited for the emerging soundscape? For Burr's theory course, learning outcomes pursue an enactive imperative, or, to develop a real confidence in being able to engage with music they know, music they don't know, and music they imagine.

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58. Burr, A, 2018. "There's no question that certain kinds of tonal forms become structures for closure, you have things that mean closure and things that mean dissonance, but even that is a referential thing. It's a reference to another thing you've heard which felt settled." Personal Interview. March 15.

When it comes to assessment, Burr finds little utility in typical analysis assignments. "I can't see that there's much point in having a midterm or final in terms of analyzing a piece of music. I mean you can give them a Haydn piano sonata to analyze in forty-five minutes to break this down, but frankly I don't really understand what that's testing. Maybe score reading. The old-fashioned piano thing, putting red X's on the notes they get wrong…not very useful." Instead, Burr organizes five students in a group that chooses a piece they collectively want to know about. The group then creates a presentation where they illustrate three different ways of breaking it down, and then together arrive at some creative reinterpretation of the piece. In this method students rehearse a skill far more valuable than harmonic analysis: the development of a process for deciphering, extrapolating, and extending musical "knowledge."

Summary.

The music department at UCSD was founded as an extension of the Cagean School, and, at least in the beginning, desired to pioneer a music program for the everyman where experimentation and creativity could flourish, unrestricted by the influence of "traditionalist commitments." Often a vehicle for such commitments, the theory courses at UCSD developed to be responsive to the evolving scholarly interests of faculty and the aesthetic imperatives of the students. Despite its divergence from the conservatory model, the required six course theory sequence was truncated to a three-course required sequence, taught over three quarters in one academic year. Overseeing the new restructuring, Anthony Burr elected to retain voice leading and counterpoint as fundamental to the courses A and

B. Through all three courses, and central to course C, Burr keeps with departmental history through a collection of carefully balanced themes that, without fanfare or controversy, make his approach remarkably innovative.

A central theme is the contingency of piece and composer upon the historical and cultural context that shaped their imagination, their practice, and their careers. Reinforcing this contingency demythologizes canonical masters and their works, spotlighting the more pragmatic sides of their occupations and of the narratives that have constructed their legacies over time. David Cope's experiments in musical intelligence illustrates this situated, embedded contingency. By treating composers not as authors, but as databases of their particular sonic environments, masterworks shine forth as "contingent collages," the type of which can be imitated through artificial intelligence. To harmonize a genuine admiration for the contributions of canonical composers with the effort of decononization is a delicate counterpoint. One way to stabilizes this balance is to create time for cross-cultural examples. Musical systems and structures are truly multicultural phenomena, and to not present them as such is to stifle the substance of what theory study offers to music learners: the awareness that thoughtful, systematic engagement with music was neither invented nor perfected by any one culture, that there exists no totalizing musical logic, but that patterns and practices emerge to serve a plurality of functions. Some are similar, none are equal. A pluralistic approach to theory — spotlighting African polyphonic singing, Chinese opera, etc. — broadens the theoretical lens, a lens that simultaneously magnifies the space for students to critically reflect upon their own contexts, define their musical goals, examine the contingencies that frame their goals, develop a strategy for forward motion, and, identify what theoretical tools are needed to thoughtfully act through music.

Timothy Rice, former Director of the Herb Alpert School of Music, U.C.L.A.

> My question is, 'music for what? What's the point of being musical? What's the point of being creative?' At UCLA, the answer is 'so you can serve society, so that you can say something about your culture that's not being said by anyone else, in any other medium.' — T. Rice[59]

The final curricular restructuring examined in this chapter is the most ambitious. The Herb Alpert School of Music, at a glance:

Faculty Members: 135
Total Students: 468
Student/Faculty Ratio: 4:1
Degree Programs: 15
Performance Ensembles:45
Value of Endowments: $53MM [60]

In 2015 the University of California at Los Angeles (UCLA) announced that it would move forward with plans to create the UC system's only stand-alone school of music. Set in motion in 2007 following a $30 million endowment from the Herb Alpert Foundation, this monumental shift has involved more than mere curricular tinkering. The newly established school contains three departments: the ethnomusicology and music performance departments were both transferred from the School of the Arts and Architecture, while the musicology department was transferred from the division of humanities. As if the bureaucratic undertaking weren't daunting enough, the new school envisioned a pivot from a traditional fine arts department, and what has been one of the

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59. Rice, Timothy. 2017. Personal interview. September 27.
60. UCLA Herb Alpert School of Music website. About. https://schoolofmusic.ucla.edu/about. Retrieved January 31, 2018.

west coast's centers for classical music study, to a program that would attract more jazz musicians (particularly "global jazz") and more industry-focused entrepreneurs.

Ethnomusicologist Tim Rice was the Associate Dean of academic affairs for the School of the Arts and Architecture, and directed the new School of Music at the outset of this shift, prior to his retirement in 2017. Rice was also a lead author for the TFUMM Manifesto, so, naturally, the Herb Alpert School was influenced by the views tendered by the report at its founding. Somewhat counter to the three previous interviews, Rice was willing to discuss not just the vision-casting and the intention behind the restructuring, but also moments where the visions struggled to congeal as hoped. As a result, while this section describes UCLA's restructuring efforts, it also looks into Rice's perspective on the state of music in higher education, the history of failed attempts to integrate diversity into the schools and departments of music, the roles music theory might (but largely does not) play in diversification, and UCLA's ongoing process of attempting to "move the graveyard."[61]

Broadening Horizons.

In Rice's view, in the context of most U.S. schools and departments of music, "diversity is an oxymoron. It simply doesn't fit." The attempt to make it fit has been a curricular problem that has impacted his work personally for over fifty years. Rice's advisor, ethnomusicologist Robert Garfias, earned the first degree in ethnomusicology from UCLA in 1958. Garfias's hope was that with ethnomusicology infiltrating schools of

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61. Coolidge, Calvin. "Changing a college curriculum is like moving a graveyard-you never know how many friends the dead have until you try to move them!" Ward-Steinman. 2016. Advances in Social-Psychology and Music Education Research. Routledge.

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music, programs would become more diverse, that is, see a more diverse student body practicing a broader representation of the world's music. Now, sixty years later, Garfias and Rice agree that this vision has not been realized. "We ethnomusicologists, who have this rather different worldview, aesthetic, and ethic, have been largely unsuccessful in getting schools of music to adopt the attitudes and repertoires we would like to see," laments Rice.

Though, of course, it has not been from a lack of trying, nor from a lack of impact on students. Throughout his career Rice has been approached by countless former students recalling the life-changing effect of being exposed to a broader world of music, and adopting an ethnographic perspective on their own music-making. Ethnomusicology electives, by and large, are the only courses in which music majors might encounter a glimpse beyond what the Manifesto critiques as "narrow horizons,"[62] toward a more global twenty-first century landscape. Even within the explosion of commercial music programs, intended to appeal to students motivated to make a living in today's musical landscape, core theory and history sequences remain largely unchanged from the orchestra-oriented interpretive-performer model. "The lack of imagination of these educators at the college level is profound," as far as Rice is concerned.

When Rice took leadership of UCLA's restructuring, he had the opportunity to set a new tone at the outset. One of the initiatives he took was to suggest to the faculty to create a common core course that all first-year students would take, regardless of their emphasis. The faculty agreed, in principal, that it ought *not* be a course in the history or theory of

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62. Campbell, Patricia Shehan. 2014. p. 36.

European classical music, but rather a wider survey of global music history and practice. It was important for Rice to reach students in their first year, as prior experience had taught him that after four years students already tended to suffer from what he calls a "hardening of the categories." They had already been taught that European classical music was "the most beautiful music in the world." The more study in classical music, the more difficult it was for students to appreciate music that they heard through that filter as out of tune, having poor tone quality, etc. Rice knew that he had to "get to these students in their first year to have any chance at a life-changing experience."

When it came to faculty pushback, performance faculty were largely on board because they were familiar with a world of studio demands in which versatility is non-negotiable. The main source of resistance was from the area of music theory. Comprised primarily of composers, faculty struggled to imagine compressing the theory sequence, covering *Gradus ad Parnassus* though serialism in just two years, which would be necessary to allow room for the new course.

Ultimately the new course was approved. "Introduction to Music: History, Culture, Creativity" was envisioned with more in mind than mere lip service to diversity, or the contextualization of the Western history and theory that would follow. Prior to the establishment of the School of Music, the School of the Arts and Architecture contained six departments: Music, Ethnomusicology, Dance, Art, Design, and Architecture. Rice, as Associate Dean, saw Music as the obvious outlier.

> …because all of the other departments were focused on art-making, and they all believed that the making of art was an intellectual contribution to theory. They thought artists were doing the same work as social theorists. In music, we sort think that art happens over here, and theory over there, and never the twain shall meet.

The hope for the new course, then, was to recast core music courses as an immediate part of the process of aesthetic production, rather than as a graduated sequence of learning 'how to' create art, in which requisite knowledge had to accrue before meaningful participation in art-making could take place. The intro course was intended to answer Rice's question: "What's the point of being musical…creative?" At UCLA, the answer is "so you can serve society, so that you can say something about your culture that's not being said by anyone else, in any other medium."

In Rice's view this social consciousness puts UCLA on the right track toward "forging a new foundation," which requires the dismantling of the eighteenth-century German foundation on which music education still rests. "You've got to build a new foundation,…alive to the whole world of music." Otherwise, "you're just pushing notes around."

The process of implementing the course was, admittedly, "not supremely successful," as they struggled to identify a faculty member with the expertise to teach such a broad-based course. Similar to Frost's strategy in response to the same difficulty, UCLA decided on a team-taught approach. As often occurs, this resulted in a course that was logistically difficult to organize, conceptually diffuse, and eventually defaulted to the same divorce between multiculturalism and music theory that the course was designed to redress. Students also responded variously to the course, with many frustrated by its length and by the conceptual discord. Thus, students had difficultly seeing how this course contributed to their educational goals. Rice provided some cohesion by teaching the course himself, but

this only resulted in creating a dependency, ensuring that, following his retirement, the course itself would close.

For programs considering introducing a similar course, Rice offers two bits of wisdom. First, programs should strongly consider the timing of such courses in relation to the goals of the student body. If students generally have a grasp on their personal educational, career, and musical goals, an introductory course need not be a year long. Secondly, for Rice, the fundamental issue with such initiatives is that even when there are people of good will, who see the problem, they themselves may not have the skills to implement the solution. While larger programs are able to identify faculty flexible enough to teach these courses, smaller programs are really stuck.

Task Force for the Undergraduate Music Major.

It's a familiar situation to most working in higher education, to recognize a problem, envision a solution, yet feel powerless to effect substantive change against opposing forces. Identifying the root of those opposing forces is, of course, not as simple as it may appear *prima facie*. For the authors of the Manifesto, the failure to dig deep enough into the cultural heritage of music education is why substantive curricular change over the past century has been so hard to achieve. The self-identified "Manifesto" was so-called because it didn't merely propose a shift, or moderate a corrective. It aimed to take a hammer to the "eighteenth-century German palace on which music education is founded."[63] In presenting an idyllic, almost utopic vision for curricular change, one with little pragmatic guidance, the Manifesto managed to open up a new imaginative space for faculty to reconceptualize

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63. Rice. 2017.

the problems at hand, and dream up new possibilities for their own institutions. In terms of social network analysis, the Manifesto would be seen as a central node, bridging the flow of complex information between networks that are otherwise weakly tied.

When asked what the 'fantasy' undergraduate music program would be, Rice replied without hesitation: "the model in the Manifesto is the fantasy." But even this fantasy did not congeal into a united vision without some negotiation between its authors. As one example, there were two ethnomusicologists on the task force, Tim Rice and Victoria Levine from Colorado College. Both pushed back against lead author Ed Sarath's emphasis on jazz. "It seemed like one form of hegemony was being substituted for another hegemony, which was African-American music." In such an exchange, where does the diversity come from? Both Rice and Levine came around to Sarath's view, realizing that if there is going to be a hegemony, in the context of the United States, African American music makes more sense than European classical music.

African-American music took a prominent role in the document, but it was certainly was not its core. Every recommendation swirled around the vague but unyielding notion of 'creativity.' The authors envisioned a school of music that is not about performance, and not about studying theory and history as adjuncts to performance, but was about refiguring a program as a place for musical creativity, and creativity conceptualized through a more pluralistic, cross-cultural framework.

For changes of this magnitude to have a chance, powerful voices, incendiary documents and bold actions will never be enough without the requisite self-reflection, and humility, on the part of all faculty involved. To illustrate this, Rice described a particularly touching moment in the life of the task force. The Manifesto was presented in a pre-

publication form at a symposium before the College Music Society national conference[64] in 2013. Each member of the task force presented the document from their perspective to an audience of about thirty people. After opening up for questions, one attendee asked of the audience "How many of you here are from the performance faculty of your program?" Only one person raised his hand. When asked why, that individual responded, "I came because if this document is talking about stuff my students need to know, then I want to know about it." "I found that very touching," says Rice. "There was a teacher who was willing to see there might be a world out there that they don't know much about, but perhaps his students should know about."

"Good musicians don't need theory".

More should be said about Rice's own attitude toward music theory, or perhaps music theorists. The way Rice describes courses and programs that lack a cultural dimension as "pushing notes around" and "lacking imagination" can easily be construed as jeers aimed directly at theorists. It's unclear whether anyone in the music theory subset of the College Music Society has ever experienced these caricatures, but there was no ambiguity in their response to the Manifesto. According to Rice, theorists in particular "hated the document." But such strong feelings suggest that Rice harbors an aversion to theorists in particular. This could be a reflection of the history of ethnomusicology's marginalization by music theory in core curricula, or a reaction to the times theory faculty have been cast as the force obstructing the deeper integration of diversity, he and his advisor Garfias have tried over their careers to bring to schools of music. Whatever its source, it

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64. CMS membership is primarily comprised of music faculty from around the U.S.

seems that Rice undervalues theory study in the same way theorists, in his mind, disregard ethnomusicology: "Most classical musicians think they should know something about the theory of the music they're going to play. I don't happen to share that view. I think good musicians are good musicians, they actually don't need theory."

In support of this belief, Rice offers the examples of a trumpet teacher he knew who could learn the whole repertoire using solfege, and a jazz musician who, having carpel tunnel syndrome, never practiced, but learned his repertoire by "thinking about the music," envisioning how he would play it on the instrument. For Rice to consider these examples as demonstrations of something other than theory, that solfege and mental imagery are somehow divorced from the work that theorists do, reveals that Rice, at least in part, conceives of theory as a purely conceptual, disembodied discipline. This view conflicts with the position stated in the Manifesto, which rejects the conceptual separation of theory from aural skills,[65] and hopes not to eliminate theory, but refigure it as "an applied endeavor that is directly integrated into students' music expression and understanding."[66] While Rice's view is perhaps an accurate representation of the character of the music theorists he has encountered, and battled throughout his career, it is not a representation of what the field could be.

The arguments forwarded in Part II of this dissertation assert that the examples above, of the trumpet teacher and jazz musician, are in fact both instances of theory-in-action, exemplars of a music theory well-integrated into a musicking body. The Manifesto,

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65. Campbell. 2014. p. 36.
66. Ibid. p. 30.

to the extent that it made any recommendations to theory specifically, appears to be in agreement.

Summary.

Despite the ultimate unsustainability of the course introduced by Rice, curricular restructuring at UCLA should be considered a success. When considering the size of the ship, and its ability to shift its momentum toward newer, fresher waters, the Herb Alpert School of Music stands as a model for all schools currently uncertain how to chart a curricular path in the 21st century. New programs (Global Jazz Studies, for example) were introduced that reflect an orientation toward a pluralistic consciousness and global musicianship, without weakening its classical backbone. Programs should take notice of the challenges UCLA faced, even provided a $30 million endowment.

While the four programs examined in this chapter are, in their own ways, leaders in the current wave of curricular change in music theory, a number of reputable programs are setting trends worth noting. Collectively these cases further implicate a current *wave* of reform. Even in New England, a harbor for high level classical music education, interesting changes have been taking place. A few examples would include Yale,[67] New England

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67. The Department of Music at Yale University was one of first to offer specialized degrees in music theory, pioneered by Alan Forte. Yet, Yale too is (cautiously) introducing changes to their undergraduate theory sequence, though. Led by Ian Quinn, new courses were introduced in 2018 for a two semester theory sequence tailored to those with no notation background. One new course, titled "Melody, Rhythm, and Notation in Global Context," is structured around Alex Rehding's Three Music Theory Lessons, which orients beginning students through three categories of theoretical tools: Instruments, repertories, visual representation/analysis. The only requisite for the class is a willingness to sing. Instructors rely on LilyPond, an open source notation software. The immediate goal is to emphasize the voice (and simultaneously de-emphasize the keyboard), improvisation, new notation, and new repertory, fostering an emerging 'common practice.'

Conservatory,[68] University of Massachusetts at Amherst,[69] and Longy Conservatory.[70] Their activities are footnoted here for the reader's reference.

Conclusion

Through interviews this chapter has aimed to: (1) identify common reform themes; (2) recognize shades of divergence from mainstream theory curriculum; and (3) provide a resource for departments and schools of music surveying potential paths forward. As a summary, Table 3 discretizes fourteen curricular reform imperatives discussed by at least two of the four reform leaders. It should be noted that these shifts map well onto the student evaluations of music theory classes presented in Chapter 2, specifically the call for creativity, diversity, and integration.

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68. The New England Conservatory, while remaining committed to its legacy as a leading classical conservatory, has recently developed a praxis-based model adapted from Steve Larson's Integrated Music Curriculum. The theory core takes the lead in integrated curricular modalities – hearing, notating, conceptualizing, singing, reading, playing – throughout the sequence. In this model theory training is conceived as a process of developing praxis-based skills that apply to a wide range of styles.

69. University of Massachusetts at Amherst has introduced a number of innovations to their theory curriculum, beginning with the theory entrance test, a mandatory exam administered by most programs to measure musical competency vital to success in the program, and as a musician, as well as to place them in the appropriate starting level. Faculty member Gary Karpinksi determined that the standard entrance tests offered only snapshot, and are neither an accurate assessment of musical competency or predictive of success in a music program. In place of the standard placement test, which measures competencies in conventional notation and harmony, Karpinksi designed a diagnostic based on seven measures of auditory perception competencies: Pulse perception (students asked to clap back a rhythm), rhythm memory (6-10 events), pitch matching, short pitch memory, extracted memory (in which students hear a longer phrase and sing back as much as can be remembered), collection inference (infer note scale from hearing a pitch set), and tonic inference in a given melodic phrase. Thus far, following this new diagnostic, more students successfully pass theory courses.

70. Finally, similar to the curriculum branding seen at Frost (The Frost Method™) Longy School of Music recently introduced their Catalyst Curriculum™ for its graduate degree and diploma programs. While their undergraduate programs is structured around the familiar core requirements, including four semesters of courses in Harmony, Form and Analysis, etc. (it does require a single credit in improvisation), the restructured graduate program is overtly entrepreneurial and "you-centric," according to the program website. It aims to expand beyond performance skills, preparing students to 'design experiences' through a more customizable, project-based course load, with the added promise of "No busywork." Longy School of Music: Curriculum https://longy.edu/study/curriculum. Accessed December 15, 2018.

Table 3.1: Fourteen curricular reform imperatives

	Harvard	Frost	UC San Diego	UCLA
Expanded repertoire	√	√	√	√
Appeal to broader range of students	√	√	√	√
Reduced notation competency requirement	√	√	√	
Reduced unit requirements	√		√	√
Cross-curricular integration	√	√	√	√
Cross-cultural integration	√		√	√
Contextualizing the Western canon	√		√	√
Assessment: Growth over Proficiency	√	√	√	
Introduction to multiple analytic approaches	√		√	
Emphasis on entrepreneurship		√		√
Creative projects	√	√	√	
Collaborative projects	√	√	√	
Emphasis on concrete application	√	√	√	√
Required improvisation		√	√	

They are presented as discretized because that is how they were described in each interview. Upon deeper inspection of these fourteen items, taken together with the shortcomings observed by students in Chapter 2, two overlapping categories of concern emerge: (1) epistemological pluralism (e.g. multiple analytical approaches, cross-cultural integration, decononization) and (2) the status of student agency (e.g. growth over proficiency, creative and group projects, entrepreneurship).

It is too soon to know to what extent the shifts outlined above represent a true breaking of the logjam that, according to the Manifesto, has obstructed change efforts in

the past. For reform advocates, these are promising directions. The discretized list of imperatives, like a skeleton, is rigid and clunky, though functional as a framework for forward motion. But the muscle of curricular reform lies in the network of ties between individuals in a social system engaged in the exchange of ideas, with the qualities of these ties determining the relative effectiveness of purposive action. Both strong and weak (more dense, less dense) ties between actors are necessary within a social structure, as they facilitate access to different kinds of information.[71] This chapter presented the types of changes being made in the sphere of music theory curriculum, but, more importantly, it aimed to illuminate how programs have gone about implementing these changes in ways that make political, ethical, and pragmatic sense in their unique situations, and how the curricular flows are colored by the particular lenses of each faculty.[72]

Chapters 2 and 3 have investigated the expanding curricular horizons for undergraduate music theory. The environment is calling for a far different tool than the one we currently have, one better equipped to meet the complexities of musicking in the twenty-first century. The horizons, in breaking away from standardized approaches, leave us feeling unsettled, diffuse, unsure of what lies ahead for theory teaching, yet hopeful that a polyphony of good things are in process. While music theory is in no immediate danger of withering away on the academic vine, it is transforming at an accelerating rate. The fourteen items listed above, while an accurate breakdown of actions currently being taken,

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71. Daly, A.J. & Finnigan, K.S. 2010.
72. For instance, cross-cultural integration for Tim Rice means fostering a broadly inclusionist ethic through exposure to non-Western music traditions prior to students' "hardening of the categories" in theory and history sequences. While for Anthony Burr the integration is embedded within conversations about structures, for example, comparing variations of *Romanesca* cycles in Spanish, South Indian, and Japanese music.

are a gross oversimplification of the attitudes driving these actions. In the immediate timeline, these attitudes are inextricable from broader sociocultural forces — the economic imperatives of the modern university (i.e. the adoption of a business model)[73], intensifying political dialogue (i.e. what curriculum signals within the dialectic of progress and conservation), the *ethos* of globalization, and the haze of a digital reality, with its dictum: "In the digital world, he who hesitates is abandoned."[74]

The discipline, both a knowledge base and problem domain, is no stranger to such forces. Part II aims to provide today's reform efforts with a guiding framework through (1) engaging a considerably longer timeline in order to understand how these horizons, in many ways, circle back to older modes and traditions of theorizing music; and (2) grounding the imperatives of creativity, diversity, and integration in a paradigm of embodiment.

73. Bunce. 2017.
74. Stringer, Howard. 2011. "CEO Howard Stringer sees Sony's future in 3-D". Interview with David Lieberman, www.usatoday.com. January 5.

Part II. Mutual Transformation: Perspectives of Musical Embodiment

Chapter 4. Music, Body, World: Vectors of Agency in Music Theoretical Traditions

> "Nothing determines me from outside, not because nothing acts upon me, but, on the contrary, because I am from the start outside myself and open to the world."[1]
>
> — Maurice Merleau-Ponty

> "The soul is the effect and instrument of a political anatomy; the soul is the prison of the body." [2]
>
> — Michel Foucault

Having outlined present-day curricular shifts in music theory, first through surveying the perspectives of students (Chapter 2), then stepping out to gain insight from faculty engaged in various types of curricular reform (Chapter 3), this chapter takes another step back — perhaps several — to contextualize these horizons within music theoretical traditions. Part I revealed the central themes of reform to be (1) epistemological pluralism and (2) the status of student agency. With these themes in mind, Part II investigates how music theoretical traditions converge in 'the body' — both the material body, and the 'the body' as a construct. Through what I call an embodied reading, this chapter considers how shifting notions of 'the body' are reflected in music theoretical traditions, crystalized in its treatises, and exercised through pedagogy.

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1. Merleau-Ponty. 2002 (1945) Phenomenology of Perception. Routledge.
2. Foucault, Michel. 1977. Discipline and Punishment. New York: Vintage.

To do this I engage a sociology of embodiment, a broad field concerned with the philosophy of perceptual experience, the politics of corporality, and modes of presence and engagement in the world. This field is heavily influenced by twentieth-century French philosophy and sociology (Merleau-Ponty, Bourdieu, Barthes, Foucault), and lives on in a variety of forms through the work of Luce Irigaray, Donna Haraway, Jane Bennett, and Linda Blum, among many others. In this scholarship 'the body' represents fertile ground for the critical analysis of social structures, patterns of agency, and ethical (bioethical) and political (biopolitical) systems. With substantial overlap in their problem spaces, embodiment thus opens up new lines of inquiry at the intersections of music, teaching, agency, and the body.

What do the reform imperatives expressed in Chapter 3 suggest about the shifting status of the body and body-world relations in pedagogical discourse? Both advocates and opponents of change suggest that theory teaching is in the process of being deeply redefined, but this, I will argue, is only true in the small scale. Contextualized within a larger scale curricular evolution in music theory, I will argue that current trends can be understood as an equilibration of the body-world dynamics that are enacted in the implementation of a curriculum. To label this an 'embodied turn,' while tempting, would be to ignore the ways in which 'the body' has been central to theoretical discourse throughout its history, whether implicitly and explicitly. There can't be a 'turn toward the body' in music theory because, in a sense, it has always been about the body. Theoretical traditions, treatises, and pedagogies testify to the ebbs and flows in conceptualizing the body's relation to the world.

In 2012, Thomas Christensen, chief editor of The Cambridge History of Western Music Theory, spoke to a conference audience at the International Forum on Comparative Music Theory. He opened his lecture by revealing what he believed to be the most important lesson of the volume he had compiled: "There is no such thing as Western music theory." Since the term "theory" is not used in any consistent manner, the field overall, like Western music, is complex, unstable, and seldom obvious. For this reason, in compiling the Cambridge History, Christensen, via Carl Dahlhaus, describes three separate traditions that have developed and persist in the usage of the term 'theory': (1) the *speculative*, concerned with basic musical categories and nature of the relationships between them[3] (e.g. cosmological harmony, tetrachords, scales, meter), (2) the *regulative*, concerned with constructing systems of musical practice (e.g. methods for structuring music, including notation, and pedagogy, such as species counterpoint), and (3) the *analytic*, concerned with excavating the forms (or logic) of existing works (e.g. techniques for identifying structures, patterns, and forms, such as Shenkerian analysis).[4]

This chapter pushes beyond viewing these categories as mere observations, to ask: How are they related? How are they balanced? How does each tradition reflect the ways in which its theorists related to their world, and how does its implementation in the form of pedagogy predetermine how initiates are trained to relate to the world?

The first task is to embark upon an embodied reading of the theory/practice binary as it appears in pivotal moments in theory history. This reading reveals shifts in ways in which

3. London, Justin. 2011. Ch. 45: Musicology. in "The Routledge Companion to Philosophy and Music." Ed. Theodore Gracyk, Andrew Kania. Routledge. p. 502.
4. Christensen, Thomas. Ed. 2002. The Cambridge History of Western Music Theory. Cambridge University Press.

'the body' has been located as either extraneous or integral to the process of theorizing. Special attention is given to Rameau's lesser-known concepts of *corps sonore* and *le sous entendu*, and Roland Barthes' notions of geno-text and grain. Then, building from Thomas Csordas' description of embodiment as an indeterminate methodological field,[5] I juxtapose the aforementioned music theoretical traditions — the speculative, regulative, and analytic — with varying notions of agency described by Merleau-Ponty, Bourdieu, and Foucault. Of particular interest is how each thinker ascribes a directionality to agency, which Csordas terms: "vectors of agency."

Through this juxtaposition I argue that the three traditions are not merely interrelated, independent categories of musical thought, but (1) they represent spaces in which bodily agency have distinct vectors in the production, teaching and learning of theory, and (2) the dynamic between these spaces is complimentary. Ultimately, this provides (3) a framework for conceptualizing how the 'the body' — both the material body and the construct — operates within music theory teaching, and (4) how the equilibration of the speculative, regulative, and analytic traditions (and their implied vectors of agency) optimizes the potential for the mutual transformation of student and world.

The Body in the History of Music Theory and Practice

> Music has God for a father, Nature for a mother; it has a divine quality whereby the mind, the image of God, is wondrously delighted. It is a physical and natural thing, by which not only the ears of men, but the senses of all beings, as it were, are

5. Csordas, Thomas. 2015. Chapter 2: Toward a Cultural Anthropology of Body-World Relations. *Phenomenoloy in Anthropology: A Sense of Perspective.* Indiana University Press.

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comforted in a way which is beyond speech or thought. – John Case, *Apologia musices* (1588)

Tradition identifies Pythagoras as the first to examine sound as an empirical phenomenon, in the sixth century BCE.[6] The first classical treatises[7] reified Pythagorean inquiry, as well as Aristotle's dialectical juxtaposition of *theoros* — the act of observation[8] — with *praktike* — an action resulting in a change in some object.[9] These treatises also affirmed the stature of Aristotle's *theoros* allied with *episteme* (knowledge of the good and true) as a higher form of *praktike*,[10] setting in motion the discursive privileging of abstraction over action in Greek philosophical tradition. When consulting the archeological record, the discovery of Paleolithic flutes[11] carved from the hollow bones of swans and vultures, dating to approximately 35,000 BCE, testify to the presence of systematic musical thought that predates the invention of writing by at least thirty millennia. There's nothing random about the placement of the holes on these instruments; some reconstructions suggest pentatonic scales, though this is speculative, given the incomplete state of most of the flutes. What is clear is the fact of the *designed* tool, a product of an embodied cognitive process, embodied in the sense that the thinking that produced it was, being preliterate, not

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6. Christensen, Thomas 2002. The Cambridge History of Western Music Theory. Cambridge University Press.

7. The most influential of which by Aristoxenus, Quintilianes, and Boethius

8. Pre-Socratic Greek used *theoria* as a visual term, describing the action of a spectator at the theater or games, or a legal dispute. Plato appropriated the term to emphasize the act of witnessing in philosophical inquiry. Aristotle first juxtaposed *theoria* with *praktike.*

9. Christensen. p. 2

10. Ball, T. 1977. "On the Unity and Autonomy of Theory and Practice," in Political Theory and Praxis: New Perspectives, ed. T. Ball, Minneapolis, University of Minnesota Press. P. 65.

11. Conard, N.J. (et al.). 2009. New flutes document the earliest musical tradition in southwestern Germany, *Nature* 460, 737-740.

mediated by representations and symbol systems, but through sensory experimentation, and the gradual integration of the tool into the body schema.

David Kirsh summarizes this process in four principles: (1) interacting with tools changes the way we think and perceive; (2) we think with our bodies not just with our brains; (3) we know more by doing than by seeing; and (4) there are times when we think with things.[12] If we think with our bodies and with things, and know more by doing than by seeing, then we most certainly theorize, in large part, with our bodies, with things, and by doing.

The notion of embodied thought, then, disrupts Aristotle's *theoros/praktike* binary, and requires a more dynamic understanding of how theory relates reciprocally to practice. The two primary differences between Aristotle's binary and the basic tenets of embodied thought, are the former's hierarchy of abstraction over action, and the understanding of the role of agency in the thought process. Prehistoric instruments are clearly elements of a preliterate system of theorization, in which iterations of observation, prediction, and design experimentation, over a long period of time, produced tools that structured sound, but, more importantly, mediated the transmission of working knowledge from person to person, generation to generation, culture to culture. It would be a mistake to invent a teleology linking present and prehistory systems of musical thought, for many reasons, not least of which are the questions of *whose* music, and *whose* history is being imagined. Yet, it is tantalizing to think that traditions of music pedagogy, in its most basic meaning, are more temporally related to the emergence of clothing, tool-crafting, and burying our dead, than

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12. Kirsh, David. 2013. "Embodied Cognition and the Magical Future of Interaction Design." *ACM Trans. Comput.-Hum. Interact.* 20 (1): 3:1–3:30

the formalization of laws, the rise of city-states, or even agriculture. And the more we consider the likelihood of a nebulous protomusical coevolution with the capacity for language,[13] the more arbitrary it seems to adhere to a teaching paradigm that begins at the level of literacy. Given the evidence that at least 90% (though likely more) of the span of time that at least some humans have been making and teaching music occurred prior to the invention of writing, currency, and other symbolic systems of capital, the lens of embodiment has much to offer to serious discussions of curricular reform.

What music students today are asking for (Chapter 2: diversity, creativity, integration), and the directions institutions are currently moving (Chapter 3: expanded repertoire, improvisation, application, etc.), in various terms, can be read as a leaning away from the linguistic/rhetorical model that has dominated its recent history, toward a paradigm resembling that of embodiment. 'Resemble' is a required qualifier here, as the embodiment thesis has taken on many shades of usage over the past thirty years. Principal sources of what is known as the embodied movement would be George Lakoff and Mark Johnson.[14] Johnson lays out the basic premise of embodiment in these terms: "Our reality is shaped by the patterns of our bodily movement, the contours of our spatial and temporal orientation, and the forms of our interaction with objects."[15] Music has been explored at length through this lens, also in various shades,[16] though it often seen as vague by those who find it difficult to explore empirically. It should also be clarified that embodiment and

13. Mithen, S. J.. 2006. The Singing Neanderthals: the Origins of Music, Language, Mind and Body Cambridge, Mass.: Harvard University Press.
14. Lakoff, George. Johnson, Mark. 2003 (1980). Metaphors We Live By. University of Chicago Press.
15. Johnson, M. 1987. The body in the mind: The bodily basis of meaning, imagination, and reason. Chicago, IL, US: University of Chicago Press. xix.
16. See Leman (2007) who describes music as a mediating technolgy; Reybrouck (2005) who described music as emergent sensorimotor coupling; Clarke (2005) who provides a Gibsonian ecological account.

embodied cognition, though related, have separate histories, with the former having roots in phenomenological philosophy, and the latter in early twentieth-century cybernetics.

I have adopted the social framing of embodiment offered by anthropologist Thomas Csordas, who defines it not merely as a perspective, but as an indeterminate methodological field concerned with "the problem of our bodies in the world." I use this framing to trace the evolution of how theorists have addressed this 'problem' in the form of their musical theories, focusing on those moments that have been the most pivotal in the evolution of pedagogy.

The Natural Order: Metaphysical Speculation pre-Rameau.

In the sixth century CE, Christian philosopher Boethius described the threefold classification of music, extending the metaphysics of Pythagoras: *musica mundana* (describing the music of the spheres), *musica humana* (harmony of the human body and spiritual harmony), and *musica instrumentalis* (instrumental music),[17] with all three united in a general theory of universal harmonics. Theoretical treatises in the middle ages did not stray far from Boethius' basic epistemology, but varied in intellectual styles and alternating emphases on universal speculation, and the pragmatic concerns of harmonic interval calculation and organizational theories. As the heliocentric astronomical model gradually diminished the status of cosmic theories of harmony, the philosophical domain of Nature became the preferred vehicle for speculation, and the basis for explaining the place of music in the grand narrative of Natural order.

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17. Christensen. p. 146

In his 1588 treatise,[18] English academic John Case describes music as having dual citizenship in the Kingdom of God and the physical realm of Nature, as does any person who engages in music knowledgeably, and in doing so align themselves with the "natural order." Descartes, in his 1618 *Compendium musicae*, states that if two drums are struck simultaneously, with one being made from a sheep's skin and one with a wolf's skin, the drum with the sheep's skin will not sound, in alignment with the transcendent hierarchy of the natural order in which the sheep fears the wolf.[19] The fact that Descartes, a core player in the scientific revolution, could be swayed by such a transcendental hierarchy points us to a fundamentally different epistemology: an account of what constitutes Nature, the Great Chain of Being that all things and living beings obey.[20] Musical theories – to appropriate a line from Nietzsche[21] – at their core represent the confessions of the music theorist, or in the words of Daniel Miller, manifestations of their "attempts to transform the world in order to make it accord with beliefs as to how the world should be."[22]

Recent scholarship has re-emphasized the mutual interplay between theology and the development of the natural sciences during the seventeenth century. The Reformation conceived of Nature as entirely passive, with God holding complete sovereignty over this non-resisting force and could command natural things to behave in any way.[23] Yet by the

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18. Case, John. 1588. *Apologia Musices tam Vocalis Quam Instrumentalis et Mixtae*
19. René Descartes. 1961 (1618). *Compendium of Music*, trans. Walter Robert, notes by Charles Kent. n.p.: American Institute of Musicology.
20. Lovejoy, Arthur. 1936. The Great Chain of Being. Harvard Univ. Press,
21. To paraphrase Nietzsche: "It has gradually become clear to me what every great philosophy up till now has consisted of – namely, the confession of its originator, and a species of involuntary and unconscious autobiography; and moreover that the moral (or immoral) purpose in every philosophy has constituted the true vital germ out of which the entire plant has always grown." Nietzsche, F. 1886. "Beyond Good and Evil". Prelude to a Philosophy of the Future.
22. Miller, Daniel; Introduction to *Materiality*, Duke Univ. Press, 2005
23. Case, John, *The Praise of Musicke; wherein...is described the sober and lawful use of the same in the Congregation and Church of God*, 1586, in Music & Letters, Oxford Univ. Press ,Vol. 55, No. 4, Oct., 1974

time of the Restoration in England, the application of mathematics and sense data had influenced both natural theology and philosophy.[24] Humans were now an extension of God's sovereignty. What was meant by 'civilization' — the process of becoming civilized — was the subduing and transformation of natural things into artificial marvels, a hedge against disorder, and sin. Middle seventeenth century English agricultural writer Hugh Plat likens nature's elevation into art to the ensoulment of an unruly body:

> Art doth perfect Nature, for although Nature appears a most fair and fruitful Body, and as admirable in her variety as abundance; yet the Art here mentioned is as a Soul to inform that Body, to examine and refine her actions, and to teach her to understand those abilities of her own, which before lay undiscovered to her.[25]

Although Plat's waxing about gardens is rather innocuous, in and of itself, it illustrates a metanarrative[26] that permeated Renaissance culture, from its art and scholarship, its expansion of trade and colonialism, down to the level of the individual body's moral imperative to be subdued, ensouled, in-formed by natural order.

By the eighteenth century the Scientific Revolution determined that music theory would double down on its empirical project, shedding much of its former speculative and metaphysical character. For every defender of music theory, such as Rameau or Mizler (founder of the Society of Musical Science), there were critics such as Johann Mattheson, who would harangue the discipline as musical mathematics whose operatives were system

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24. For instance in Thomas Mace's influential treatise the rules of music rooted in nature, as well as a mystical blend of nature and divinity founded largely on number.
25. Plat, Hugh. 1653. The Jewel House of Art and Nature.
26. It should be noted that Christianity, especially a burgeoning Protestant ethic, was a primary driver of the theology that connected civilization with the subduing of a sinful body. Genesis 1:28- "Be fruitful and multiply and fill the earth and subdue it," Romans 8:13- "For if you live according to the flesh you will die, but if by the Spirit you put to death the deeds of the body, you will live."

builders deafly constructing elaborate numerical edifices with no regard for musicality. For most progressive thinkers of the Enlightenment, music treatises were viewed suspiciously in comparison to unprecedented advances in natural scientific fields such as physics, chemistry, and geology. In an effort to save the discipline from becoming an increasingly rarified collection of measurements and rules, the late eighteenth-century theorist Johann Forkel steered theory away from scientism, and was the first to define it as a primarily pedagogical discipline, abstracted through a specific analogy to language. In his, what we might call 'curriculum,' Forkel identifies five categories:[27] physics, mathematics, grammar,[28] rhetoric, and criticism. For the first time, music theory's core identity was something other than empirical or speculative, also shifting the dynamic between theory and practice. Previously theory had functioned as a preliminary foundation for practice, but, after Forkel, practical pedagogy became a subset of theory study.[29]

Rameau's "Below Understanding".

Prior to Forkel, who wrote during Mozart's lifetime, there was Rameau, who wrote during the lifetime of J.S. Bach. Forkel's conception of harmony (studied within his musical grammar) would have drawn from Rameau's well-known establishment of the ground bass, as well as his lesser-known contributions to pedagogy. Rameau is widely acknowledged as the founder of modern harmonic theory. And though, like others during his time, he was driven to ground music in a natural principle, he is also the first to describe

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27. Forkel, J. 1967. Allgemeine Geschichte der Musik, Göttingen, Schwickert, 1788; facs. Graz, Akademische Druck- und Verlagsanstalt.
28. Grammar includes I- tones, scales, keys, modes, melodic patterns, II- harmony, III- rhythm, including prosody, accent, meter, and phrase
29. Christensen. p. 9.

a dimension of musical understanding that can be said to be intuitive, instinctual, unconscious, and, I would argue, embodied. His discovery of the harmonic series led to his development of the principle of *corps sonore* ("sounding body"), the starting place for his theory of a quasi-grammatical, unconscious process of hearing relations between tones. From the publication of his *Nouvean systeme* in 1726 until the end of his life Rameau insisted on the unique role of the *corps sonore* as the source of all kinds of propositional relations, centrally the fundamental bass, the proper operations of which, he proposes, are understood intuitively by the listener.[30] Rameau proposed that humans had gradually derived the principles of the fundamental bass as a logical consequence of the music's orderly nature: "The fundamental bass is the musician's invisible guide, which has always directed [the composer] in all his musical works without his having noticed it."[31]

For Rameau, this intuitive perception is what allows a listener to perceive notes that aren't present (at least not as fundamentals), but instinctively presumed when the logic of a progression mandates their presence. He saw this phenomenon as pointing to a deeper understanding which he termed *le sous-entendu*, literally translated as "the below understanding," or "the under-hearing," a natural ability that gives rise to tacitly held principles or rules that govern our musical, as well as linguistic, behavior, in both the acts of production and reception.

> By the word *sous-entendre* one must be made aware that the sound to which
> it is applied can be heard in chords in which they are not in fact present; and
> with regard to the fundamental sound, it is even necessary to imagine that

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30. Jean-Philippe Rameau, *Traite de l'harmonic reduite a ses principes naturels* (1722), in *Jean-Philippe Rameau: Complete Theoretical Writings* by Erwin R. Jacobi
Review by: Paul Henry Lang, The Musical Quarterly, Vol. 57, No. 4 (Oct., 1971), Oxford Univ. Press, pp. 677-684
31. *Generation harmonique, Preface,* fol. iii.

this sound may be heard below the other sounds when one says that it is *sous-entendu.*[32]

It is not a stretch to interpret Rameau's *sous-entendu* as a description of what we'd now term as an offline cognitive process, as suggested by Brian Hyer.[33] While writing 150 years before psychology would be a self-conscious discipline, it is well after Cartesian physics (including mind-body dualism) had been firmly established in the natural sciences, and would have been the accepted paradigm of Rameau's audience. So, it would have been difficult for readers to categorize Rameau's concept as either a mental ability — and thus subject to the rational or epistemological critique — or a physical operation — subject to scientific experimentation or mechanical description. For Rameau it is the physical ear (*l'orelle*) that gives rise to a way of knowing that, though being non-rational, could be sophisticated through training. Occurring without conscious awareness, the sensation produced by the ear constitutes an unconscious deduction, though not proper "knowledge," and thus not a product of the mind. In his writing Rameau is clearly reaching the limits of what can be described in the terms that were available to him.

> I call ignorance all knowledge that comes solely from an experience formed simply from sensation. This knowledge is not, properly speaking, knowledge; it is only a reminiscence of an effect felt on the occasion of a certain arrangement among the parts, the cause of which is not known.[34]

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32. Rameau. 1722. *Traité*, Table des Termes. p. xxi
33. Hyer, Brian. 1996. 'Before Rameau and After.' *Music Analysis* 15. 81
34. Rameau, *Génération harmonique, Préface*

In working to establish a natural principle, Rameau had no ambitions of breaking with Cartesian physics. Still, his account of *le sous-entendu* pushed toward a dynamic, non-dualist way of thinking about the act of listening, inferring a different soul/body dynamic than that forwarded by Renaissance theorists, where the soul's taming of the body was exclusively a one-way phenomenon. Rather than presenting a musical theory as a form of knowledge to be comprehended by the conscious mind, Rameau's radical theory aims to explain the contributions of the sensory experience of the ear to the body-based offline cognition of music. Careful to keep the *sensus* of the *l'orelle* sufficiently distinct from the *ratio* of the mind, *le sous-entendu* attempts to account for the ear's unconscious sensation of acoustic information that underlies the rational process of composing music.

Later publications see Rameau's cryptic use of the word "instinct":

It is from [Nature] that we have that feeling that moves us all in our musical operations; she has made us a gift of it, which we can call Instinct…Music is natural to us. We owe only to pure Instinct the agreeable feeling it makes us experience.[35]

It is this instinct that enables humans to experience and respond to the *corps sonore*. It is unclear what Rameau meant by "instinct." The dictionary of his time first defined "instinct" as "that which belongs to the animals, a feeling or movement independent of reflection or reason."[36] By asserting a level of instinct, Rameau seems to presume a dimension of animality to human musicality, though, consistent with the vernacular, he attributes this to the grander gifts of Nature. He oscillates between two distinct understandings of nature: the modern scientific nature, and the providential Nature. The two are merely different

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35. Rameau. 1754. *Observations sur notre instinct pour la musique, Préface.*
36. *Dictionnaire de l'Académie Française*, 5th Ed. 1798. Paris.

sides of the same phenomenon, which ultimately allows for his understanding of unconscious musical knowledge. In his way of thinking, there is no epistemological gap between subjective knowledge and objective event to be overcome. The same nature that operates in the *corps sonore* as a physical phenomenon also arises within the individual as a faculty of sensation with or without apprehension by means of reason.

Of course Rameau's primary contribution to music theory was his discovery of harmonics, and development of the fundamental bass. Not knowing how to build upon *le sous-entendu*, theorists after Rameau would progress in a bifurcated manner along the familiar dividing lines of Cartesian dualism. This peaked in 1879 with the publication of Helmholtz' *On the Sensations of Tone*, which thoroughly grounded theory in an experimental scientific paradigm, forming the spine of mainstream theory through the twentieth century (a more substantial analysis of the mixed legacies of Descartes and Helmholtz will be discussed in Chapter 6).

Benjamin Steege writes about a brief but lively "forgotten chapter"[37] in the history of music theory in which theoreticians (Bekker, Cohn, Güldenstein, among others) productively engaged with the mid twentieth-century phenomenologists, such as Merleau-Ponty, who drew upon Husserl's critique of psychologism: that psychological data, whether culled from subjective introspection or experimental procedures, could not be taken as an adequate ground for knowledge. With concerns ranging from theories of form and tonality, to the formal conditions for music-theoretical logic, to the historical significance of sonority. From Husserl's "return to things themselves" emerged a "critique of musical

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37. Steege, B. 2013. "Society for Music Theory." Conference Proceedings, edited by M. Buchler and V. Long, 97. Charlotte, NC.

consciousness and its objects," and aesthetics itself was to be redefined by these theoreticians as a *Wegbereitung* or "preparation" for "turning toward" music, rather than a naturalistic interpretation of music's effects on the listener *ex post facto*.

It was in this brief phenomenological climate that Émile Jaques-Dalcroze[38] developed Eurhythmics – a pedagogical approach to teaching rhythm, music structure, and musical expression with minimal reliance on verbal instruction or notation. Rather, the idea was to exploit students' capacity for learning by doing, rather than through second-hand abstractions of theoretical description. Adopting these ideas, the ensuing Kodály, Orff, and Suzuki methods (though differing) also succeed in bringing music theory out of the skull through modes of kinesthetic engagement, similarly attempting to "transcend an instructional mode by which music theory is perceived to be independent of music practice,"[39] or an "artificial construct of limited relevance or interest."[40] These approaches also incorporate bodily movement into a social framework for musical participation and exchange, representing a tradition that, in theory, regards music theory as an embodied, enacted, and extended discipline.

These movements, or perhaps how they are commonly applied, are not without their shortcomings. Kodály, for instance, has become a moderately popular system of "harmony-signing"[41] with hand gestures even in collegiate classrooms. While these procedures provide an enactive mode for introducing initial diatonic concepts, its capacity for

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38. Dalcroze, Émile Jaques. 1980 (1921). "Rhythm, music and education." Trans. H. Rubinstein. THe Dalcroze Society Inc., London.
39. Welch. 2001. "The misunderstanding of music". Institute of Education, University of London.
40. Ross. 1995. "What is wrong with school music?" British Journal of Music Education. 12: 185
41. The Kodály method uses a lexicon of hand/arm gestures to signify scale degrees, outline chords, while groups sign harmony in multiple parts. Overall, this approach helps make explicit some features of harmonic motion that are obscured by notation and theory exercises.

complexity quickly becomes evident as it drops out of use in learning higher concepts, and further reinforcing a strictly intellectual view of music theory. Moreover, these approaches adhere to a view of music structure that is overtly teleological, with a Helmholtzian naturalistic account of music consciousness at its heart: "Harmonic signing is first and foremost concerned with the harmonic series, which governs what we discern as consonant or dissonant as a fact of nature, like the speed of light, the temperature of absolute zero, or the boiling point of water."[42] In this system, the raw 'facts' of auditory perception are conflated with a structuralist teleology in which 'structural listening' facilitates a naturalistic musical meaning. The result is a pedagogy designed to acculturate students into the codes underlying Western art music, composing a body politic strongly allied with the prestige of its canon.[43]

Following these phenomenological music theorists, the most forceful reemergence of what can be considered an embodied account of music structure came not from a music theorist, but a semiotician.

Structure, Meaning, Grain.

Given that musical theories are generated *a posteriori*, it has always been the prerogative of the musician to determine their meaning, to decide how their work, their intuition, stands in relation to the theories presented to them during their training. Schoenberg, who initiated art music's firm break from the metanarrative of Western tonality in the early twentieth century, made his orientation clear: "To hell with all these

42. Bannon. 2010. "Embodied Music Theory: New Pedagogy for Creative and Aural Development." Journal of Music Theory Pedagogy 24: 202.
43. Hund, J. 2014. "What is the Discipline of Music Appreciation? Reconsidering the Concert Report." Journal of Music History Pedagogy 4(2): 255–72.

theories, if they always serve only to block the evolution of the art and if their positive achievement consists in nothing more than helping those who will compose badly anyway to learn it quickly."[44] Though while dismissing theoretical traditions, in other moments he acknowledges the governance of an implicit theory: "As soon as a tone is misplaced…coherency seems destroyed. Laws apparently prevail here. What they are, I do not know. Perhaps I shall know in a few years. Perhaps someone after me will find them."[45]

Leonard Bernstein, the highly public New York Philharmonic conductor who for decades participated equally in artistic and popular spheres, delivered a series of famous lectures at Harvard in 1973. In these lectures Bernstein reflected upon a long and uniquely successful career, and described the "crisis" that beset the world of classical music increasingly divorced from some defining universal. Closing the lectures in a solemn tone, Bernstein proposed his own natural theory on which music is based: "I believe a new eclecticism is at hand…No matter how serial or stochastic, or otherwise intellectualized music may be, it can always qualify as poetry as long as it is rooted in Earth." He continued, "I believe from the Earth emerges a musical poetry, which is by the nature of its sources tonal. I believe that the sources cause to exist a phonology of music, which evolves from the universal known as the harmonic series." Bernstein's poetics thus reifies the metanarrative of Western tonality.

Semiotician Roland Barthes provides a postmodern critique of the Western fascination with the search for meaning, which he sees manifested in this project of tonality to which Bernstein alludes. Barthes counters with the example of traditional Japanese

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44. Schoenberg, Arnold. 1978. *Theory of Harmony*, trans. Roy Carter, Faber and Faber. p. 345
45. Ibid, pg. 421

music, such as *Noh*, in which there exists no distinction between noise and music. This tradition dictates that musical sound has to be heard with environmental sounds around it, the intensity or sophistication thought to disappear in the attempt to graft a logic or a meaning onto the sound. Barthes deconstructs Western aesthetics and the role of Platonic metaphysics on historical understandings of theorizing music,[46] and proposes his notion of the *grain* to fill out what has been largely neglected. The grain is the precise space between language and voice: neither wholly vocal, nor wholly linguistic; neither sign nor signified. As such, its status is ambiguous; it does not want to be interpreted by language. According to Barthes, Western civilization perpetuates the desire to fill signs with meanings, whereas Japanese culture avoids this project. This situation, in which all signs simply exist without signifying any assigned meaning, is what Barthes calls 'the grain.' Other foundational conventions of Western art music, such as the duality of performer and audience, do not exist in some Japanese art forms, which traditionally featured no written or spoken word; rather, students watch and listen, in essence, to the grain.

Barthes' interest in music, aside from his being a notable amateur musician, stems from its clear links to gesture and signification, yet peculiar resistance to language. His unique position as musician and semiotician provides a unique edge to his critique of linguistic approaches to music analysis. In his call for a second semiology, Barthes responds to the limitation of these approaches by describing the 'body in a state of music', an image-text containing four experiential dimensions: gesture, pulsion, grain, and *jouissance*. For Barthes, the meaning in music is plural, which is not simply to say that it

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46. Barthes, Roland. 1978. *Image-Music-Text*; trans. by Stephen Heath. Macmillan.

has several meanings, but that it "accomplishes the very plural of meaning: an irreducible plural…not a co-existence of meanings, but a passage, an overcrossing; thus it answers not to an interpretation, even a liberal one, but to an explosion, a dissemination."[47] Given that language deals with music "very badly," his solution to displace the point of contact between music and language. Barthes suggests the grain to be that new point, defined as: "the materiality of the body speaking in its mother tongue."[48] The grain is the body in the voice as it sings, the hand as it writes, the limb as it performs.

> If I perceive the 'grain' in a piece of music and accord this a theoretical value, I inevitably set up a new scheme of evaluation…made outside of any law of culture but equally that of anti-culture…I shall not judge a performance according to the rules of interpretation, the constraints of style, (nor the 'rigour', 'brilliance', 'warmth', or 'respect for what is written') but according to the *image of the body* given me…This discussion has been limited to 'classical music.' It goes without saying, however, that the simple consideration of 'grain' in music could lead to a different history of music from the one we know now, which is purely pheno-textual.[49]

By 'pheno-text', Barthes is referring to all of the aspects of music that form a communication, including style, form, phrase, grammar, and all cultural references therein. This is contrasted with the grain, which is the fiber of the music's geno-text: musical attributes that can be felt as a bodily sensation of another body through sonorous touch. And it's not just the performer, but also the listener's body that is able to enter into a 'state of music' at the level of the geno-text. This is possible because the geno-text is more than communication via a symbol system, it contains muscular events, coordination, concentric

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47. Barthes, Roland. 1977. From Work to Text. Image/Music/Text. p. 159.
48. Barthes, R. 1991. The grain of the voice. In *The responsibility of forms: Critical essays on music, art and representation* Berkeley, CA: University of California Press. p. 261.
49. Ibid., p. 180-189. Emphasis added.

perceptions and responses, the hearing of which is one only of "ratification," as though the body (not the mind) were hearing. When music is treated as a rhetorical text, theorists only interact with the phone-textual elements of the music work. But the real product of the composer, the substance of the work, is "to give to do, not to give to hear, but to give to write."[50]

Barthes' insights as a semiotician remain a challenge to theorists and educators currently redefining the role of theory study. What would it mean to engage with the grain in a theory classroom? How does viewing the musical work as a 'to give to do' upset current curricular models built around the descriptive analysis of the pheno-text, and refigure the agency of the learner? How is the agency of the learner oriented in a theory class setting, and is there room for fostering a more geno-textual analysis or engagement? In order to answer these questions at the curricular level, a framework must be established for understanding how music theoretical tradition maps onto notions of agency in the integration of body and world.

Body-World Relations: Vectors of Agency in Speculative, Regulative, and Analytic Theory

> The properties of materials, in short, are not attributes but histories.[51]
> — Timothy Ingold

To regard music as immaterial would be a step backward; yet treating it expressly as 'a material' is also problematic. To paraphrase Georgina Born,[52] music is perhaps the

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50. Barthes, "*Musica Practica*," in Image, Music, Text, pp. 149-154
51. Ingold, Timothy. 2007. Materials against Materiality. Archaeological Dialogues. Cambridge University Press p. 15.
52. "…music is perhaps the most paradigmatic multiply-mediated, immaterial and material, fluid quasi-

most fluid "quasi-object" in which subjects and objects collide and intermingle. If this really is the case, and has always been the case, we would predict that music theorists over time would need to invent a range of quasi-objective tools and paradigms in order to relate to this fluid and unstable phenomena. This is precisely what we see. Music theory's perpetual defiance of its own history is the best reflection of the fluidity of its subject. Thomas Christensen, building from Carl Dahlhaus, identifies three separate, but simultaneous traditions within the history of music theory: the speculative, the regulative, and the analytic. To restate, speculative theory is concerned with grounding musical experience in a larger account or narrative, such as cosmology (Plato's music of the spheres); regulative theory is concerned with constructing systems of musical practice (*Gradus Ad Parnassum*); and analytic theory is concerned with the understanding of existing works (e.g. Shenkerian analysis). The status of each tradition has ebbed and flowed, each with its own history, perspective, and mythology. I argue that these three modes represent distinct orientations of body-world relations. Applying the methodology posed by Thomas Csordas, I will model each of these traditions from an embodied perspective, and relate this embodied reading to present curricular shifts.

Csordas presents embodiment as an indeterminate methodological field[53] concerned with perceptual experience, and modes of presence and engagement in the world. Our embodiment partakes in three subfields: corporality (the fact of bodily form, sensory experience, movement, intentionality, temporality), materiality (with a threshold between

object in which subjects and objects collide and intermingle." Born, G. 2005. On Musical Mediation: Ontology, Technology and Creativity. *Twentieth-Century Music, 2*(1), 7-36.

53. This phrase explicitly paraphrases the definition proposed by Roland Barthes (1986:57-8) of the text or textuality as an "indeterminate methodological field caught up in a discourse and experienced as activity and production" in contrast to the work (book) as a material object that occupies space.

animate and inanimate, rather than between body and immaterial mind, soul, spirit, etc.),

and animality (the physiological and metabolic activity of life). Toward establishing a

topology of embodiment, Csordas juxtaposes the philosophical work of Merleau-Ponty,

Bourdieu, and Foucault, observing the complementarity of their positions in addressing the

problem of human bodies and human agency in the world. He identifies three elementary

structures of agency derived from the body–world paradigms proposed by each in their

writings: (1) the operative locus of agency, (2) the modality in which agency is exercised,

and (3) the vector of agency: (Fig. 4.1)

1)   The operative locus of agency is for Merleau-Ponty at the level of the for-itself, for

       Bourdieu at the level of the *habitus*, and for Foucault at the level of discourse.

2)   The modality in which agency is exercised is for Merleau-Ponty intention, for

       Bourdieu practice, and for Foucault power.

	Merleau-Ponty	Bourdieu	Foucault
Locus	existence	habitus	power relations
Mode	intentionality	practice	discourse
Vector	being-toward-the world	reciprocity	world-upon-body
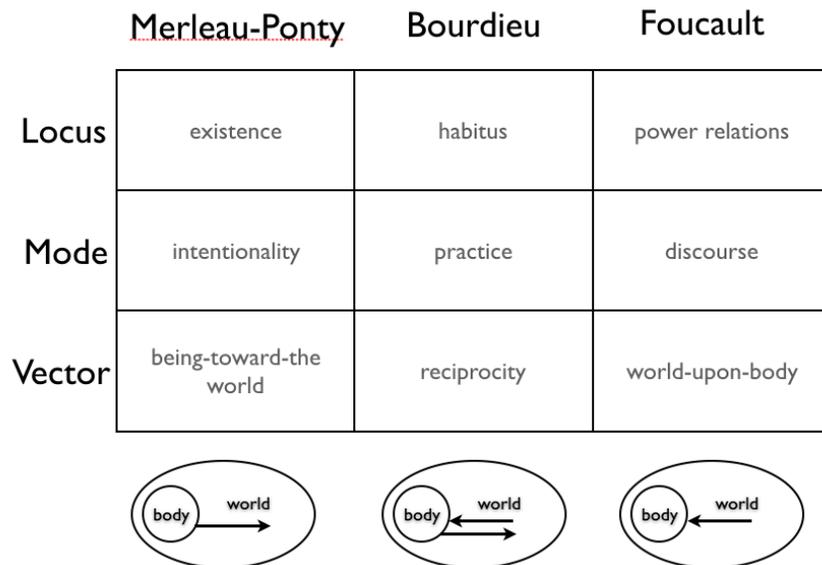
Figure 4.1: Body-World relations described by Merleau-Ponty, Bourdieu, and Foucault

3)   The vector of agency (for it has a directionality) is for Merleau-Ponty from our bodies

to the world in the sense of projecting into and orienting to the world. For Bourdieu

the vector is a double one, pointing in opposite and reciprocal directions between our

bodies and the world that we inhabit and that inhabits us. For Foucault the vector is

from the world toward our bodies in the sense of inscribing itself upon or

incorporating itself into us.[54]

Csordas presents this matrix as a tool for transdisciplinary analysis, rather than as a

methodological reduction or summary of each author. The three paradigms represent three

possible orientations of body-world, and the nature of their relation. The three traditions

within the field of music theory (speculative, regulative, analytic) align with these body-

world orientations modeled by Merleau-Ponty, Bourdieu, and Foucault, respectively. That

is, the project of speculative music theory has been the pondering of the (proper) orientation

of one's body toward the outer world (i.e. physical, cosmological, theological); while

regulative theory has been primarily concerned with what Bourdieu describes as the

habitus, the reciprocation between body and world in the mode of practice; and analytic

theory, which allows for the development of discursive tools designed to reify, neutralize,

or critique the power of the masterwork — the product of 'the master' — exerted upon the

musicking body.

Merleau-Ponty's phenomenology inverts the common image of a body placed within

a world, saying: "The body is our general means for having a world."[55] When Pythagoras

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54. Csordas, Ibid. pg. 7
55. Merleau-Ponty, M. 1945.

contemplated the music of the spheres, Rameau postulated *le sous-entendre* and *corps sonore*, Bernstein presented the poetics of nature as an answer to Ives' Unanswered Question, and even when Schoenberg announced "To hell with the rules," we interface with the tradition of speculative music theory. These are the confessions of theorists' orientation toward their world, and, in various terms, their treatises testify to their sense of corporality, materiality, and animality. For example, Rameau's previously speculative theories reflect his thinking of each of these subfields, *corps sonore* (sounding body) reflecting corporality, *sous-entendre* (below understanding) a reflection of materiality (the body as "touching-touched, seeing-seen…the capacity to relate itself to something other than its own mass"),[56] and instinct (as understood at the time) a reflection of animality.

In this sense, speculative theories are a form of phenomenological account forwarded by the theorist, or in Merleau-Ponty's terms, the products of intentional acts that posture the body as being-toward-the-world. 'Intentional' in this context isn't referring to an action that is purposeful or premeditated, but rather evokes Husserl's reference to "a teleology of consciousness…recognizing itself as a project of the world, meant for a world which it neither embraces nor possesses, but toward which it is perpetually directed."[57] From this perspective, from Pythagoras to Schoenberg and beyond, the act of musical speculation can be viewed as the projection of 'intentional threads'[58] from the musicking body toward the world, linking one's sensation with oneself in the medium of what Merleau-Ponty describes as the "thickness" of sensory experience.

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56. Merleau Ponty, Maurice. *Nature*: Course Notes from the Collège de France. Compiled with notes by Dominique Séglaard, trans. by Robert Vallier. 2003. Evanston: Northwestern University Press.
57. Merleau-Ponty. 1962. *Phenomenology of Perception:* The Spatiality of the Lived Body and Motility. London: Routledge. xviii.
58. Ibid. p. 106.

Every perception takes place in an atmosphere of generality, and is presented to us anonymously…Every time I experience a sensation, I feel that it concerns not my own being, the one for which I am responsible, and for which I make decisions, but another self, which has already sided with the world…Between my sensation and myself there stands always the thickness of some primordial acquisition which prevents my experience from being clear to itself.[59]

The body responds to this 'thickness' by assuming a "posture," a recurrent term in Merleau-Ponty's writing. In this formulation 'posture' does not refer to a physical stance, or a metaphor for a moral stance, but as a synthesis, a conditional tension in which the body and world are synthesized. It is through speculation that the theorist determines how to posture their bodies and intensions toward the musical phenomenon they perceive.

The musical phenomenon, it should be said, consists of more than just sonic phenomena, but also the social, cultural, economic, and material dimensions of musical systems, all synthesized with the body in the particularity of the posture, both literally and metaphorically. A theorist may assume a cosmological posture (Boethius), a theological posture (John Case), an empirical posture (Helmholtz), a postmodern posture (Cage), each in-formed by and, in turn, reifying the world in which they make music. Not unlike the way Darwin's progression of man depicts the gradual shifts in physical posture toward standing more and more upright in response to changing environmental demands and opportunities, the tradition of *musica speculativa* testifies to the evolution of the theorists' conceptual 'posture,' synthesized in their intentional being toward their world. This tradition is the only one of the three to engage with sound at a deeply phenomenological

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59. Ibid. p. 215–216

level. Or, in other words, when the speculative theorist turns to 'face the music,' it's not the music's fundaments on the line, but their own.

Regulative theories are concerned with *musica practica*, the application of aesthetics, systems, and structures toward musical practice, which saw a surge in innovation through treatises from the late medieval and early Renaissance, and slowing down by the mid-Romantic era. In these treatises it was critical for theorists to substantiate their *musica practica* by reference to a speculative theory, regarded as a requisite prelude. This is exemplified by the most enduring of regulative theories — Johannes Fux' vastly influential *Gradus Ad Parnassum* published in 1725. The first part, *musica speculativa*, reified familiar mathematical theories of interval proportions, while also affirming the authority of the listening experience over numbers.[60] The second part, *musica practica*, unfurled his species counterpoint, the gradated system for approaching the art of composing. Fux states his purpose at the outset of his treatise: "to invent a simple method by which a student can progress, step by step, to the heights of compositional mastery...I will not be deterred by the most passionate haters of study, nor by the depravity of the present time." The balanced interplay between the speculative and regulative is critical for the staying power of Fux' approach, and underlies the Fuxian truism: theory without practice is useless.

Thus, for Fux, the vector of agency between body and world is, in the Bourdieuian sense, reciprocal, the agent ("a student") simultaneously inhabiting the world and being inhabited by the world in a progressive mode of practice, the end goal ("mastery") evident in the automated execution of what was once inaccessible. The formulation and goal of this

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60. "Because experience told us that one cannot do this by means of figures, the ear was called in to help, by taking away an almost non-detectable amount from one note and adding it to the others." Fux, Johann Joseph. 1742. *Gradus ad Parnassum*. Leipzig: Mizler. p. 52.

paradigm relates closely to Bourdieu's *habitus*: "*Habitus* provides base of *doxa*, the par excellence of '*Cogitatio caeca vel symbolica*' (blind or symbolic thought)".[61] Under the guidance of regulatory procedures (i.e. conditional freedoms), such as progressive polyphony, species counterpoint, fugue, etc., a learner conditions their body in a cycle of perception and expression that simultaneously alters the student and the sonic world that they experience, processing in an upward spiral toward mastery. Central to regulative theory, as to the *habitus*, is the process-toward — rather than the nature-of — the projected mastery, which is the domain of speculative theory.

> Because the *habitus* is an infinite capacity for generating products-thoughts, perceptions, expressions and actions – whose limits are set by the historically and socially situated conditions of its production, the conditions and conditional freedom it provides is as remote from creation and unpredictable novelty as it is from simple mechanical reproduction of the original conditioning.[62]

For Bourdieu, because there is a harmonization of the agents' experiences and the constant reinforcement each of them receives from expression, and because of the harmony between practical sense and objectified meaning, practices exhibit an objective intention "transcending subjective intentions and conscious projects."[63]

A recent survey of music theory students (presented in Chapter 2) indicates that students often feel the purpose of theory study[64] has not always been well-communicated.

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61. Bourdieu; *The Logic of Practice*: Structures, *Habitus*, Practices; Stanford Univ. Press, 1990, p. 68
62. Ibid., p. 55.
63. Ibid. p. 58.
64. "I also think music theory needs to be presented as something that is alive and constantly being updated and information being added to. As a result, students often, for no fault of their own, really have no clue as to what is and isn't out there or why they're studying what they're studying or where it comes from, etc." Gutierrez. 2018. p. 26.

Stated in a more diachronic framing, we might say that *musica practica* has not been placed in dialogue with *musica speculativa*, collapsing the reciprocal body-world interaction. Lacking a speculative framing, the conditions and conditional freedoms that comprise the *habitus* are, as one would expect, seen as arbitrary rules; the bidirectional vectors of agency that ought to define regulative theory fold into a Foucauldian power dynamic, in which the only vector proceeds from world toward the student. Instead, presenting a myriad of speculative bases at the outset of theory courses, even an introduction to music cognition and acoustics can nurture a student's own speculative imagination, and begin to restore the reciprocal relationship between them and the sonic world.

The analytic tradition within music theory accelerated in the early seventeenth century, largely through the work and influence of Burmeister. George Buelow notes that stylistic shifts in the music of the late fifteenth and sixteenth centuries toward a more rhetorical, text-sensitive model pushed the elements of *speculativa* and *practica* to develop a vocabulary to interact with music conceived more closely according to a text.[65] This direction would also raise the status of music theory by modeling it closely after the prestigious discipline of rhetoric. A motto of rhetorical pedagogy at the time — adopted by default by analytic theory — was *praeceptum – exemplum – imitatio*: learn a principle, locate and memorize an example, and imitate it[66]. Burmeister's extensive system of figures supplied the first extensive language for music analysis in this rhetorical mode, and while today the figures themselves are obsolete, the motto tacitly remains intact. The analytic tradition, then, carries with it what Foucault identifies as the *ethos* of Modernity, with the

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65. Buelow, G. 1983. "Rhetoric and Music." Johann Mattheson and the Invention of the *Affektenlehre*," in New Mattheson Studies. Cambridge University Press. p. 250.
66. McCreless, Patrick. 2002. Ch. 27: Music and rhetoric. Christensen. p. 856.

micro-physics of power relations nested within the rhetorical pedagogy after which it modeled itself. Foucault explains:

> It is not enough to have a liking for architecture. One must also know stone-cutting (Saxe). There is a whole history to be written about such stone-cutting – a history of the utilitarian rationalization of detail in moral accountability and political control. The classical age did not initiate it; rather it accelerated it, changed its scale, gave it precise instruments, and perhaps found some echoes for it in the calculation of the infinitely small or in the description of the most detailed characteristics of natural beings.[67]

Foucault brought the body into focus within ethical discourse as a subject of political power and power relations. The physical body is subjected to a body of knowledge, defined, classified, controlled and regulated through institutions, and the social systems that comprise them. Musical analysis, as an extension of Modern aesthetics, is for Foucault centrally concerned with objects, rather than individuals or life,[68] with the vector of agency projecting from the world toward the body, inscribing itself upon or incorporating itself into the individual student.

To be clear, the point here is not to decry analysis as necessarily oppressive or corrupt as a pedagogical practice, but to recognize that the analytic tradition, as an extension of Modern rhetoric, forms a unidirectional power dynamic, a vector of agency proceeding from the world toward the body of the music learner. Learner indeed grow through discipline, but an exclusive adherence to an analyze-and-assess model too closely resembles 'discipline-and-punish.' The rhetorical dimension of analysis always carries an

67. Foucault, Michel. 1975/1977. *Discipline and Punish*, Docile Bodies. NY: Vintage. p. 139.
68. Foucault, Michel. 1997. "On The Genealogy Of Ethics: An Overview Of Work In Progress." Ethics: Subjectivity and Truth. The New Press. p. 261.

element of institutional situatedness. A curriculum that places primary emphasis on the analysis of musical works, analogous to interpreting a text, provides a student very little in the way of understanding how the work functions in the world, or how their own voice might be inserted into the process.

By juxtaposing the speculative, regulative, and analytic traditions with the body-world relations proposed by Merleau-Ponty, Bourdieu, and Foucault, what emerges is a similar complementarity between their vectors of agency. (Fig. 4.2) Over their histories each theoretical paradigm has featured various shades of deterministic thinking, though when integrated, through the lens of embodiment (as forwarded by Csordas), music theory itself becomes an indeterminate methodological field, rather than nested sets of accounts, procedures, materials, or even histories. When a curriculum privileges one or two of these traditions, be it the speculative, regulative, or analytic, it privileges one orientation of body-world relations, and in turn determines the particular mode, vector of agency, and locus of operation enacted in its implementation. Whereas a curriculum designed to *equilibrate* the three paradigms presents music theory as an indeterminate field that in-forms, accommodates, and promotes various orientations of body-world relations that converge
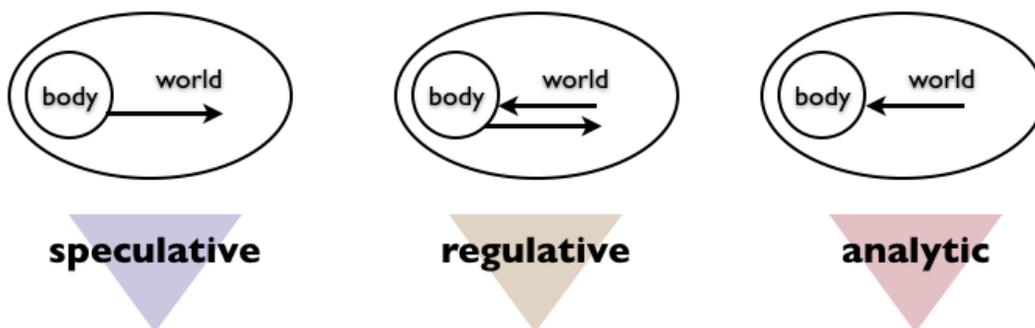
Figure 4.2: Body-World relations enacted by speculative, regulative, and analytic theory

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under the aim of *mutual transformation* (Chapter 1). From this standpoint, the curricular reforms taking place today reflect an attempt to equilibrate the vectors of agency inherent to theory study, specifically in the resurgence of what I characterize as speculative theories — those that orient the agent (student) toward the world.

Hidden Narratives of the Normalized Body.

In tracing the shifting position of the body in music theoretical discourse, it should be noted that concurrent with conceptual development of the body in relation to the world is the evolution of Western's culture's conceptualization of the disabled body. When theorists and critics mention 'the body' it has historically referred to a normatively-abled body (as seen in Schoenberg's corporealization of tonality[69]), if not an idealized body (such as Hugh Plat's "a most fair and fruitful Body"[70]). Theorists, particularly in the regulative tradition, have in large part been engaged in the project of normalizing sounds and practices perceived as ideal through a process of identifying and eliminating abnormal, or disfigured sonorities. Thus, narratives of abnormality and normalization are played out in the drama of tonality, dissonance and consonance acting as metaphors for the struggle between the unnatural and the ideal, between the divine and the *diabulus in musica*, the triumph of harmony over the din of rhetorical chaos. Historians of disability observe that prior to the nineteenth century, disability was seen as monstrous and unnatural, permanent and

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69. "The term 'form' is used in several senses. In an aesthetic sense, form means that a piece is organized: that consists of elements functioning like those of a living organism." "If one presumes that one such body could be the tonality in a piece of music, then the fundamental tone would be relatively lifeless if it did not itself contain those centrifugal and centripetal forces…Thus they become limbs, thus they perform functions, thus they independently go their own ways." (Scheonberg, 1967) "Therefore music does not depend upon the theme. For the work of art, like every living thing, is conceived as a whole — just like a child, whose arm or leg is not conceived separately. The inspiration is not the theme, but the whole work." Schoenberg, 1948.
70. Plat. 1653.

immutable. In the early nineteenth century a paradigm shift occurred in the social and cultural construction of disability, which began to be understood as something abnormal, though not necessarily permanent. The Romantic fascination with madness, and nature on its own terms, is reflected in celebration of Beethoven, who embodied how the abnormal can be normalized through music.

Joseph Straus critiques the application of embodied terms to music, pointing out that these concepts presume the metaphorical body to be normatively abled. The work of Lakoff and Johnson, and David Lewin, for instance, depend on what Garland-Thomson calls "the phantom figure of the normate."[71] While embodiment theorists emphasize the experience of the body, they rarely account for the presence not only of disability, but the centrality that the threat of disability plays in our daily lived experience. The normal body imagined by theorists (both embodiment theorists and music theorists) is "a fiction, a phantom, an idealization,"[72] opposed to the concrete and often disabled bodies that real people inhabit. All of us at times have experienced a form of disability, and the threat thereof.

This critique further supports the importance of the speculative dimension in music theory pedagogy. Having defined speculative theory as the tradition in which agency is vectored outwardly from the body toward the world in the mode of intentionality (as presented by Merleau-Ponty), one central goal of speculative theory has always been the discovery of which questions about music are the most worth asking at all, from the standpoint of the theorist. The speculative process is thus profoundly personal, phenomenological, and the only paradigm which opens space for the agent (student) to

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71. Garland-Thomson, Rosemary. 2009. *Staring: How We Look.* New York: Oxford University Press.
72. Straus, Joseph. 2011. *Extraordinary Measures: Disability in Music*. Oxford University Press.

project their 'intentional threads' from the particularity of their own body, and for a *habitus* that reflects the reciprocation between their non-normative lived experience in an unideal world. It is only through this process of intentional self-determination that any meaning can be found in analysis. Fostering what van der Schyff calls a 'phenomenological attitude'[73] allows learners to explore musical phenomena as something "we live through,"[74] an attitude that is strongly allied with the traditional function of *musica speculativa*.

The Speculative Tradition and Affordances.

Tools change the way we think and perceive, yet, not merely as mediators between our bodies and the world. Rather, according to an embodied perspective, tools are absorbed into our body schema, extending our exploratory and probative capacities. The speculative music theoretical tradition (agency vectored from body toward the world), then, advances in synchrony with the development of new tools. The effects of early hand tools (likely leading to the advent of bone flutes), the advent of writing, the printing press, vacuum tubes, transistors, etc. on music and musical thought have been well-documented. Through social media, for the first time in human history, the spoken word has a farther reach than written word. While largely considered a revolution in communication, these new tools are presently enabling us not just to interact differently, but to *think* what was previously *unthinkable*. This, is, and has always been, the speculative domain.

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73. Schyff, D van der. 2016. "From Necker Cubes to Polyrhythms: Fostering a Phenomenological Attitude in Music Education." Phenomenology & Practice 10 (1): 4–24.
74. Thompson, Eric. 2007. Mind in life: Biology, phenomenology and the sciences of mind. Cambridge, MA: Harvard University Press.

Participation in music speculation is analogous to surveying one's world for new tool-dependent affordances, be it physically, imaginatively, or experimentally, as an agent orients itself toward its world. Speculation, in this sense, is inevitable within the technocentrism governing the global economy. The sooner that curriculum reflects this, the more the classroom itself can facilitate, rather than hinder, this process. The TFUMM Manifesto, in its call to redefine music pedagogy, is itself aligned with ancient speculative tradition, as I have described it here. No less forcefully than Plato, Plat, or Rameau, Manifesto co-author Patricia Shehan Campbell links pedagogy to a larger-scale ethical imperative: "Pedagogy that amplifies instrumental skills and deemphasizes creative and critical thought impacts not only graduating students; it impacts the contours of democracy."[75]

Toward Mutual Transformation.

Thinking of the curricular change in light of this embodied reading of music theory history allows us to see 'innovations' through a much wider lens as extensions of the speculative tradition. When these three modes of theory are equilibrated in an educational setting, so is the exercise of agency between student and world. *Why* is it important that students operate in a state of equilibrated agency? Because speculation, regulation, and analysis collaborate and converge in the aim of *mutual transformation*, in which the learner, teacher, and world engage in a dynamic process of reciprocal change. When a curriculum

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75. Campbell, P.S. "The Lay of the Land." Ch. 1. "Redefining Music Studies in an Age of Change." Routledge. 2016.

stresses the regulative and analytic modes at the expense of the speculative, it inhibits this mutual transformation. The speculative space invites the student to participate at the level of theory production, but also invites reciprocal teacher participation. Both are jointly engaged in teaching and learning, both being transformed through their participation. For education theorist Barbara Rogoff, transformational participation means that "what people learn is a function of their transforming roles and understanding in the activities in which they participate."[76] Rogoff is clear that participatory learning is the mutual constitution of personal, interpersonal and cultural processes. In contrast to a banking model of learning, in which development equates to the internalization of knowledge content, the participatory perspective focuses instead on events as dynamically changing, and development is seen as transformational.

The aim of mutual transformation is the substance of my central thesis — figuring the *student* of music theory simultaneously as music *theorist*. Through a sociology of embodiment this chapter has presented a framework for understanding how this state is currently being approached through what I describe as a reemergence of the speculative tradition. Above all, however, this framework provides a model for identifying and maintaining an optimized state of mutual transformation through the equilibration of the speculative, regulative, and analytic theoretical traditions. My hope is that this larger scale description of the various diachronic aims of theory pedagogy from the standpoint of bodily agency might substantiate current directions and illuminate paths forward.

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76. Rogoff, Barbara. 1995. Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J. V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind*. p. 156. Cambridge University Press.

Conclusion.

This chapter has explored how bodily agency is modeled differently by music theoretical traditions. Linking the speculative mode with Merleau-Ponty's notion of intentionality summons additional questions that must usher us away from the sociological field. How is the body involved in speculation, which is classically seen as a purely conceptual, mind-based project? What has been the effect of Cartesian mind-body dualism on our understanding of the musician's cognitive processes? How might non-dualist accounts recast the meanings of music, of theory, of speculation, and of teaching and learning? These inquiries await you, dear reader, in Chapter 5.

Chapter 5. 4E Perspectives: The Embodied Mind and Music Cognition

"Too often […] the older dualism of soul and body has been replaced by that of the brain and the rest of the body." [1]

— John Dewey

The previous chapter presented embodiment, through a sociological lens, as an indeterminate methodological field, and provided an embodied reading of music theory history in these terms. In the domain of cognitive science and related fields, a broad thesis known as embodied cognition has emerged as a platform for challenging dualist assumptions underlying the study of the mind. Not to be confused with the sociology of embodiment explored in the previous chapter, I will present how the propositions within *embodied cognition*, though arriving to similar views, arise from a separate history. Drawing inspiration from variety of sources, including Merleau-Ponty, James Gibson, and George Lakoff, modern day embodied cognition has erupted with a remarkable pandisciplinary appeal. Its advocates, through diverse, are primarily interested in challenging established cognitivist paradigms, most notably: a foundation in Cartesian dualism; the assumption that the mind is brain-bound; the tendency to ascribe to the brain psychological concepts that only make sense when ascribed to whole organisms (mereological fallacy);[2] a reliance upon computer metaphors in describing the processes of

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1. Dewey, John. 1997 (1916). Democracy and education. Free Press. Later Printing Edition.
2. Schaal D. W. 2005. Naming our concerns about neuroscience: a review of Bennett and Hacker's philosophical foundations of neuroscience. *Journal of the experimental analysis of behavior*, *84*(3), 683–692.

the mind (computationalism); and the view that internal consciousness represents external reality (representationalism).

The field of embodied *music* cognition extends these and related perspectives to similarly challenge standard descriptions of music cognition (e.g. that musical experience is reducible to neural activity or brain states). Embodied music cognition thus carries important implications for both music theory and music education, and shifts our basic understanding of learning, teaching, and the nature of music's fundamentals. Yet, very little scholarship has explored what the perspectives of embodied music cognition mean specifically for music theory *pedagogy*. This seems to be because, on the surface, embodiment appears more closely related to musical practice (performance) than it is with theory, and conventionally construed. Another reason is contemporary theory's deep conceptual roots in dualist thought, particularly in its core emphasis upon symbolic logic and procedural knowledge.

Non-dualism and the Rise of 'E' Approaches to Cognition

Helmholtz and midcentury theorists took for granted that the *speculative space* served a function beyond the search for an objective basis. By providing a determined rule, Helmholtz' vastly influential *Sensations of Tone* unwittingly closed the space that was traditionally available to the music learner to reflexively interface with their own musicality. The previous chapter described this heuristic-speculative process through a sociological perspective of embodiment, as differentially viewed by Merleau-Ponty, Bourdieu, and Foucault. Here I turn from the social sphere toward the mind. Pivoting from a determined, skull-bound view of the mind, Embodied, Embedded, Enactive, and

Extended views of cognition form the four corners of what has emerged in recent years as a pandisciplinary school of thought known as *4E cognition*. Merleau-Ponty's distinctly phenomenological view of embodiment has had a substantial if indirect influence on 4E theorists, far more than either Bourdieu or Foucault. Thus, to varying degrees, 4E perspectives tend to promote a view of the mind in which agency vectors from the body toward the world, the mode of learning that most closely parallels the speculative theoretical tradition.

The 'E' prefixes — em-, ex-, ec-, en-, (as well as eco-) — are derived from the Latin (or Greek: eco from *oikos*), and signify either the inside-ness or outside-ness of what follows. The 'E' uprising in cognition represents a competing narrative to the conventional study of human cognition, and its narrative of the mind bounded 'inside' of the brain. 4E cognition attempts to consider a broader range of dynamics at play in a cognizing living system. The mind, in this view, includes the brain but is inextricable from the body (embodied); it is embedded (or situated) within a world with which it interrelates; it is enacted, emerging in the inter-action between autonomous agents and their environments; and perhaps is extended beyond the body by way of objects within the environment that present affordances (tools).

While 4E scholarship is itself a diverse field, it is for the most part unified in opposition to various standard cognitivist assumptions, particularly a commitment to representationalism, and a computer metaphor for the mind, both of which are manifestations of a deeper commitment to Cartesian dualism. By painting a more holistic picture of what cognition is, it also aims to avoid the *mereological fallacy*: the tendency to ascribe to the brain psychological concepts that only make sense when ascribed to whole

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animals.[3] In denouncing this fallacy, M. R. Bennett, a neuroscientist, distinguishes between what neuroscientists and cognitive scientists *can* do — elucidate brain structures that make learning, thinking, perceiving, etc. possible — from what they *cannot* do — subsume psychological explanations within neurological explanations. Or, in Bennett's cogent summary: "The brain and its activities make it possible for us—not for it—to perceive and think, to feel emotions, and to form and pursue projects."[4] Thus 4E perspectives have emerged as a non-dualist, non-reductive thought space in a response to what is seen as the failure of cognitive science to meaningfully account for the phenomenon of cognition. Founding embodied cognition theorist George Lakoff, for instance, identifies three major findings of cognitive science:[5] (1) The mind is inherently embodied; (2) Thought is mostly unconscious, (3) Abstract concepts are largely metaphorical. Less confident about even these findings, Alva Noë declares that after decades of concerted efforts on the part of neuroscientists, cognitive scientists, and psychologists, only one proposition about how the brain gives rise to a mind has emerged unchallenged: "...we don't have a clue."[6]

Many scholars in this domain are not scientists, at least not in the sense Helmholtz, Huron, or Babbitt would uphold. While they might be better described as philosophers of science, that too doesn't do justice to the pandisciplinary appeal of these ideas. Below I'll more closely examine the primary theorists in what has become the 4E tradition, beginning with biologists Humberto Maturana and Francisco Varela. Maturana and Varela introduced

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3. Ibid.
4. Bennett & Hacker. 2003. Philosophical foundations of neuroscience. Blackwell Publishing. Malden, MA: p. 3.
5. Lakoff, George. Johnson, Mark. 1999. Philosophy in the Flesh: the Embodied Mind & its Challenge to Western Thought. Basic Books. p. 3.
6. Noë, Alva. 2009. Out of Heads. Hill and Wang. New York. p. xi.

the concept of *autopoiesis* to the life sciences, and obscured the boundaries of what constitutes a living system by describing the role of situated sensorimotor coupling with the environment. Varela's later collaboration with Eleanor Rosch and Evan Thompson more explicitly explores the mind as *radically* embodied and enactive, forging a path for other 'radicals' such as Daniel Hutto and Anthony Chemero, as well as less radical enactive perspectives such as those presented by Susan Hurley and Alva Noë. Drawing upon studies by David Kirsh, Andy Clark and David Chalmers each argue that cognition is best understood as extending beyond the arbitrary bounds of the body. George Lakoff and Mark Johnson's seminal works in cognitive linguistics discussing embodied conceptual metaphor have also been vastly influential. The 4E paradigm has identified strongly with earlier work in visual perception by early twentieth century psychologist James Gibson, whose notions of affordances and ecological systems have been given a second life by so-called Neo-Gibsonians, who forward a dynamical systems approach with, again, pandisciplinary appeal. In the case of phenomenologist Maurice Merleau-Ponty, while it's difficult to trace any direct intellectual lineage, many of these thinkers draw inspiration from his writings, himself advancing ideas posed by Heidegger and Husserl.

Tracing the evolution of these ideas will clarify its varied implications for music scholarship today. For instance, contrary to a cognitivist approach to the study of music, from the perspective of embodied music cognition, music perception and musical action are not divorced, not mediated by a decoding brain, but rather dynamically interwoven in a codetermined process of musicking. In many ways the case of music, as a phenomenon, epitomizes what is meant by an embodied, embedded, enactive, and extended cognitive

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process. Mark Reybrouck, drawing upon Katie Overy and Istvan Molnar-Szacaks,[7] describes sounds as the "outcomes of human actions. Even if they are not self-produced, they can induce a kind of (ideo)motor resonance that prompts the listener to experience the sounds as if they have been involved in their production."[8] Similarly, an ecological approach to music perception, such as that forwarded by Eric Clarke, posits that "perception must be understood as a relationship between environmentally available information and the capacities, sensitivities, and interests of a perceiver."[9]

Merleau-Ponty and Gibson: Toward an Indeterminate Account of Intentionality.

       Purely phenomenological writing largely seeks to describe rather than explain, free from hypotheses or preconceptions.[10] Phenomenology formally begins with Husserl's late nineteenth-century transcendental philosophy, which Don Ihde calls the 'first phenomenology.'[11] For Husserl the center of experience and attention is intentionality — that essence of experience to be 'directed towards,' to be 'aimed at.' First phenomenology's primary concern is to observe, describe, and analyze the ways that 'directedness' takes place in language, and in perceptual and imaginative experience, and aims toward developing a precise method. Phenomenology as a method is dominated by a highly

7. Overy, Katie, and Istvan Molnar-Szakacs. 2009. "Being Together in TIme: Musical Experience and the Mirror Neuron System." *Music Perception* 26 (5): 489–504.
8. Reybrouck, M. 2005. "Body, mind and music: Musical semantics between experiential cognition and cognitive economy." Trans: Transcultural Music Review. 9.
9. Eric Clarke. 2005. Ways of Listening: An Ecological Approach to the Perception of Musical Meaning. Oxford: Oxford University Press. p. 91.
10. Husserl, E. 1901. "*Logische Untersuchungen. Zweiter Teil: Untersuchungen zur Phänomenologie und Theorie der Erkenntnis.*" Max Niemeyer, Halle. [Logical investigations. Second part. Investigations concerning phenomenology and the theory of knowledge. Martinus Nijhoff, The Hague, 1984].
11. Ihde, Don. 1976. Listening and Voice: Phenomenologies of Sound. State University of New York Press. p. 17

technical language and sets of intellectual machinery. Through both the deconstruction of taken-for-granted beliefs, and the reconstruction of a new language and perspective, Husserl's phenomenology desires to become the prototype for a science of experience.

Phenomenologists after Husserl, for the most part, abandoned his mechanism, and the scaffolding, and instead generated a more existential language. This was the case with Heidegger, who implicitly follows Husserl's scaffolding without explicitly noting each step of his method. If Husserl's phenomenology yielded an early appreciation of the richness and complexity of experience, Heidegger's pursued that richness, and discerned the sedimentation of traditions of thought, and that experience itself was embedded in history. The phenomenology of transcendence, structure, and presence in Husserl led to the phenomenology of existence, history, and the hermeneutical in Heidegger.

Merleau-Ponty retains some of the transcendent philosophy of Husserl, and existential language of Heidegger, but went further to describe experience as a "double horizon of an internal space of envelopment and a sending forth of intentional threads into the world,"[12] highlighting the bodily being's simultaneous "in-tension and intention." Our bodies-in-the-world are neither passive nor inert (they are not "just there"). For Merleau-Ponty it is more accurate to say that we are bodies postured *toward* the world, bound to it by the web of "intentional threads" that issue from us: "There is a momentum of existence towards others, towards the future, towards the world."[13] He suggests "my body appears to me as an attitude directed towards a certain existing or possible task."[14] Thus the spatiality of body is less one of position, and more one of *situation*.

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12. Merleau-Ponty. 136.
13. Ibid. 165.
14. Ibid. 100.

Another instrumental writer, psychologist James Gibson, was independently making similar strides concurrently with Merleau-Ponty. When Merleau-Ponty was writing *The Nature of Perception* in the mid-1930's, Gibson was transitioning out of a radical empiricism after a series of studies in visual adaptation. While Merleau-Ponty was publishing *The Structure of Behavior and Phenomenology of Perception,* which asserted the centrality of embodiment as early as the 1940's, Gibson was taking the first steps toward his ecological approach though the study of how birds, bees, and pilots land. While Merleau-Ponty pursued his concepts of 'interweaving intentional threads,' Gibson was developing his notions of affordances, and the reciprocity of the perceiver and the environment.[15] Gibson was frustrated by the mechanical understanding of vision, that the eye sensed objects, that were then represented in the mind. This view didn't account for a deeper level of vision that seemed profoundly motivated. Vision, it seemed, was more than seeing objects as-they-are, but also involved viewing a landscape of potential, where what is and is not seen is shaped as much by past experience as it is by future-orientation.

Strikingly, these ideas seem to have developed completely free of influence from the other. There is a similarly suspicious absence of Merleau-Ponty from the work of Maturana and Varela. Could it really be that Merleau-Ponty's prolific writing on what can be considered the first articulation of a situated and intentional-embodied view of perception had *zero* influence on either Gibson's ecological theory, or Maturana/Varela's *autopoiesis*? While the record lacks concrete evidence of any level of confluence, the concurrence of these ideas might suggest a broader recognition of the limitations of

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15. Sanders, John. 1993. "Merleau-Ponty, Gibson, and the materiality of meaning." Man and World 26: 287.

empirical determinism to meaningfully account for intentionality, to fully explain the 'directed towards' or 'aimed at.'

Autopoiesis: De-Isolating the Living System.

For medical biologist Humberto Maturana, a problem arose while teaching a course on the organization of living systems, and simultaneously researching the participation of the retina in the generation of color. His previous research on the neurophysiology of the frog claims that a frog's brain *constructed* reality rather than *represented* reality.[16] The more deeply he pursued the central questions of each — "What is the organization of the living?" and "What takes place in the phenomena of perception?"— he discovered their immanent collapse into a single question that plunged him into the study of cognition as a legitimate biological problem, asking: "How does it happen that the organism has the structure that permits it to operate adequately in the medium in which it exists?"[17] Maturana's eventual answer was "circular organization." His student Fransisco Varela pushes this question further, asking: "If indeed the circular organization is sufficient to characterize living systems as unities, then one should be able to put it in more formal terms." The resulting term was *autopoiesis*, joining "auto" with the *poiesis*, meaning creation, or production.

Straightforward as this might seem, it is difficult to form a clear idea of autopoiesis from reading their landmark book *Autopoiesis and Cognition*. They set out to explain the

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16. Lettvin. Maturana. 1959. What the frog's eye tells the frog's brain. Proc. Inst. Radio Engr. vol. 47 pages 1940-1951

17. Maturana, H. Varela, F. 1980. "Autopoiesis and Cognition". D. Reidel Publishing Company. Dordrecht, Holland. p. xvi.

mystery of the autonomous nature of all organisms, which they term *autopoietic machines*.[18] These machines "do not have inputs or outputs," but rather can be "perturbated by independent events and undergo internal structural changes which *compensate* these perturbations."[19] So while they make great strains to establish a naturalistic (explicitly not animistic or transcendental) theory of autonomy in which the organism is a machine, this machine is emphatically not a computer, but indeed much more complex. Nor can this machine's interaction with its surroundings be understood in terms of information processing (as theorized by Claude Shannon). Their model also relies on the essential *unity*[20] of the autopoietic machine, the identity that remains despite the frequency or extremity of transformations: "a cell stands out of a molecular soup by creating the boundaries that set it apart from what it is not."[21] Autopoietic machines are autonomous (the subordination of all perturbations to the maintenance of their own organization) through a dynamic process of relations with their environment (components in their topological domain). Living systems are units of interactions.

The novelty of autopoiesis is a matter of debate. Andy Clark finds it profoundly engaging, and often points to this work as a real turning point in the cognition studies. Daniel Dennett on the other hand, is, in characteristic fashion, rather underwhelmed,

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18. Maturana. Varela. 1980. p. 78– "An autopoietic machine is a machine organized (defined as a unity) as a network of processes of production (transformation and destruction) of components that produces the components which: (1) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (2) constitute it (the machine) as a concrete unity in the space in which they (the components) exist by specifying the topological domain of its realization as such a network."
19. Ibid. p. 81. [emphasis added]
20. Ibid. p. 94– "A unity is defined by an operation of distinction; in an autopoietic system its autopoiesis constitutes the operation of distinction that defines it, and its origin is cocircumstantial with the establishment of this operation."
21. Ibid. p. 99

saying: "So far as I can see, autopoiesis is an excellent summary of what it takes for a collection of molecules to be alive, but it doesn't predict anything in biology that hadn't already been well understood by earlier theorists, or dissolve any puzzles."[22] He goes further to cite viruses and transplantable organs as non-autopoietic, non-autonomous unities that are yet living, challenging Maturana and Varela's claim that "a system is an autopoietic system, or it is not."[23] Perhaps it is to avoid these hard lines, and in *a posteriori* consideration of a more phenomenological perspective, that Evan Thompson and Daniel Hutto promote a more liberal understanding of autopoiesis as "internal self-production sufficient for constructive and interactive processes in relation to the environment."[24] Even this broad take, as Ezekiel Di Paolo states, "leaves many questions unanswered, in particular several essential issues that could serve as a bridge between mind and life, like a proper grounding of teleology and agency."[25] Suffice to say, autopoiesis has survived as an elegant, yet incomplete idea, and it is this incompleteness that grants it such a broad appeal.

We can say that the idea of autopoiesis itself, through dynamic interaction and juxtaposition, has evolved into a diverse network of overlapping interpretations. So although Merleau-Ponty is absent from the concurrent work by Gibson, and later Maturana/Varela, he would prove to be an invaluable resource to the next generation of theoreticians whose corpus eventually substantiated the embodied turn in cognition. The

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22. Dennett, Daniel. 2011. "Shall We Tango? No, but Thanks for Asking." Journal of Consciousness Studies 18 (5): 25
23. Maturana. Varela. 1980. p. 94.
24. Hutto, D. 2011. "Philosophy of Mind's New Lease on Life: Autopoietic Enactivism meets Teleosemiotics". Journal of Consciousness Studies, 18,No.5–6,2011,pp.44–64
25. Di Paolo, E.A. (2009) Extended life, Topoi, 28,pp.9–21.

enactive notion of sense-making[26] closely parallels Merleau-Ponty's phenomenological notion of intentionality,[27] and additional parallels can be seen in Evan Thompson and Eleanor Rosch, in Alva Noë, Ezekiel Di Paolo, Andy Clark, Anthony Chemero, and George Lakoff.

Reason as Embodied.

If the mind is the substance of the coupling between organism and environment, it follows that even reason, classically understood as transcendent and universal, must also be embodied. Following the success of their 1980 classic *Metaphors We Live By*, George Lakoff and Mark Johnson produced a work that more explicitly tied their idea of conceptual metaphor to the embodiment of experience. "Philosophy in the Flesh" reads less like a challenge than it does a victor's jubilant monologuing over the corpse of a slain nemesis. In no uncertain terms the nemesis bears an uncanny resemblance to Noam Chomsky, under whom Lakoff studied for a time. For Lakoff (et al.) embodiment is not merely an alternative perspective, it is properly a "major finding" of cognitive science:

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26. Enactive Cognition is sense-making in being a skillful know-how, constituted by forms of interactions between a self-organized living system and its environment. Through dynamic interplay the organism enacts or brings forth its own domain of meaning.

27. Merleau-Ponty. 1962. "Bodily existence which runs through me, yet does so independently of me, is only the barest raw material of a genuine presence in the world. Yet at least it provides the possibility of such presence, and establishes our first consonance with the world…Even is I become absorbed in the experience of my body and the solitude of sensations, I do not succeed in abolishing all reference of my life to a world. At every moment some intention springs afresh from me, if it is only towards the things round about me which catch my eye, or towards the instants, which are thrown up, and which thrust back into the past what I have just lived through. I never become quite a thing in the world; the density of existence as a thing always evades me, my own substance slips away from me internally, and some intention is always foreshadowed." p. 165.

The mind is inherently embodied. Thought is mostly unconscious. Abstract concepts are largely metaphorical. These are three major findings of cognitive science. More than two millennia of *a priori* philosophical speculation about these aspects of reason are over because of these discoveries. Philosophy could never be the same again. Human rationality is not at all what the Western philosophical tradition has held it to be.[28]

Not only is reason not disembodied, as classically held, but they further make the claim that the very structure of reason arises from the details of embodied experience, through the peculiarities of our bodies, and by the specifics of our everyday functioning in the world. Even abstract reasoning builds upon, rather than transcends, forms of perceptual and motor inference present in lower animals. The body of the book proceeds to desacralize prominent accounts of the mind: There is no Cartesian dualistic person, no Kantian radically autonomous person, no utilitarian person; even the phenomenological person is a fiction,[29] there is no poststructuralist person, computational person, and, emphatically, "there is no Chomskyan person, for whom language is pure syntax, pure form insulated from and independent of all meaning, context, perception, emotion, memory, attention, action, and the dynamic nature of communication."[30]

For Lakoff and Johnson the universal phenomenon shared by all organisms is the *ability to categorize*. The categories, and any reasons supporting them, are fundamentally *metaphorical*, the metaphors themselves traceable to interlocking threads twined in a web of lived experiences, non-reducible to syntax or symbol, or separable into components in

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28. Lakoff, G. Johnson, M. 1999. "Philosophy in the Flesh: the Embodied Mind & its Challenge to Western Thought." Basic Books. NY. p. 3.
29. Ibid. p. 5. – "Phenomenological reflection, though valuable in revealing the structure of experience, must be supplemented by empirical research into the cognitive unconscious."
30. Ibid. p. 6.

any objective sense. Paradoxically this lived experience "must be supplemented" by empirical research if we are to fully understand the cognitive unconscious. Thus, at times, the embodied perspective espoused by Lakoff feels more like negative argument, a default position of his larger anti-disembodiment (that is, anti-Cartesian, anti-Chomskyan) stance.

Radical Reactions to Cognitivism and the Mind-Mind Problem.

Following the three views described above, beginning in the 1990's a more cohesive platform of propositions under 'embodied cognition' began to form. I will first discuss what are self-consciously the more "Radical" of these ensuing theories, and what it was its supporters were reacting against. It is important to note that 'radical embodied cognition' aren't simply the more extreme versions of plain embodiment theories, but they, in fact, have distinct intellectual lineages. According to Anthony Chemero's taxonomy
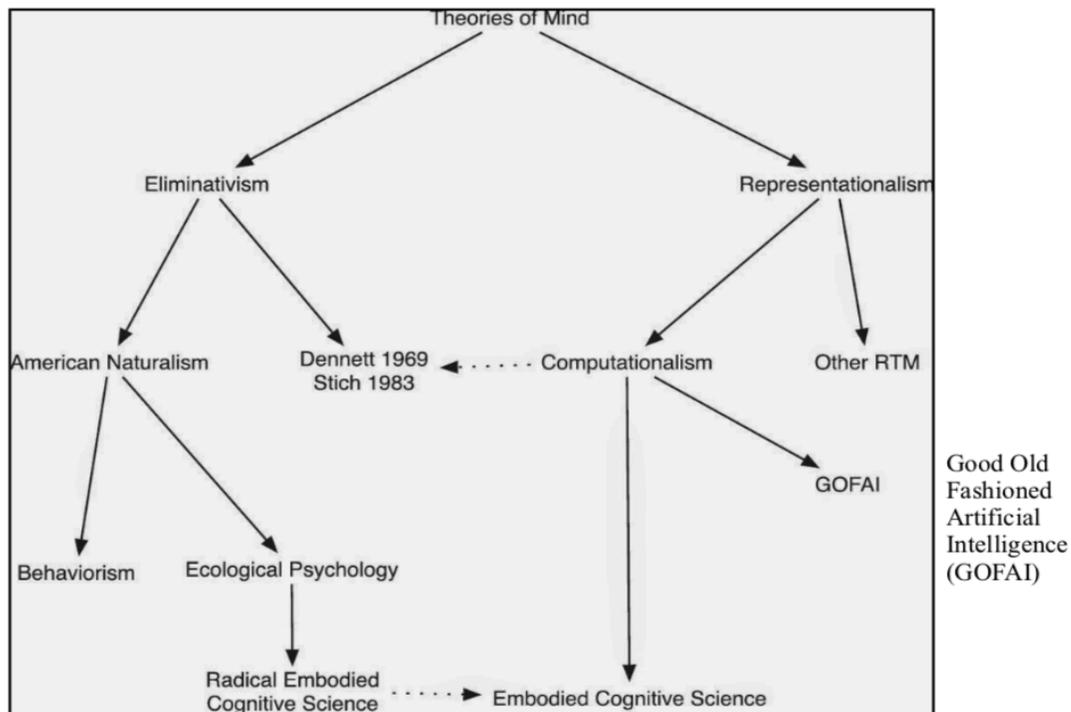
Figure 5.1: Anthony Chemero's taxonomy of embodied cognition

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(Fig. 5.1), radical embodied views follow the line of Gibson's ecological psychology, itself a descendant of earlier eliminativism (also aligned American functionalists such as William James, Dewey, also Skinner); while plain embodied views stem from (react to) the computational theory of mind, which descended from earlier representationalism (aligned with structuralists such as William Wundt, traceable to Kant, and Descartes). The 'radical' schism is not as much polar as it is spectral, shaded on one axis by the extent to which one's theory embraces particular computational and/or representational terms, and on the other axis by how far their view of cognition extends beyond the traditional boundaries of brain, body, organism, or environment.

The first 'radical' argument for an embodied and enactive view of cognition was put forth in *The Embodied Mind*, a collaboration between Varela, Thompson, and Eleanor Rosch.[31] Rosch had done previous work in the cognition of categories, drawing from her valuable field work in the 1970's with the Dani people of Papua New Guinea, in which she concluded that in categorizing an everyday object or experience, individuals rely less on abstract definitions of categories than on comparisons between the object/experience with what they understand as best representing a category. Rosch's work on Eastern religious psychology is also reflected in the book's dialogue between cognitive science and Buddhist meditation. The authors attempt to establish a common ground between the mind as treated in science and the mind as experienced: "Our concern is to open a space of possibilities in which the circulation between cognitive science and human experience can be fully

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31. Varela, F., Thompson, E., & Rosch, E. 1991. The Embodied Mind. MIT Press. Cambridge, MA.

appreciated and to foster the transformative possibilities of human experience in a scientific culture."[32]

For Rosch, the 'mind as experienced' is the antithesis of cognitivist materialism and representationalism, views endorsed by authors such as Hilary Putnam, Jerry Fodor, Ned Block, among others, who build upon the information model of knowledge set in motion by Shannon and Weaver. Throughout the 1970's and 80's Putnam formulated 'machine state functionalism,' which coopted the meaning of 'state' in a computer system with 'mental state.' In a Turing machine, for instance, *state 1* is simply the state in which, given an input *A*, an event occurs; in the same way the experience of pain is the output state which in reaction to an input stimulus, which prompts an evaluation response, a predictive response, and so forth.[33] In this view, the mind is equated with the brain: an organ, a computing machine. As Putnam describes:

> If one assumes that the mind is an organ, and one goes on to identify the mind with the brain, it will then become irresistible to 1- think of some of the "representations" as analogous to the classical theorist's "impressions" (the cerebral computer makes inferences from at least some of the "representations", the outputs of the perceptual processes) and 2- to think that those "representations" are linked to objects in the organism's environment only causally, and not cognitively.[34]

Interestingly, while he was a central theorist for the mind-as-a-computer metaphor, Putnam himself abandoned these computational theories in the late 80s, in part due to their

32. Varela. Thompson. Rosch. 1992. "The Embodied Mind: Cognitive Science and Human Experience." MIT Press. Revised ed. edition. [authors' statement]
33. Block, Ned, ed.: Readings in Philosophy of Psychology, 2 vols. Vol. 1. (Cambridge: Harvard, 1980).
34. Putnam, H. 1981. "Reason, Truth, and History." Cambridge University Press, Cambridge. p. 9

difficulty in explaining intuition.[35] It should also be noted that a computational theory of mind can be traced at least as far as Hobbes, who claimed that rational thought ("ratiocination") is the processing of internal symbols that represent external objects, according to rules.

Fodor claims that mental processes should be understood only on the basis of a subject's individual mental properties, and without any involvement with external factors (such as the environment), a reductive strategy known as 'methodological solipsism,'[36] which basically consists of a systematic mapping of an individual's mental states, or representations. Fodor proposed that a cognitive architecture is comprised of specialized vertical structures — *modules*, identical to computer modules — which facilitate the transformation of sensory input into mental representations. *Representations* are states of the mind which function to encode states of the world. They are also symbolic in that they have both formal and semantic properties. Our thoughts ("propositional attitudes") are then the relations between us, and our representations.[37] From the modular view, simply put, the mind is the software that the brain runs, via this modularized hardware. The project of cognitive psychology, from this view, is to investigate and identify cognitive circuitry of the mind, while cognitive neuroscience investigates how the mind maps onto the brain, with the ultimate goal of providing an extensive and precise topography of neural networks. This framing of the mind-body problem thus results in a further splitting into a mind-mind

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35. Putnam states "I want to defend the view that there are whole domains of fact with respect to which present-day science tells us nothing at all." Putnam. 1990. "Realism with a human face." Cambridge, MA: Harvard University Press. p. 143.
36. Fodor, J. 1980. "Methodological solipsism considered as a research strategy in Cognitive science." Behavioral and Brain Sciences, 3, p. 63-73.
37. Just as a rule-based universe predates Descartes by at least two millennia, earlier forms of representationalism can be seen at least as early as St. Augustine.

problem (as suggested by Ray Jackendoff): the computational mind and the phenomenological mind, and how the former gives rise to the latter.

When Varela (et al.) states in "The Embodied Mind" the desire to bridge cognitive science with the human experience, they are responding directly to this divorce of the computational and phenomenological mind. In articulating the enactive paradigm, the authors focus on two complimentary types of subjectivity: the biological and the phenomenological, unified by their mutual embeddedness in an ecological situation. Each ecologically-situated organism enacts, brings forth, or co-constitutes a world through evolutionarily-selected sensorimotor and goal-directed patterns of meaningful actions. Contrary to a mind-as-computer model, bodily activity is thus crucial for cognition. Contrary to Fodor's methodological solipsism, Varela (et al.) claims that "organism and environment enfold into each other and unfold from one another in the fundamental circularity that is life itself."[38] Cognition, from the enactive account, is not seen as a processing of symbolic representations, but rather as the active bringing-forth of a world by a living system's history of structural coupling with its environment. Cognitive competency is then a matter of the practical attunement of an organism with its environment.[39]

Daniel Hutto perhaps takes center stage in the radical camp. In "Radicalizing Enactivism"[40] Hutto and Myin defend an enactivist view that not only critiques dualist/computational/representational doctrines, but also the more moderate members of the 'E' family. They see mental representations lurking beneath the surface of what might

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38. Varela. Thompson. Rosch. 1992. p. 171.
39. Ezekiel Di Paolo also builds from this variant of enactivism
40. Hutto, D. Myin, E. 2012. "Radicalizing Enactivism: Basic Minds without Content". MIT Press.

appear to be an innocuous concept: *mental content*. Simply stated, theories of mental content try to explain how thoughts can be about things. If "content" is what is said, asserted, believed, desired, hoped for, etc., then "mental content" refers to the cognitive states and processes that are seen to directly correlate with the content. Hutto and Myin argue that belying mental content (akin to informational content) is an unfounded causal logic, used to explain 'intentional states,' such as attitudes, desires, beliefs, wonder, intelligence, thoughts, and other proposition concepts they refer to as "commonsense psychology."

Commonsense psychology (or folk psychology) is a deeply eliminativist label for the common ways of explaining actions by appeal to reasons. Hutto does not hold commonsense psychology to be an inferior remnant of pre-scientific ignorance, as earlier eliminativists did, but is in fact reacting against those who would see it naturalized into a purely scientific account of mental content. Hutto's account is in step with other general embodied and enactive forms, but becomes radical in its arguing for a mind that is not just non-representational, but content-less. Expressions of hope, belief, desire, etc., are then culturally constituted artifacts that are impossible to explain in any natural scientific terms.

In short, the more radical the view, the more problematic any implication of dualism will be, be it metaphorical, terminological, or methodological. What these views may gain in the way of describing the mind 'as experienced,' they sacrifice in terms of testability and scientific intelligibility.

Sensorimotor theories: A Less 'Radical' Enactivism.

Branching off from conventional cognitive science, less radical variants of enactivism have emerged that are more comfortable with *some* machine metaphors, but focus more on a cognitive system's grasp of sensorimotor contingencies — facts about the inter-relations between actual and possible perceptions, sensations, and actions. This view is best presented by Susan Hurley's *Consciousness in Action*,[41] and Alva Noë's *Action in Perception*.[42] Hurley is best known for opposing what she calls "The Classical Sandwich" — the particular relationship between perception, cognition, and action wherein "perception and action act as peripheral buffer zones" separated from "central cognitive processes,"[43] in which perception/action can be equated to input/output systems. Hurley is specifically critiquing the *vertical modularity* of the cognitivist account which limits the relations among components, as well as the directionality of the signal flow (not unlike a vertical stack of audio modules and interfaces).

Hurley's alternative is a *horizontal modularity*, in which "each horizontal module or layer is a content-specific system that loops dynamically through internal sensory and motor processes well as through the environment"[44] [sic][45]. In arriving to similar conclusions as Varela (et al.) — dynamic interrelations between brain and the active body and environment — Hurley maintains some conventional aspects that more radical theorists dismiss, namely a kind of modularism — though dynamic — and a soft representationalism — though complex.

41. Hurley S. 1998. Consciousness in action. Harvard University Press, London.
42. Noë, Alva. 2004. Action in perception. MIT Press. Cambridge.
43. Hurley. 1998. p. 21.
44. Ibid.
45. The omission of "as" is likely a typographical error, and should probably read: "...motor processes, as well as..."

A similarly non-radical view is Noë's sensorimotor theory, which explores how our activity brings objective properties into view. Noë is concerned with how we experience that which is hidden from our perception. For example, your perceptual experience of looking at a tomato is indistinguishable from your experience of one side of a tomato that has been bisected. Yet when encountering this tomato, our perception of a spheroid tomato seems to require no further investigation. Noë believes that we perceive the whole tomato because we grasp the ways in which our potential movements with respect to it (or its movement with respect to us) would reveal objective aspects of its shape.[46] Thus from this view, enactive cognition is realized through our sensorimotor abilities to determine the aspects of objects and scenes which can be perceived. This comes together in Noë's (et al.) *sensorimotor contingency theory*, in which the knowledge of the ways that movements affect sensory stimulation is necessary for experience.[47]

Beyond Skull and Skin: Extended Cognition.

While Maturana and Varela were instrumental in considering the dynamic role an organism's environment plays in its cognitive processes, a central goal of autopoiesis was establishing the fundamental *unity* of the living system, its absolute, if semi-permeable, boundaries. The autopoietic mind, though embodied and enactive, is still like the standard information-processing model: contained within this unity. In 1994, David Kirsh and Paul Maglio challenged the traditional accounts by demonstrating that cognition depends heavily on, and is deeply intertwined with, aspects of the environment beyond the

46. Paglieri, F. (Ed.). 2012. "Consciousness in Interaction: The role of the natural and social context in shaping consciousness." Advances in Consciousness Research. John Benjamins Publishing Company.
47. O'Regan. Noë. 2001. "A sensorimotor approach to vision and visual consciousness." Behavioral and Brain Sciences, 24(5), pp.939-973

boundaries of the organism. By studying Tetris players, they showed that standard information-processing models failed to explain actions that appeared superfluous. This is because these models assume that actions are pragmatic — actions create physical states which physically advance one towards goals.[48] In response, Kirsh and Maglio introduce the idea of an *epistemic action:* physical actions that make mental computation easier, faster, or more reliable. This highly detailed empirical study was certainly not 'radical,' but it was provocative, and was influential in forming a view of the mind as *extended*.

Andy Clark and David Chalmers proposed the "Extended Mind"[49] in what now seems like the inevitable logical following-through. Building from this growing 'E' theme in cognitive science, they argue that there is no principled reason to distinguish between the external parts and bodily parts of the cognitive process, but it is best understood as extending beyond not just the skull, but also the skin: "Once the hegemony of skin and skull is usurped, we may be able to see ourselves more truly as creatures of the world."[50] Cognition in the extended view, then, goes beyond mere inclusion of the body or dynamic intertwining with the environment, but quite literally includes elements outsides the traditionally understood unity of the organism.

Consider their hypothetical individual, Otto. Otto is a memory impaired individual who relies heavily upon a detailed notebook he keeps as a physical stand-in for his biological memory, enabling him to recall, believe, and navigate the world at a level that would otherwise be impossible. Clark and Chalmers argue that since this notebook

48. Kirsh, D. Maglio, P. 1994. "On Distinguishing Epistemic from Pragmatic Action." Cognitive Science 18, 514.
49. Clark, A. Chalmers, D. 1998. "The Extended Mind." Analysis 58:10-23.
50. Idid. p. 18.

occupies a central part of his identity as a cognitive agent, constituting Otto's "beliefs," "social beliefs," and even "Otto himself," cognition is best understood as an extended system, a literal coupling of biological organism and external resources.

The extended view, however, has been harder to swallow, even among other 'E' theorists. Evan Thompson, for instance, regards the extended thesis as openly conflicting with a truly enactive account. As it lacks constraints, he predicts it's likely to collapse into a form of classical dualism, prompting Thompson to reinforce the boundaries of his own enactivist stance: "For anything external to the body's boundary to count as part of the cognitive system it must function transparently in the body's sense-making interactions with the environment."[51]

Musical instruments, in this respect, are clearly transparent in affording sense-making interactions. For the purposes of imagining the musical mind, extended cognition is a tantalizing idea. How might music lessons change if the instrument was regarded not as a thing that was played on, but as a tool through which a mind is extended? From this view, a teacher's aim wouldn't be so much to tell the student *how to use,* say, the piano, but rather, in a more codetermined process, to guide students through making the piano *part of them*; students wouldn't really experience a saxophone, as much as experience *through* the saxophone. Agency is key. The mind being extended has to *want* to be extended. The difficulty many children face, for instance, is that they would rather be doing nearly anything else. The predominant performer-interpreter model of teaching rarely promotes real sense-making, which is the substance of theory.

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51. Thompson, E., & Stapleton, M. (2009). Making Sense of Sense-Making: Reflections on Enactive and Extended Mind Theories. Topoi, 28(1): 29. (emphasis original)

The Positive Case for Radical Embodied Cognition.

Anthony Chemero's book *Radical Embodied Cognitive Science*[52] is compelling not because it is ostensibly convincing, in the sense that it obliterates the competition. Chemero presents a positive 'radical' argument that in no way seems defensive. Many of the sources discussed above begin by arguing that everyone else is incorrect. In refreshing contrast (to Lakoff, or Noë for instance), Chemero chooses not to present arguments for why all approaches other than radical embodied cognition are somehow 'bad.' What is compelling is the clarity, humility, and invitation for theorists across domains to fully embrace the theoretical pluralism of cognitive science, which is still an "immature science," using Kuhn's term.

For Chemero, radical embodied cognition is not plain embodied cognition plus antirepresentationalism, but rather, plain embodied cognition is actually radical embodied cognition plus computationalism. Central to his perspective is (1) the treatment of animal-environment systems as unified entities (contrary to the extended view, which he regards as requiring "Olympic level mental gymnastics"), and (2) the marriage of a Gibsonian ecological psychology with dynamical systems modeling[53] often used by cognitive/embodied cognitive scientists. While Gibsonian psychology is to him the best theory for the nature of animal-environment systems, dynamical systems theory is the best modeling tool to put ecologically-motivated hypotheses "in touch with actual data,"[54] a

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52. Chemero, Anthony. 2009. "Radical Embodied Cognitive Science". MIT Press. Cambridge.
53. Ibid. p. 25: "A dynamical system is a set of quantitative variables changing continually, concurrently, and interdependently over time in accordance with dynamical laws that can, in principle, be described by some set of equations."
54. Ibid. p. 208.

view shared by Andy Clark.[55] Radical embodied cognitive science, for Chemero, is a progressive discipline, one in which perfection is the enemy of progress. So, while remaining antirepresentational and anticomputational, Chemero is not resistant to using quantitative modeling as a tool for understanding cognition.

Cheremo also submits a pragmatic concern, one of equal importance to pedagogy: *intelligibility*. Intelligibility is upheld by lines of demarcation. That is, the power of legibility is taxed with opportunity cost of conceptual partitioning, with a high risk of sustaining ill-informed, arbitrary, blinding conceptual metaphors. So while it is possible, or even plausible, that the 'best way' to understanding cognition is to remove all conceivable lines (as in a radically extended perspective), such an account is doomed to be immobile when it comes to articulating an intelligible, not to mention testable, description.

For the interests of cognitive science and philosophy of mind alike, it is understandable how computer metaphors, representations, information-processing, and even Cartesian dualism have all served as useful tools, perhaps conceptual metaphors. Chemero's call to embrace the theoretical pluralism of cognitive science is analogous to Csordas' framing of a sociology of embodiment as an 'indeterminate methodological field.' In either case, the theorist (agent) situated within a discipline (environment) is tasked to explore/examine/excavate/experiment in order to discover/determine/design, and ultimately, divulge the most "value-rich ecological object."[56] In this pragmatic sense, the 'best way' to understand the mind shifts, being the *most affordance-rich* heuristic formed in the meeting place between a particular agent and their world.

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55. Clark, A. 2001. "Mindware." New York: Oxford University Press.
56. Gibson, James. 1979. The Ecological Approach to Visual Perception. Houghton Mifflin.

Musicking as Embodied, Enactive, Ecological

Various forms of radical and plain embodied cognition have recently been applied in the rethinking of the cognition of music. Here I will outline several of the most compelling implications of 4E perspectives. This adaptation moves the discipline beyond the symbol system approach that characterizes a traditional cognitivist perspective (e.g. How does a musical experience map onto mental representations in the form of auditory streams, schemas, and qualia?) as explored in the work of David Huron, Fred Lerdahl, John Sloboda, and others; beyond brain modularity (e.g. What neural substrates enable the perception of, say, the prolongation of the dominant, or facilitate trading fours in a jazz quartet?) seen in the scholarship of Daniel Levitin, Isabelle Peretz, and Robert Zatorre, and others; and instead move toward a broader consideration of body as integral to the cognition of music (e.g. How does the experience of motion influence musical meaning?) as described by Steve Larson; of the body's situatedness, through a neo-Gibsonian ecological lens (e.g. How can music be explained as the inter-relating between organism with their environment?) as argued by Eric Clarke, and extended in terms of sensorimotor coupling by Mark Reybrouck.

These questions represent a shift away not only from cognitivist descriptions that reduce the musical mind to formal symbol systems and a computer metaphor for the mind, but also modes of musicological inquiry that performed similar reductions through a linguistic purview. Bruno Nettl describes this predominate assumption within musicological work throughout the 1970's and 80's: "If all music is a system of symbols,

one ought to be able to analyze it in a way similar to or derived from the accepted analysis of the intellectual grandfather of symbol systems, human language."[57] Musicologists and theorists of this period tended to fetishize the appearance of scientific rigor, and saw Chomskyan and Saussurean semiotics as exemplary models of such precision. Ethnomusicologist Steven Feld, who was trained in linguistics, later described most of this era as "trendy dabbling," which favored intricate ways of *describing* sound, without *explaining* sound. Fred Lerdahl describes what drew him to such a description:

> …it was Chomsky's way of framing issues that attracted us: the supposition of specialized mental capacities, the belief that they could be studied rigorously by investigating the structure of their outputs, the distinction between an idealized capacity and its external and often accidental manifestations, the idea of a limited set of principles or rules that could generate a potentially infinite set of outputs, and the possibility that some of these principles might be unvarying beneath a capacity's many different cultural manifestations.[58]

Robert Walser, associated with the New Musicology that reacted to this vein of semiotic descriptions, was among the first to explore a shift in perspective. While musicology gravitated toward Chomskyan linguistics, Walser looked across the linguistic ravine to Mark Johnson's "The Body in the Mind" — a precursor to Lakoff and Johnson's classic "Metaphors We Live By". Both works draw attention to the notion that underlying the meanings of words are *metaphors* based in lived, bodily experience. Contrary to symbol system analysis, Walser[59] sees embodied conceptual metaphors and pre-linguistic

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57. Nettle, B. 1983. "The Study of Ethnomusicology." University of Illinois Press. Urbana.

58. Lerdahl, Fred. 2009. Genesis and architecture of the GTTM project. Music Perception, 26, February. p. 187

59. Walser, Robert. 1991. "The Body in the Music: Epistemology and Musical Semiotics". College Music Symposium. Vol. 31. p. 117-126.

schemata as a better conceptual landscape for understanding the experience of music-making than semiotic descriptions. One perhaps unintended result of this embodied shift is the credence it gives to popular characterizations of what is often seen as music's core feature: a unique capacity to transcend language — "Where words fail, music speaks." (attributed to Hans Christian Anderson), "If you don't live it, it won't come out of your horn." (Charlie Parker); "Talking about music is like dancing about architecture." (attributed to Thelonious Monk); and song titles, such as Duke Ellington's "It don't mean a thing (if it ain't got that swing)." The shift toward embodied metaphors provides a lens for describing musical practices that were harder to account for in terms of syntax and grammars. Walser, for instance, described the appeal of distortion from its strong metaphorical association with both the social constructions and bodily experiences of *distortion*, such as the meanings conveyed in vocal distortion.

A recent work influenced by Lakoff and Johnson[60] is Steve Larson's *Music Forces: Motion, Metaphor, and Meaning in Music*.[61] Larson explicitly opposes "Classical theories of language," and instead provides an account of musical meaning, and music theory, through embodied metaphors that drive the Western canon. Moving beyond the event hierarchies of Schenker, and the tonal hierarchies of Krumhansel, Larson proposes four musical *forces* as grounding metaphors for how listeners (particularly Western listeners) tend to listen to music: *melodic gravity, melodic magnetism, metrical magnetism,* and *rhythmic gravity,* which are understood as tendencies that our "minds attribute to the sounds we hear."[62] Our experience of physical gravity, for example, shapes our experience

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60. Mark Johnson actually co-authored Chapter 3: "Something in the Way She Moves"
61. Larson, Steve. 2012. "Musical Forces: Motion, Metaphor, and Meaning in Music." Indiana Univ. Press.
62. Ibid. p. 22.

of musical motion, while an intuitive understanding of magnetism underlies the tendency to prefer quantized rhythms. Music can be analyzed in such terms. Larson, to be clear, is *not* arguing for the innateness of these tendencies, but rather that these forces have been the predominant metaphors in Western music for at least three centuries. It could be that the adoption of the metaphorical forces — properties of physical objects, not of sound — could have grown in conjunction with the rise and reliance upon notated music, that is, around the time notation began to be colloquially referred in objective terms, as "a piece of music." The translation of auditory events into *dots on a page* necessarily meant that dots on the page reciprocally shaped the auditory imagination. Our intuitive experience with gravity effecting physical objects would then begin to, in an indirect way, influence systems of signification codetermined by listeners, performers, improvisers and composers.

Proto-Musicality: Constituting Musical Actions.

The 'music' studied through a cognitivist or linguistic lens is highly constrained by their particular modes of description. As expressed by Ian Cross: "What we know of music in neurobiological and neuroscientific terms is constrained by a conception of music that is narrowly shaped by historical and cultural notions of what constitutes 'music'."[63] The focus on overcoming an object/subject dualism allows us to consider a spectrum of musical, quasi-musical, and proto-musical behavior, the processes by which the embodied

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63. Cross, I. 2010. "The evolutionary basis of meaning in music: Some neurological and neuroscientific implications." In Clifford F. (Ed.), The Neurology of Music. Imperial College Press, London. p. 1-15.

metaphors that establish musicality are formed. An infant's vocalizations and exploratory striking of objects, in this view, might be considered a proto-musical action.

An ecological approach views perception as a mutual relationship between organism and environment, so that every description of perception is therefore specific to an individual's capacities and perspectives. This positions musicality as a gradual outgrowth of the intentional, that is, goal-driven exploration that takes place in early childhood. Eric Clarke, in arguing strongly for an ecological perspective of music and musical meaning, describes the dynamics of a child's first encounter with a xylophone:

> The child's more-or-less unregulated experiments with hands or sticks will result in all kinds of accidental sounds. With unsupervised investigation, the child may discover that different kind of actions […] give rise to differentiated results […], and even that these distinctions can themselves be used to achieve other goals.[64]

At six to ten months of age an infant's attention begins to be captured by the sounds they themselves produce, rather than by their own action, or by tactile or visual properties of objects. For Clarke, these interactions signify the child's initial *play* with sounds in a meaningful way. As a direct application of Gibsonian ecological psychology, objects in this view are information-rich, and these meaningful interactions allow the infant to explore each object's potential affordances in relation to specific actions. A xylophone, in relation to a ten-month old child, affords striking with a mallet, block, or hand — the child experiments with timbral variation ("What can I hit this with? Does it produce a different

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64. Clarke, E. 2005. Ways of Listening: An Ecological Approach to the Perception of Musical Meaning. Oxford University Press, Oxford.

sound?"), pitch variation ("Where can I hit it?"), dynamic range ("How hard can I strike it?"), tempo and rhythm potential ("How fast can it be struck"), and later the social and mimetic interactivity (call/response, turn-taking). In this way infant exploratory behavior is a necessary tool to grasp the affordances of their environment. Importantly, this behavior is decidedly pre-linguistic.

Musical Affordances.

Music perception, from Clarke's ecological view, refers to one's particular degree of comprehension of the musical affordances of their environment, as opposed to mere sensations of tones, their awareness of raw facts of the physics of sound, familiarity with the history of a repertoire, or the sum of neural substrates associated with performing or listening to music For Clarke, musical interactions afford not only 'tangible acts' associated with musical elements (pitch, rhythm, timbre), or cross-modal acts such as foot-tapping, dancing, worship, persuasion, catharsis, and many others,[65] but it also affords higher-level forms of engagement like musical interpretation, speaking, writing, and gesturing in response to music: "The recapitulation of the first movement of Beethoven's Ninth Symphony affords writing (or speaking) in terms of murderous sexual rage, or the heavens on fire. Interpretative writing and speaking are forms of action."[66] Clarke's musical affordances are then very broadly based on an organism's *resonating* with their sonic

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65. Ibid. p. 38.
66. Ibid. p. 204.

environment, and the capacities and perspectives realized by this interrelationship, which is also necessarily a function of a larger scale biological and cultural evolution.

This application of Gibsonian psychology to music cognition carries significant pedagogical implications, shifting what is meant by the teaching and learning of music. In relation to jazz teaching, David Borgo writes: "We should avoid presuming that by dictating which music theories are important, we are helping [students] to engage most fully with their own musical horizons."[67] Borgo observes that the process of self-tuning, the feedback cycle of action and perception through exploration, is very similar to the way mature musicians tend to hone their skill. Inversely, the minimal attention given to improvisation in conventional music education is indicative of a preference for the 'low-level' musical features emphasized by information-processing models of music cognition, rather than the nurturing of higher-level reflexivity.

Some scholarship adopts a more biosemiotic view of musical affordances, describing the action-perception feedback cycle in terms of *sensorimotor coupling*, in the less-radical way of Hurley and Noë.[68] Mark Reybrouck perhaps best exemplifies this view. His argument hinges on the coupling between (1) musical experience (auditory perception imbued with an aesthetic connotation), and (2) motor cognition. His understanding of motor cognition relies on the *image schemata*, particularly *container schema* ("in" and "out") and *source-path-goal schema* (being oriented toward a goal). Over time the coupling between experience and motor cognition constitutes the development of musical "sense-

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67. Borgo, David. 2007. "Free Jazz in the Classroom: An Ecological Approach to Music Education." Jazz Perspectives 1 (1): 77.
68. 'Less-radical' in that the arguments rely to an extent on the explanatory power of representations.

making," which in turn results in increasingly sophisticated sensorimotor expertise.[69] Reybrouck builds upon Kirsh's concept of *epistemic actions* (physical actions that make mental computation easier, faster, or more reliable),[70] and describes the sensorimotor integration during musical performance as *epistemic contact*. Much like Kirsh's subjects used the transformation of zoids as cognitive aids in playing Tetris, a violinist relies on sensorimotor integration in the process of "shaping" the sound through the reciprocity of "doing" and "undergoing."

Andrea Schiavio integrates this notion of sensorimotor coupling with a more radical enactive perspective (that is, expressly anti-representational, anti-computational). Aiming to disambiguate the usage of 'affordances' in relation to music, Schiavio introduces the concept of *teleomusical acts* — chains of actions with goal-directedness which constitute a musician's motor knowledge.[71] He further delineates between *Original teleomusical acts* (OTA) — autonomous and foundational to human musicality, and the basis for sensorimotor skills brought forth in infancy through environmental interaction (i.e. a child's open exploration of a xylophone), and *Constituted teleomusical acts* (CTA) — kinematic fluency built through the unification of sets of OTAs (i.e. playing *this* chord in *this* way). Although Schiavio does not address the concerns of music theory specifically, the concepts of OTAs and CTAs are the most useful for conceptualizing a theory pedagogy through a 4E lens. For instance, the regulative theoretical tradition is primarily tasked with

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69. Reybrouck, M. 2005b. "A biosemiotic and ecological approach to music cognition: Event perception between auditory listening and cognitive economy". Axiomates. An International Journal in Ontology and Cognitive Systems, 15(2), pp. 391-409.
70. Kirsh D., P. Maglio. 1994. On Distinguishing Epistemic from Pragmatic Actions. *Cognitive Science.* 18:513.
71. Schiavio, Andrea. 2014. "Music in (En) Action: Sense-Making and Neurophenomenology of Musical Experience." Doctoral Dissertation. p. 93

the formation of a general set of CTA's, yet, without a speculative base, there remains a disconnect between a learner's own OTA's and the CTA's standardized within the curriculum.

In summary, 4E perspectives offer modes of thinking about music-making that are: (1) non-dualist, and (2) indeterminate. Such accounts are compelling to musicians, who, rather than being provided a governing rule are finding in this emerging field a framework for renewed *speculation*, which, again, I define as that subset of philosophical thought concerned with basic musical categories, and the nature of the relationships between them. Of particular importance to the arguments forming throughout this dissertation, these modes invite educators to rethink the processes that form and in-form musicality and musicianship. This presents an opportunity for the transformation of music education broadly, provides a promising conceptual way forward for curricular reform in music in higher education, and represents a platform for rethinking the core learning objectives of music theory study.

The third and final section of this dissertation explores the ways in which the perspectives of embodiment and embodied mind recast the meanings of learning and knowing music theory, and how this addresses the current needs of curricular reform. What forces led to the suppression of the speculative in theory pedagogy? How might 4E paradigms redefine the speculative space today? (Chapter 6) And, finally, what specific curricular tools might be designed and implemented in the classroom to stabilize a curriculum aimed at mutual transformation? (Chapter 7)

Part III. Student as Theorist

Chapter 6. Recovering the Speculative: The Embodied Mind in Music Theory Pedagogy

> Music, in fact can be considered a collection of sound/time phenomena which have the potential of being structured, and wherein the process of structuring is just as important as the resulting structure.[1]

> — Mark Reybrouck

This chapter turns toward the mind in order to understand what forces led to the recession of the speculative thought space in music theory pedagogy, and to formulate what its reemergence means practically for theory pedagogy today. Firstly, I examine the effect of Cartesian dualism on paradigms of theory teaching, and secondly I outline a non-dualist perspective that recasts what it means to learn and know music theory, and invites us to reconsider the levels at which the student is transformed not only in the process of learning theory, but by actively participating in the production of theory.

My understanding of the 'speculative space' borrows from Judy Lochhead and Justin London. Lochhead argues that music theory, particularly in the speculative mode, represents a subset of philosophical thought;[2] Justin London describes speculative music theories as those that make arguments regarding basic musical categories, and nature of the relationships between them.[3] My definition then follows as: the subset of philosophical thought concerned with basic musical categories, and the nature of the relationships

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1. Reybrouck, Mark. 2012. Musical sense-making and the concept of affordance: an ecosemiotic and experiential approach *Biosemiotics*. 5(3), 391-409.

2. Lochead, Judy. 2011. Ch. 46: Music Theory and Philosophy. in "The Routledge Companion to Philosophy and Music." p. 506.

3. London, Justin. 2011. Ch. 45: Musicology. in "The Routledge Companion to Philosophy and Music." Ed. Theodore Gracyk, Andrew Kania. Routledge. p. 502.

between them.

I argue that dualism by the late nineteenth-century, as solidified in Helmholtz' influential *Sensations of Tone*, was received by music educators as a determined, objective basis for music theory. This determinist foundation meant that the speculative theoretical tradition — the curricular space in which students traditionally made contact with the grounding, conceptual metaphors underlying music's fundamentals — was gradually overshadowed by the imperatives of Modernist education. Believing talent to be innate — that is, biologically-based, rather than mind-based — curricular emphasis was placed on developing students' procedural knowledge (reflected in regulative theories) and imitation[4] as mediated through symbolic logic (reflected in analytic theories).

The primacy of these two traditions was punctuated in a 1965 special issue of *College Music Symposium*, which asked composers Howard Boatwright, Milton Babbitt, and Andrew Imbrie to provide direction amidst the "crisis in music theory teaching." Elements of their varying perspectives became standardized around this time in response the rapid expansion of college music programs, meaning music theory was homogenized into a curricular mainstream that remains largely intact to the present day. Chapter 3 uncovered various cracks forming in this foundation, seen in curricular innovations accelerating today. Chapter 4 argued that the speculative, regulative, and analytic traditions are not merely independent categories, but are rather *interdependent* at the level of agency. Chapter 5 presented several non-dualist approaches to conceptualizing the mind (embodied, enactive, embedded, extended). In this chapter I argue that contemporary

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4. Or *praeceptum – exemplum – imitatio* (observe, memorize, imitate) McCreless, Patrick. 2002. Ch. 27: Music and rhetoric. Christensen. p. 856.

reforms can be understood as a collective move to recover the speculative space in music higher education, and argue that these reforms might converge under the ultimate aim of equilibration between intersubjective vectors of agency. Building from an embodied approached to mathematics education offered by George Lakoff and Rafael Núñez, and proceeding with ideas from Lakoff & Johnson, Anthony Chemero, Eric Clarke, and Andrea Schiavio, I provide a conceptual groundwork for an embodied approach to theory teaching.

Dualist Legacies in Twentieth-Century Music Theory Pedagogy

> "In this regime, *what was measured was produced by the measurement*. Ultimately, this applied to the separation between the inner and the out world."[5]

— H. Schmidgen

Cartesian Anxiety in Helmholtz' Basis for Music Theory.

Descartes was the first to articulate a mind-body problem, holding that while one may doubt the existence of their body, one absolutely cannot doubt the existence of their mind.[6] This dualism split the Renaissance man in two epistemological shards, spinning off in opposite directions, each propelled by the force of the other. At the social level this diametric opposition is what C.P. Snow describes as the 'Two Cultures' that governed Modern intellectual life in the whole of Western society,[7] namely, the sciences and the humanities. Philosopher R.J. Bernstein describes the "Cartesian Anxiety" that enshrouded

5. Schmidgen, Henning. 2014. The Helmholtz Curves: Tracing Lost Time. First Edit. New York: Fordham University Press. [emphasis in the original] p. 4

6. Descartes, Rene. 1984 (1641). *Meditations on First Philosophy*, in *The Philosophical Writings of René Descartes*, trans. by J. Cottingham, R. Stoothoff and D. Murdoch, Cambridge: Cambridge University Press. Vol 2.

7. Snow, Charles Percy. 2001. [1959]. The Two Cultures. London: Cambridge University Press.

this Modern intellect, a deep-seated existential fear in the longing "to find some fixed point, some stable rock upon which we can secure our lives against the vicissitudes that constantly threaten us."[8] Steve Torrance uses the striking metaphor: "This anxiety generates a dream and a nightmare — the absolutist dream of achieving a guarantee of objective truth in our internal representations, and the nihilist nightmare that such a guarantee is forever beyond us."[9] Kierkegaard echoes this anxiety well, in lamenting: "Either there is some support for our being, a fixed foundation for our knowledge, or we cannot escape the forces of darkness that envelop us with madness, with intellectual and moral chaos."[10]

The questions pursued by subsequent Enlightenment thinkers were themselves, for the most part, not particularly new. What was new was an optimism (or positivism) that ancient questions were not doomed to remain open mysteries, but could be ultimately solved, determined by means of precise measurement, and reasonable dissection into formal parts. The optimism was the overtone of the dream that behind every phenomena rested a yet-to-be articulated principle or law of the material universe. Just as the cartographical blank edges were filled in (and promptly colonized), scientists and natural philosophers clamored to plant their flag on intellectual property that had since time immemorial been inhabited by mere primitive mysticism, yet untamed by disciplined empirical inquiry, and, as such, had no basis for defending its claim as a legitimate form of knowledge.

8. Bernstein, R.J..1983. Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis. University of Pennsylvania Press. p. 18
9. Torrance, S.. 2005. In Search of the Enactive. Introduction to the special issue on Enactive Experience. Phenomenology and the Cognitive Science, 4(4), pp. 357-368.
10. Ibid. p. 18

The determinist imperative ensured that speculative music theory (open questioning of basic metaphors, forms, and structures) was already beginning to be overshadowed by regulative theory (which emphasized procedural knowledge), and the analytic (which operated under the *imitatio* dictum, with a strong nationalist undertone). By the time Herman von Helmholtz entered the scene, speculative theory represented blank edges of a map begging to be defined, and occupied. So while the formidable German physician, physicist, and natural philosopher didn't single handedly demolish the speculative tradition, he certainly demoralized it in no uncertain terms. It should be said that, all things considered, Helmholtz is owed a debt of gratitude for a number of notable contributions to modern science, the best known of which is perhaps his statement on the law of conservation of energy.

In "Sensations of Tone as the Physiological Basis for the Theory of Music", Helmholtz, also an amateur musician, brought the same level of experimental rigor to bear on questions perennially belonging generally to the music theoretical tradition, and the speculative specifically. Employing Fourier's recently developed wave transform as a method of analyzing patterns of wave interaction, armed with a spectacular assembly of tuning forks, oscillators, and electromagnets, he performed exhaustive measurements of tones, harmonics, and beats produced by monads, dyads, and tetrads. His experimentation was, technically speaking, spectacular, and in step with the ethos of modernity, which sought, to an obsessive degree, to ground ancient mysteries in a thoroughly natural theory. By the end of "Sensations", Helmholtz confidently answers Pythagoras' 2,500-year-old question — "Why is consonance determined by the ratios of small whole numbers?" — with "the discovery that the ear resolves all complex sounds into pendular oscillations,

according to the laws of sympathetic vibration."[11] By quantifying sound to such a precise degree, Helmholtz was the first to provide convincing evidence that it is the physiology of the ear that gives rise to the sensation of consonance and dissonance. So while the full experience of music was presented as bridge between the physical body and the aesthetic mind, music's fundamental basis was determined to be absolutely physiological.

Music theory, the traditional discipline reserved for the speculation, regulation, and analysis of musical structure, the old arbiter of consonance and dissonance, was, in the mind of Helmholtz, now free from mystical "dreaming," and thereafter firmly planted in scientific fact.[12] Helmholtz mentions several speculative theories that could now be dispensed with in serious discussions of music, including antiquated musical cosmologies, the moralizing of protoscientific Renaissance thinkers, Plato's transcendent forms, ancient Chinese philosophizing, elemental accounts in Arabic writing, among others, all of which could at once be subsumed within his totalizing theory. He alleged that his basis was the world's first to furnish the "required explanation" for melodic and harmonic relationships.[13] While not a completely unfair claim — he undeniably contributed a brilliantly exhaustive understanding of the interactions of overtones in the ear — the notion

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11. Helmhotlz, Hermann. 1875. On the Sensations of Tone: As the Physiological Basis for the Theory of Music. Edited by Alexander Ellis. Search. Third Ed. London. p. 346
12. "In the book of the Tso-kiu-ming, a friend of Confucius (B.C. 500), the five tones of the old Chinese scale were compares with the five elements of their natural philosophy- water, fire, wood, metal, and earth. […] Similar references of musical tones to the elements, the temperaments, and the constellations are found abundantly scattered among the musical writings of the Arabs. The harmony of the spheres plays a great part throughout the middle ages. In Athanasius Kircher, not only the macrocosm, but the microcosm is *musica*. Even Kepler, a man of the deepest scientific spirit, could not keep himself quite free from imaginations of this kind. Nay even in the most recent times natural philosophers may still be found who prefer such dreaming to scientific work." Ibid. p. 347
13. Ibid. p. 600

that an explanation is required perhaps speaks more to the empirical appetite of the nineteenth century than it does about the inadequacy of earlier theories.

By pitting speculative "dreaming" against true scientific work, Helmholtz not only reified Cartesian dualism, but advanced the global dominance of German intellectualism at a time when its nationhood had just been established. Somewhat conveniently, most of his conclusions provide unquestionable support for the predominant theoretical rules of his day, and especially those associated with the legacy of great German music. For example, as intuited by J.S. Bach, melodic tones are to be prepared and resolved according to the relationships between their upper partial tones, and his harmonically ideal voicings align with those of Mozart.[14] By venerated these Austro-German composers in conjunction with musical giants such as Rameau[15] and Palestrina,[16] Helmholtz contributes to a teleology of German greatness, attested to by scientific precision.

"Sensations" self-consciously oscillates between a relatively open humanism and a deterministic scientism, a bifurcation to which Helmholtz commits at the outset: "In my somewhat unusual attempt to pass from natural philosophy into the theory of the arts, I hope that I have kept the regions of physiology and aesthetics sufficiently distinct,"[17] in order to uphold their own brand of universal "dignity." Yet the dignity granted to the separate spheres of "the facts of nature" and "the artistic feeling," the caused and the

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14. "Mozart is certainly the composer who had the surest instinct for the delicacy of his art." Ibid. p. 339
15. [Regarding minor triad inversions] "Rameau's successors have partly given up this last distinction; but it is one in which Rameau's fine artistic feeling fully corresponded with the facts of nature." Ibid. p. 480
16. "Palestrina and his school have really solved the problem [of consonant chords] in the most perfect manner. Here also we find an almost uninterrupted flow of consonant chords, with dominant Sevenths, or dissonant passing notes, charily interspersed. Here also the consonant chords wholly consist of those major and minor chords which we have noted as being in the more perfect positions. […] This explains the deep and tender expressiveness of the harmony of these compositions, which sound like the songs of angels with hearts affected by undarkened by human grief in their heavenly joy." Ibid. p. 340
17. Ibid. p. 8

chosen, while certainly treated distinctly, is far from balanced. As Aristotle presented *theoros* as a higher form of *praktike*, Helmholtz presents his discoveries as the long awaited guiding rule that musicians had always lacked: "It was [previously] left to the musician himself to obtain some insight into the various effects of the various positions of chords, by mere use and experience. No rule could be given to guide him."[18] Helmholtz never claims that physics should determine creative choice, but instead distinguishes the physiological determination of consonance/dissonance ("gratification of the senses") from the aesthetic requirements that at times may stand in contrast to such gratification for expressive purposes.[19]

The negotiation between causality and choice in Helmoltzian music theory reflects a broader dialectic of liberal thought, retaining the impulse to reconcile causality and choice not by mediating between them, but instead by requiring their strict conceptual and temporal separation. As Will Kymlicka observes, a liberal society not only requires the defense of the freedom to pursue the 'good life,' but is also specifically concerned with the forming and revising of people's conceptions of 'the good', rather than the pursuit of those conceptions once chosen.[20] Helmholtz is never fully Hegelian idealist, nor fully materialist-sensualist, but not entirely free of the determinism of either extreme, magnifying a competitive dynamic between the two modes. Benjamin Steege observes:

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18. Ibid. p. 339

19. "In ancient music the flute played a much more important part than at present, and this seems to accord with the whole ideal of classical art, which aimed at keeping every unpleasant thing form its productions, confiding itself to pure beauty, whereas modern art requires more abundant means of expression, and consequently to a certain extent admits into its circle what *in itself would be contrary to the gratification of the senses*." [emphasis added] Ibid. 311

20. Kymlicka, Will. quoted in Steege, Benjamin. 2012. Helmholtz and the Modern Listener. Cambridge: Cambridge University Press. p. 171

Thus, the two incommensurable modes of knowledge most characteristic of history and psychophysiology do not simply coexist but rather compete at every moment for an impossible (chrono)logical priority, and this structural impossibility does not so much undermine as indeed intensify the explanatory zeal of each.[21]

Cartesian anxiety also intensifies in this competitive incommensurability between an inner, subjective world and an outer, objective world. For Helmholtz the boundary between the two is assumed to be the limits of measurability, maintaining the dream that the quantified object provides the most accurate picture of objective reality, conjuring the parallel nightmare, that "what was measured was [itself] produced by the measurement."[22] Helmholtz provided the very image of precision that was key for the experimental life sciences of the late nineteenth and early twentieth centuries, and modeled how the sensory experience might be quantified for early cyberneticists, the forerunners of what would evolve into cognitive science.

Helmholtz' distinction between the 'reason of sensation' — which can be apprehending consciously and measured empirically — and the 'ecstatic satisfaction' in music perception — manifested from the subconscious, and impervious to analysis[23] — set the discursive tone for theory as a discipline. Theorists thereafter preserved Helmholtz' dream of a discipline steadfastly "radically present and radically historical,"[24] a position

21. Ibid. p. 103
22. Schmidgen, Henning. 2014. The Helmholtz Curves: Tracing Lost Time. First Edit. New York: Fordham University Press. [emphasis in the original] p. 4
23. "But for all this it is an essential condition that the whole extent of the regularity and design of a work of art should *not* be apprehended consciously. It is precisely form that part of its regular subjection to reason, which escapes out conscious apprehension, that a work of art exalts and delights us, and the chief effects of the artistically beautiful proceed, *not* form the part which we are able fully to analyse." [emphasis original] Helmholtz, p. 571
24. Steege. p. 14

reflected in the cementing of the regulative tradition praised by Helmholtz and reified by his measurements, and the growth of the analytic tradition. Pedagogy after Helmholtz gradually replaces open speculative questions with the facts of sensation. There was little reason for the student to anymore question the basis of their practice. Fulfilling what Helmholtz labored exhaustively to achieve, the rule could now be provided to them. In terms of agency, as argued in the Chapter 4, the limiting of the speculative also meant a recession of the curricular space in which agency proceeded from the student toward the world (through actively engagement with the open questions of music's fundamentals), and the expansion of curricular spaces in which agency is asserted from the world onto the student (through determined facts, canonized repertoire, and procedural learning).

The case of early twentieth-century prodigy Ervin Nyiregyhazi testifies to the belief that instruction in theory was a requisite for higher order musical thinking. In 1916 Ervin was the child subject of what appears to the first empirical account of a musical prodigy. Psychologist Geza Revesz elaborates in great detail his surprise at Ervin's ability to formulate ideas despite having lacked formal training:

> At this time he did not even know the first rules of the theory of composition, and had heard and learned but a little. It is in spite of insufficient instruction and complete lack of knowledge concerning the theory of composition, that we see musical thoughts already taking form, and becoming musical units of higher order. When he sat in this way before the piano, thoughtful and perfectly engrossed by the music, I had the impression that I was in the presence, not of a child, but of an artist of deep insight.[25]

25. Revesz, Geza. 1925 (1916). The psychology of a musical prodigy. Harcourt Brace & Co .

The determinism of music theory taught on the basis of Helmholtz' measurements resulted in a proportionately "intensified explanatory zeal" of the indeterminate, aesthetic mode of knowledge, taking form in a defiant push to stretch and break from the rules he so meticulously substantiated. In effect it took only one generation for the composers of the Second Viennese School to begin dispensing with them altogether. Various forms of tonal experimentation required new rules, as Webern states: "new laws asserted themselves that made it impossible to designate a piece as being in one key or another."[26] The growth of non-traditional tonal practice through the first half of the twentieth century intensified the dissonance between artistic practice and theory as it was conventionally taught, which still remained largely based in Helmholtz' "Sensations." As both experimental practice and music theory as a discipline grew in academic clout, their disjunction inevitably came to a head in a parley, playing itself out in a 1965 special issue of the *College Music Symposium*. A closer look at this exchange of views, for the purposes of my argument, underscores the destabilization that resulted from a strongly dualistic conceptualization of what it means to teach and know music theory.

1965's 'Crisis in Theory Teaching': Intercessions from Boatwright, Babbitt, and Imbrie.

The 1950's saw the emergence of the first academic appointments of music theory in several American music departments and the foundation of advanced degree programs and music theory. The Yale University department music, under the leadership of Paul

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26. Webern, A. 1963. *The Path to the New Music*. Trans. by Leo Black. Bryn Mawr. Pennsylvania: Theodore Presser.

Hindemith, was the first academic institution to establish a music theory degree. There was, however, little unification how theory was defined, much less taught. In 1965 the Journal of the College Music Society proposed the following question in a series entitled "The Crisis in Theory Teaching": "In view of the great advances made in recent years in composition, do you think that 'traditional' harmony, counterpoint, etc., are still essential to the training of a music student? Or do you feel that these courses are outmoded and need to be replaced with new curricular concepts?" American composers Howard Boatwright, Milton Babbitt, and Andrew Imbrie provided opposing views. The wide discrepancies between their conceptions of the discipline reflects the inexorable outcome of the attempt to ground it in a determined nature. Below I look at each respondent, identifying in what ways they explicitly or implicitly forward Helmholtzian dualism, and in the case of Boatwright and Babbitt, a vision of the speculative explicitly constrained by empirical determinism. I also being to integrate the framework introduced in the Chapter 4: the vectors of agency represented by the speculative, regulative, and analytic theoretical traditions (see p. 158).

As a theorist, Howard Boatwright was heavily influenced by Hindemith's pedagogical system which, more than any other approach, attempted to separate so-called traditional harmony from the classical canon for use in the twentieth century. Boatwright's response to the 'crisis in theory teaching' is then appropriately diachronic in its scope. He proposes: "In the curriculum of the future, it would appear that a study of the sound material, and the physics relating to it, will probably reassume the important role occupied by its primitive precursors, which dealt merely with simple proportions and their relation

to tone and interval."[27] He also criticizes the tendency to exclusively teach experimental theories, such as serial techniques, which did not truly reflect concert hall practice. Whether or not "serialists actually represented the 'cutting edge' of twentieth century music," contemporary music as far as programming in the 1950's-60's, statistically consisted of Stravinsky, Prokofieff, Hindemith, Bartok, Britten, Barber, and Copland, etc., and not Schoenberg, Webern, and the Second Viennese School.

In order to minimize the aesthetic bias implicit within a curriculum, Boatwright calls for a synthesized method that gives students impartial exposure to "the full range of tonally organized music," with time given to serial methods proportionate with its presence in concert programs. His proposed cut-off point for modern music is 1950, which removes the inappropriate 'modern' classification from the first half of the century. "[Contemporary theorists] need to do more to eliminate anachronistic practices in their field, to make it serve more meaningfully in developing a general understanding of our musical heritage from the distant and recent past, and to connect it more realistically with the events of the present." Boatwright outlines a two-dimensional music theory pedagogy: physics of sound as raw materials, and unbiased exposure to the full range of tonal procedures throughout history, and, importantly, not just European history.[28]

Boatwright's model desired to reinstate what he sees as the conventional progression of medieval theoretical treatises — the *musica speculativa* preceding the *musica practica*. Except Boatwright's *speculativa*, following Helmholtz, has been completely subsumed by *ratio*, with speculation merely a stand in for being oriented toward determined physical

27. Boatwright, Howard. 1965. "The Crisis in Theory Teaching." College Music Symposium 5. p. 2
28. Boatwright, H. 1963. Indian Classical Music and the Western Listener. Bharatiya Vidya Bhavan. 2nd ed.

properties of sound and sensation. In this way, Boatwright's paradigm resembles the model that became standardized around this time, and still predominantly practiced today. His paradigm revolves around the instillation of physics and histories, both factual and determined in their presentation, working together toward the goal of performing a specific canon. Through the lens of arguments presented in the Chapter 4 we see in Boatwright the reification of both the analytic theoretical tradition (analysis via the "raw physics" of sound) and the regulative tradition (disciplined engagement with the "full range of tonal procedures" seen in concert repertoire). Boatwright also retains Helmholtz' implicit dismissal of an open speculation. This is also consisted with the so-called 'banking model' of learning, in which teachers are seen to enrich students through deposits of knowledge. From the standpoint of embodiment, particularly as it concerns the student body, pedagogy based on this formulation situates the student primarily as acted-upon, rather than actor, and stifles the agency vectored from the student toward their world.

Milton Babbitt represents a more extreme empirical idealization of the discipline, so much so that Richard Taruskin mentions him specifically within the period he refers to as "the peak of unethical theory."[29] Babbitt polemically defends a music theory truly worthy of the title 'theory', which can only be answerable to the scientific method.[30] Contrasting most paradigms of the day, Babbitt's pedagogy is far more concerned with verbal and

29. Taruskin, Richard. 2018. "The Many Dangers of Music." Lecture delivered at the University of San Diego. March 22.
30. "…there is no doubt that the question as to whether musical discourse or, more precisely, the theory of music should be subject to the methodological criteria of scientific method and the attendant scientific language is a question, except that the question is really not he normative one of whether it 'should be' or 'must be,' but the factual one that it is, not because of the nature of musical theory, but because of the nature and scope of scientific method and language, whose domain of application is such that if it is not extensible to musical theory, then musical theory is not a theory in any sense in which the term has been employed." Babbitt, Milton. 1965. "The Crisis in Theory Teaching: The Structure and Function of Music Theory." *College Music Symposium.* 5. p. 2

methodological responsibility than with whether one begins with tonal or atonal, with "all" music, or with Fuxian or Webernian counterpoint. He fundamentally demands an "adequately reconstructed terminology to make possible and to provide a model for determinate and testable statements about musical compositions." Similar to the way Helmholtz endeavored to situate music theory in an empirical method, free from "speculative dreaming," Babbitt calls for a theory founded in empirical coherency, free from the tautologies, numerologies, and contradictions that persisted among the theoretical perspectives of his day. For example, Babbitt rejects the tendency to regard the overtone phenomena as a "system" for grounding or justifying the natural-ness of music theory, and the incessant desire to categorize consonance and dissonance in a fixed definition. He sees this as a "folly" descended directly from Helmholtz, who he likely had in mind when stating: "The concepts of consonance and dissonance have induced centuries of a comedy of methodological errors, from the rationalistic stage, through the so-called 'experimental stage,' without having been clear or inquired at any time as to the object of the rationalizing or the experimentation."[31]

For Babbitt, the theory student is not a composer-in-training, but rather a student of contemporary philosophy and science, and the successful theorist is not a practicing musician, but rather a "concerned and thoughtful musical citizen." Where creativity is concerned, music theory education is to provide the necessary constraints by which a student moves from ignorance ("*argumentum ad populum*") to the freedom of comprehensibility, which alone can supply the basis for "unprecedented musical

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31. Ibid. p. 5

utterances." Despite setting himself apart from Helmholtz, they share a deep conviction to hold music theory subject to a certain notion of the scientific method. Unlike Helmholtz, Babbitt aims to avoid grounding theory in a single totalizing logic. Babbitt's music theory is fluid, capable not only of examining musical structures, of formulating systematic constraints, but also of constructing predictive models about composers and styles. The creative process is then a matter of following through with a fully informed musical prediction of a coherent and mature methodology.

On the surface Babbitt thus appears to espouse a mode of musical speculation. This might be true, in a sense that it pursues open questions. After all, Babbitt discourages fixed definitions, positions theory as the pursuit of open questions, and embraces a pedagogy that is expressly philosophical. Yet, the speculation he espouses is itself fixed in a Modern sense of legitimacy, with mathematics and scientific method providing the only proper terms for theorization, prediction, measurement, and interpretation. Since the terms of speculation are so prescribed, Babbitt's theory follows more the analytic tradition. In a Foucauldian sense, this analytic mode creates an agency dynamic oriented from the world onto the theorist, or learner. Cartesian anxiety is summoned once more, ensuring, again, that what is measured is, itself, produced by the measurement.

The response from composer Andrew Imbrie stands out by adopting a strong practitioner stance in contrast to both Boatwright's physics/history model, and Babbitt's scientific framing. Imbrie finds theory to be a "strange term to apply to a discipline designed to develop a student's mastery of a craft. One doesn't learn to swim by studying the theory of swimming." Imbrie thus calls for a pedagogy formed around teaching-by-doing, in which instruction in traditional harmony is primarily suitable for the purpose of

analyzing the Western canon, still a valuable exercise "despite our cosmopolitan attitudes and historicizing sensibilities."[32] Imbrie operates under the assumption that all students are potential composers, with music theory positioned as the medium for attaining what he terms artistic control, aimed toward mature artistic production, "for it is nothing less than the dignity of true craftsmanship that he should aspire to."[33] Far from adopting a 'creative approach' that brushes off conventions, he views traditional rules and exercises as important stand-ins for discipline and control, the scaffolding that builds toward a self-expression that is "truly free." For Imbrie, music theory is chiefly an action-to-do that should strive toward understanding and emoting the visceral. It is only secondarily an abstract, intellectual exercise, which guides students to acknowledge a "debt to the past," and toward navigating the iconoclasm of the mid-twentieth century.

Distinct from the thorough idealization of the first two respondents, Imbrie's model does not need not to be foolproof in order to serve its core function as a "how"-centered rather than "why"-governed progression toward artistic independence and autonomy. His is an essentially pragmatist view. After all, Imbrie observes, Beethoven was himself inspired by Fux's account of the secrets of Palestrina, despite that fact that studies by Knud Jeppesen have shown how deeply mistaken Fux was in his own summary.[34] Consistent with the ethic of pragmatism, music theory for Imbrie is far less interested in 'the truth', particularly in a determined, scientific or even historical sense. Rather, it is centrally concerned with the cultivation of useful action, of craftsmanship.

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32. Imbrie, Andrew. 1965. "The Crisis in Theory Teaching: A Grain of Salt." College Music Symposium 5.
33. Ibid. p. 3
34. Ibid.

Imbrie's overtly constructivist teaching-by-doing model correlates strongly with Bourdieu's notion of practice, the primary modality in which agency is exercised, as well as his concept of *habitus*, the operative locus of practice. As argued in Chapter 4 (see p. 150) Bourdieu's conception of embodiment and agency (in terms of body-world relations) most parallels that of the regulative theoretical tradition, in its operative focus on a reciprocal agency between the student and the world. Rather than teaching toward an ideal state in which the student is properly aligned with the fixed physics and histories of the world (as for Boatwright and Babbitt), the objectives Imbrie lays out — artistic control, mature craftsmanship — instead reflect a state of readiness for action, a relationship between musician and environment (including instruments, repertoire, physical space, audience) in which each responds to the other in a reciprocal balance. His model is thus fundamentally concerned with the contribution of theory learning to a student's actions in the present, contrasting both Boatwright and Babbit, whose models maintained the Helmholtzian vision of theory as both radically present and radically historical. By making an engagement with music history a secondary, rather than a coequal priority, Imbrie's theory teaching paradigm authorizes a higher level of student agency vectored outwardly. Yet, in guiding learners toward independence and autonomy in a mode of "how," and wholly avoiding the "why," Imbrie's model also limits the phenomenological aspects form of *musica speculativa* that place students in contact with the discipline's grounding metaphors, and thus, the overall vector of agency is still oriented inwardly, though to a lesser degree than the paradigms modeled by Boatwright and Babbitt.

Program Expansion, Curricular Homogenization.

The above discussion takes place concurrently with a rapid expansion in the number of university music and conservatory students in Western countries. The contrasting views reflect the discrepancies between theory textbooks at the time, which tended to be institution-bound, idiosyncratic, and reacting in several directions to the eclecticism of the 1950's.[35] This unwieldy state, according to David Huron, had become "something of an embarrassment."[36] By about 1970 the disparate branches began to be pruned by the forces of commercially motivated standardization. Textbook publishers had become more sensitive to teacher feedback that this or that element of a textbook was considered 'unconventional.' Systems were put in place to manage the expansion of the national student body, which, as systems do, ushered in curricular homogenization. As a result, textbooks rapidly converged so as to conform to a majority view. Huron laments: "We'd like to think that only the 'right' rules survived, but that's probably too optimistic."[37]

As a central figure in the establishment of the field of music cognition, Huron has done more than most to use cognitive science as a lens to understand not just the rules and principles underlying music theory, but to enhance the systems that have governed its teaching. Building upon established concepts in the cognition of perception, such as Gestalt principles of image formation and grouping, auditory masking, streams, and scene analysis, Huron argues, in a fashion not dissimilar from Helmholtz' measurements of sensation, that these immutable cognitive principles account for the staying power of the standard voice-

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35. The dynamics in the period are described in detail by Girard, Aaron. 2007. "Music Theory in the American Academy." Dissertation. Harvard University Press.
36. Huron, D. 2006a. On teaching voice leading from perceptual principles. Music Theory Pedagogy, Vol. 20, pp. 163-166
37. Ibid.

leading rules, including rules for chord spacing, common tones, step motion, part overlap, parallel octaves and fifths, augmented intervals, etc. The logical question that follows the attempt to ground a cultural practice in an empirical perspective is, as it was for Helmholtz, to what extent can we teach the physical principles, and dispense with the canon?

> By understanding the underlying principles, one might well expect novice students to produce better part-writing. However, this expectation has not been borne out in practical classroom experience. [...] Presenting the canon … reflects the many competing concerns that musicians must often reconcile when composing or arranging.[38]

Despite his best efforts, Huron admits that years of experience has revealed that too much emphasis on the physical account of music theory imparts none of the tools students need to interact with their immediate musical culture or dialogue with its heritage. While too much emphasis on the historical account leaves a student ill-equipped to engage creatively with his/her immediate environment. Huron's view, then, parallels the paradigm articulated by Howard Boatwright, in outlining a two-prong theory curriculum that balances objective physical (or cognitive, in Huron's case) principles to guide analysis, with exposure to a range of historical practices oriented toward a particular repertoire. Through the lens of my own analysis, this formulation perpetuates the familiar leaning upon the analytic and regulative theoretical traditions, conjuring vectors of agency that position the student as passively-informed within the learning process.

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38. Huron, D. 2006b. *Sweet Anticipation: Music and the Psychology of Expectation.* Cambridge, Massachusetts: MIT Press.

Restoring the Speculative through Embodied Cognition.

At the end of "Sensations" Helmholtz offers a vital confession. He states that the physical problems of the sensation of tone are rather simple compared to the aesthetic problems of musical motivations: "In [musical expression] the properties of sensual perception would of course have a casual influence, but only in a very subordinate degree. The real difficulty lies in the development of the *psychical motives* which here assert themselves."[39] The field of psychology, in its nascent form at the time, had little to offer Helmholtz' understanding of psychical motives. Even today, the nature of progress made in this vein is subject to debate, as we shall see. Yet this confession makes two key observations: there are two hidden factors that play a deeper role than physiological sensation in musical expression: psychical factors, and motivated factors. Huron, and similar scholars, have contributed much in the way of structuring our understanding of what Helmholtz likely meant by 'psychical.' Findings include: modeling the experience of prediction response in musical event onset,[40] defining tonal hierarchies and the role of short-term memory in tracking melodic transformation,[41] connecting attributes of musicality to animal behavior,[42] and a substantial literature investigating musical experience using neuroimaging techniques.[43] These are just a few ways cognitive science has broadened the inquiry of what had traditionally been the territory of music theory.

39. Helmholtz. p. 578 (emphasis added)
40. Huron, D. 2006b.
41. Krumhansl, Carol. 1985. Perceiving Tonal Structure in Music: The complex mental activity by which listeners distinguish subtle relations among tones, chords, and keys in Western tonal music offers new territory for cognitive psychology. *American Scientist*
Vol. 73, No. 4. July-August. p. 371-378
42. See the work of Ani Patel
43. See the foundational work of Andrea Halpern, Ed Large, Psyche Loui, Laurel Trainor, Isabelle Peretz, Petr Janata, and John Iversen.

Yet, music cognitive science retains that same bifurcated commitment that shaped Helmholtz' measurements: a Cartesian legacy whose explanatory power is owed a debt of gratitude by anyone who has benefited from the scientific revolution, but, at the same time, whose dualism prevents a more complete picture of musical experience from coming into view. Cartesian dualism, as intimated by Mark Rowlands, is fatally incapable of reincorporating the non-physical mind into the body.[44] Just as Huron conceded that exposing students to a materialist account of musical experience failed to translate to musicality, most of the work in music cognition fails to engage the musician at the level of their own agency. Instead, the general project is one of mapping specialized brain regions involved in music processing in order to provide a universal account of musical abilities. Hendrick Purwins presents this view directly:

> As with language, specific areas of the brain seem to be devoted to the processing of music information. If we could grasp universal principles of musical intelligence, we would get an idea of how our music understanding gets refined and adapted to a particular musical style as a result of a developmental process triggered by stimuli of that musical culture.[45]

The recent embodied turn in cognitive science aims to address this Cartesian legacy explicitly. Lawrence Zbikowski was among the first to apply this perspective in the realm of music structure, believing that a more dynamic, non-dualist approach can provide a firm foundation for the discipline of music theory. Zbikowski cites studies in cognitive linguistics and cognitive science to derive three general cognitive capacities central to the

44. Rowlands, M. 2003. Externalism: Putting Mind and World Back Together Again. Acumen/McGill-Queen's University Press.
45. Purwins H., Perfecto H. Gratchen M., Hazan A., Marxer R. & Serra X.. 2008. Computational models of music perception and cognition I: The perceptual and cognitive processing chain. *Physics of Life Reviews.* 5. p. 152.

production and understanding of music: categorization, cross-domain mapping, and the use of conceptual models.[46] The benefits of grounding music theory in these ideas extends to pedagogical concerns, providing an outlet from the Eurocentrist systems of musical meaning and values for the student who should be more concerned with how music comes to have meaning for themselves: "Musical structure is not simply a reflection of the tonal practice of Haydn, Mozart, and Beethoven, but is instead an account of how patterned sound comes to have meaning for human beings."[47]

If a cognitivist investigation of musical experience addresses what Helmholtz termed the 'psychical', I would argue that the perspective of embodied cognition goes further toward accounting for the second factor: motive, or specifically, motivated action. It is from this angle that I see the analytic and regulative traditions — intensified by Helmholtz, Huron, etc., and curricularized in paradigms forwarded by Boatwright and Babbitt — might be brought back into balance with the speculative tradition, and, in doing so, reassert a pedagogical mode in which agency vectors outwardly from the student toward their world. Music theory taught through an embodied lens instead opens up as an indeterminate field, one in which, I argue, students themselves are called to participate as theorists, acting equally within the speculative, regulative, and analytic theoretical traditions.

Metaphors within Metaphors: Music Theory and the Embodied Mind

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46. Zbikowski, Lawrence. 2005. "Cognitive Science, Music Theory, and Music Analysis." Musiktheorie Im Kontext: 5. Kongress Der Gesellschaft Für Musiktheorie, 447–48
47. Ibid. p. 462

[Contemporary developments] find very little reflection in the college music theory curriculum, [where] the teaching of harmony and counterpoint in many institutions continues along the same barren paths it did fifty years ago. — Allen Forte (1977)[48]

Having examined the impact of Cartesian dualism on paradigms of theory teaching, I will now turn to explore how 4E perspectives introduced in Chapter 5 recast the meaning of learning and knowing music theory.

4E investigations of music cognition have to this point been primarily interested in the 'musical mind' in the mode of performance (or *practica*, more formally), and modes of music learning oriented toward performance. Far less attention has been paid to the impact an embodied perspective on music theory. While this is in part due to the polysemous history of what exactly constitutes theory, the primary barrier remains the dualist foundations of the predominant thinking in the discipline. Music theory is certainly more difficult to interact with than performance, from an embodied approach, and so it tends to be reduced to an arcane set of rules of questionable relevance. Schiavio, for instance, describes music theory as a subject that provides a listener with a particular knowledge to ascribe meaning to a musical object, yet, "it is not the only tool that allows sense-making and, above all, it is not the primal."[49] This characterization of music theory, however, responds to a version of theory heavily inflected by dualism, which, while the predominant framing today, is not the primal. As argued in Chapter 4, a primary expression of this legacy has been the increasing concentration on the regulative and analytic theoretical traditions,

48. Forte, Allen. 1977. Music Theory in Re-Transition: Centripetal Signs." *College Music Symposium* 17/1. Spring. p. 156-59.
49. Schiavio, A., & Menin, D. 2013. Embodied music cognition and the mediation technology. A critical review. In Psychology of Music, 41(6), p. 811.

and the subsequent recession of the speculative tradition, exposing the "barren paths" referred to by Forte.

Yet in many ways today's studies of music cognition can be considered a natural extension of the same questions that have in the past been central to the concerns of speculative theoreticians — questions such as: What are the fundamental units, patterns, and metaphors underlie music as experienced? Can they be measured? How do we explicitly and implicitly structure meaning in music? And What is it that minds are doing in the experience and production of music? Mainstream curriculum has been slow to engage these perspectives in relation to another of theory's perennial questions: How might musicians-in-training be taught to think about music, and what are the most effective instructional modes and methods? In this section I will argue that 4E perspectives present an opportunity to vitalize the 'barren paths.'

I will first relate embodied cognition to music theory education by way of an example with deeply rooted parallels to music theory.

Embodied Mind-Based Mathematics Education.

It goes without saying that the disciplines of music theory and mathematics are fused at multiple points in their histories in the form of seminal thinkers from Pythagoras and Plato, to Boethius, to Descartes and Helmholtz. Both domains have relied primarily upon symbolic logic to make claims understood to be absolutely true. Thus both disciplines, more than most, have been haunted by a widespread belief in disembodied forms, traceable to Plato's transcendent philosophy, wherein the objects of study — whether notes or

numbers — are (1) assumed to be discovered, not created, (2) seen as existing out there in the world and not the products minds, and (3) presumed to have statements about observations to be either true or false, with no possibility for equally valid alternative forms.[50]

Extending Lakoff and Johnson's argument for embodied conceptual metaphor as the basis of human rationality, Lakoff and Núñez explore what this suggests about the cognitive structure of mathematical reasoning. Núñez specifically aims to address mathematics' seeming inaccessibility to many students, even those who are otherwise well-educated and capable communicators. The problem arises when the metaphorical bases of the concepts being taught are obscured by symbolic logic and procedure, resulting in the accumulation of mysteries and paradoxes with no obvious mapping to lived experience. While the cognitive accessibility of math has traditionally been treated as a matter of natural aptitude, or giftedness, the underlying aptitude may be an ability to remain in touch with these conceptual metaphors, without getting bogged down in the symbols that are presented as the literal substance of math. As Núñez describes:

> Many of the confusions, enigmas, and seeming paradoxes of mathematics are because conceptual metaphors that are part of mathematics are not recognized as metaphors but are taken as literal. When the full metaphorical character of mathematical concepts is revealed, such confusions and paradoxes disappear.[51]

Thus, clarifying the underlying metaphors can open pathways of understanding for students previously considered to simply have no aptitude for mathematics. A conceptual

50. Lakoff, George, Núñez, Rafael. 2001. "Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into
Being." Basic Books. p. 81.
51. Ibid. p. 6.

metaphor, technically defined, is a grounded, inference-preserving cross-domain mapping––a neural mechanism that allows us to use the internal structure of one conceptual domain (say, geometry) to reason about another (say, arithmetic).[52] Examples of prominent metaphors in mathematics would include: (1) Numbers Are Points on a Line, which forms the basis of geometry and trigonometry; (2) what Lakoff termed container schemas grounded in the visual system, which form the basis of Boolean algebra; and (3) Numbers Are Sets, which was central to the Foundations movement of early-twentieth-century mathematics. These are metaphors because, while they are profoundly useful for particular applications and forms of reasoning, there are other ways to conceptualize numbers that are not points on a line, or container-based, or as sets.

What makes mathematics so beautifully rich is also what renders it difficult to teach: two millennia of layering of metaphor upon metaphor, layers which have crystalized through convention into symbol systems, taught and learned (and re-taught) as literal truths in the mode of procedural knowledge — knowledge exercised in the performance of some task. The procedures, nonetheless, still rely upon these nested metaphors, which remain largely unconscious.

Most mathematicians, like music theorists, are themselves generally conscious of these metaphorical foundations, at least in some terms. George Bool — who bequeathed to us Boolean algebra — was well aware of the metaphorical mapping of arithmetic with the logic of classes. In this case, to use Lakoff's terms, the logic of classes provided Bool a grounding metaphor. That is, his concept of a class was grounded in the common concept

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52. Ibid.

of a bounded region in space, via the conceptual apparatus of the same schema for containment. He constructs a calculus of classes via a linking metaphor — in that it links one branch of mathematics (logic of classes) to another (arithmetic).[53]

As a rule, humans preserve ideas that impact our lived experience, or at least have the appearance of potential impact. Complex conceptual mappings, even if preserved in the form of symbolic logic and procedural knowledge, are built upon layers of metaphors. From a pedagogical standpoint, concepts made more accessible to students, when conscious contact with these metaphorical bases is made and maintained. Interestingly, evidence suggests that this is, at least in part, accomplished by instructive physical gestures. A study of university-level calculus instructors revealed that the physical gestures used during lectures showed an overwhelming tendency to match the dynamic meaning evoked via the underlying conceptual metaphors, source-path-goal schemas, and fictive motion.[54]

[55] This suggests that even when teaching static concepts through symbolic logic, effective teachers are able to maintain contact with their underlying embodied metaphors, though unconsciously through gesture.

The central point here is, as concluded by Núñez:

> …even the most abstract conceptual system we can think of, mathematics(!), is ultimately embodied in the nature of our bodies, language, and cognition. It follows from this that if mathematics is embodied in nature, then any abstract conceptual system is embodied.[56]

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53. Ibid. p. 127.
54. Fictive motion is a cognitive mechanism through which we unconsciously conceptualize static entities, e.g. The Equator *passes* through many countries, or the fence *stops* after the tree.
55. Marghetis, Tyler, & Rafael Núñez. 2013. "The Motion behind the Symbols: A Vital Role for Dynamism in the Conceptualization of Limits and Continuity in Expert Mathematics." *Topics in Cognitive Science* 5 (2): 299–316.
56. Núñez, Rafael. 2006. "Do Real Numbers Really Move? Language, Thought, and Gesture: The Embodied Cognitive Foundations of Mathematics." In *Unconventional Essays on the Nature of Mathematics*, edited by Reuben Hersh, 160–81. Springer. (Emphasis in the original)

Embodied Metaphor in Music Theory.

Theorists of embodied music cognition have avoided discussing the cognitive processes that underlie music theory because of its presumed higher-order complexity. Schiavio makes a statement to this effect, saying: "[Sensorimotor sense-making] disregards the high-level forms of musical understanding that are not shaped by motor knowledge such as music theory, musical analysis, etc. Those forms are moulded by a more theoretical kind of sense-making and thus cannot be accounted for by EMC (Embodied Music Cognition)."[57] Yet, if the claims made by Lakoff and Núñez are correct, that even calculus and Euler's Identity — the world's 'most beautiful' equation — are at their base level built upon metaphors grounded in the experience of being a body-in-the-world, then why would French augmented sixth pivots and musical set theory, be any less attributable to an embodied mind?
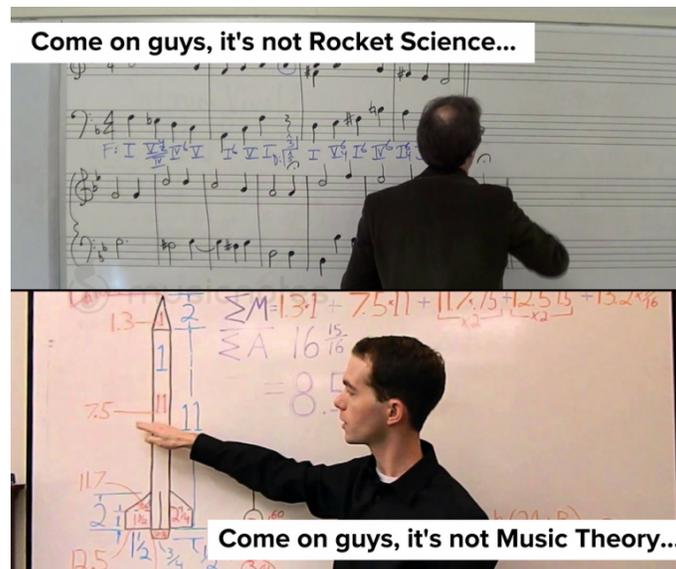
Figure 6.1: "It's not rocket science."

57. Matja, J.R., and Andrea Schiavio. 2013. "Enactive Music Cognition: Background and Research Themes." *Constructivist Foundations* 8. p. 354.

Many parallels can be drawn between mathematics education and music theory pedagogy. It's no secret that theory students often sense a peculiar resemblance, even anxiety, between their experience of math and music theory (as reported on page 55) Thanks to recent strides in technology, these attitudes have been captured by a hilarious surfeit of internet memes (Fig. 6.1). Interestingly, theory's apparent resemblances to math appear to depend on students' primary instrument. Percussionists, for instance, reported only slight similarity between theory and math, while vocalists tended to see the greatest resemblance.[58] Recent studies have also shown that academic strength in math is a strong predictor of success in music theory courses.[59] Thus, the approach toward grounding mathematical thinking in an embodied perspective provides a very useful framework for music theory to make a similar transformation.

Math and music theory share a parallel history of Platonic thought. Music theorists have (1) relied upon symbolic logic since the invention of music notation, with rapid acceleration coming with the advent of the printing press; (2) presumed that what is being studied is objective, and therefore 'out there' and not a product of mind; and (3) understood statements about the nature of music to be either true or false. Students who may have demonstrable musical ability, but who have little or no theory training, enter a theory classroom to be immediately confronted by mysteries — e.g. "So the chordal seventh may resolve up when outer voices move in parallel tenths with the soprano line. What does this mean to me?" — and paradoxes — e.g. "If a major seventh interval is a sharp dissonant

58. Gutierrez, J. 2018. "Students Evaluate Music Theory Courses: A Reddit Community Survey." *College Music Symposium* 58 (2): 14.
59. Barroso, C.; Ganley, C.; Hart, S.; Rogers, N.; Clendinning, J. 2019. The Relative Importance of Math- and Music-Related Cognitive and Affective Factors in Predicting Undergraduate Music Theory Achievement. *Applied Cognitive Psychology.*

sonority, and a resolution is a consonant arrival point, then in what sense does a major seventh chord function as a resolution?" Like mathematics, these principles are generally presented in the curriculum through symbolic logic (music notation, numerals, transformations, etc.) as literal truths, and taught procedurally, with minimal attention paid to mapping these concepts onto students' lived experience.

Theory instructors, who themselves have built sensorimotor expertise in the acts of listening, performing, composing, etc., have maintained contact (conscious or unconscious) with the conceptual metaphors underpinning what they teach. This is also a more holistic way to distinguish between the 'natural talent' or 'giftedness' of successful students, and the particular obstacles of struggling students. To view music theory teaching as a process based in an embodied mind is to dispense with external attributions of inspiration (e.g. the muses), Romantic intimations of the creative genius, as well as internalist views of 'musical intelligence' as fixed within the brain. It instead views teaching as a process of nourishing an awareness of the potential for intelligent transactions. It is not merely advantageous, but critical for a student to remain in touch with the layers of metaphor founding each learning objective for such an awareness to develop. To recall Anthony Burr's statement (page 96) the difficulty in theory teaching is in guiding students to make conscious contact with what they already know, at some level. In other words, at every level of abstraction, the logic can be peeled back to reveal the layers of metaphor upon metaphor at its base.

Like mathematics instruction, theory pedagogy is saturated with image schemas[60] and fictive motion. Let's consider the prevalence of container metaphors,[61] for example. A given note is described as existing within a melody, within a rhythm, within a chord, within a key, within a tonal hierarchy, within a voicing, within a section which itself is within a form, contained within a piece, within a style. The note also contains overtones and an associated timbre, which contains an inferential emotional significance. Outside of the its symbolic representation, the note also exists somewhere on an instrument, in physical space, in the cochlea, in the auditory imagination, in one's working and episodic memory, not to mention in multiple intersecting planes of historical and cultural context. What is meant by "a note," then, is that which metaphorically contains and is-contained in all of these ways simultaneously and interdependently, yet, can be described, identified and/or enumerated at any one level independently.

Of course, of primary interest to musicians is not what a note is, but rather how it moves. Thus theory pedagogy is also filled with orientational metaphors, or source-path-goal schema. The notion that notes/chords/keys/sets don't simply cease and make way for another note, etc., but instead exist in a fluid state of dynamic directionality, moving up and down in pitch, volume, intensity, is completely metaphorical. Simultaneous notes can move closer together or farther apart, can move in harmonic and/or rhythmic parallel, or interplay in counterpoint. Sonorities also move in and out of states of relative consonance

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60. Image schemas derive from sensory and perceptual experience as we interact with and move about in the world. For example, given that humans walk upright and because we have a head at the top of our bodies and feet at the bottom, and given the presence of gravity which attracts unsupported objects, the vertical axis of the human body is functionally asymmetrical. This means that the vertical axis is characterized by an up-down or top-bottom asymmetry: the top and bottom parts of our bodies are different.
61. A container schema is a prototypical image schema. To use Johnson's example of container metaphors: "You wake *out of* a deep sleep and peer *out from* beneath the covers *into* your room."

and dissonance, approach and depart from rhythmic stability, and can morph, mutate, and transform in innumerable ways. Ornaments[62] (another container metaphor) can be used to decorate these motions. All of these conceptual metaphors intersect and interrelate, yet remain largely unconscious in the process of learning and doing theory.

Repetition and variation — or mimesis and alterity, as described by Michael Taussig[63] — are to music what the concepts of equality and inequality are to mathematics. The dynamic between repetition and variation is the grounding metaphor in music theory pedagogy, in that it grounds the abstract organization of sounds-in-time in the common multimodal experience of patterned sameness and difference, a universal cognitive feature that begins at birth. Unlike math — which broadly speaking establishes a means for clarifying the degrees of distinction between what are presumed to be equal and unequal (category construction, A≠B) — music, broadly speaking, at its best, tends to revels in obscuring preconceived boundaries (category deconstruction), from the cultural level, down to the individual note, in all of its inextricable complexity.

What does this metaphorical space mean for music theory? To respond to Helmholtz, it means that sensation is not the basis of thinking about sound material, or musical craft. Though, neither is conceptual metaphor, in an absolute sense. The use of container schemas and source-path-goal metaphors represent cognitive strategies that have evolved heuristically in order to relate to the abstract domain of sound experience in a coherent and predictable manner. While embodied conceptual metaphors universally underlie human communication, the particular metaphors we use vary widely. As Steve

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62. Flourishes that don't substantially alter the fundamental structure
63. Taussig, M. 1992. Mimesis and Alterity: A Particular History of the Senses. Routledge.

Larson observed, the forces we play with and respond to are subjective, imaginative, yet, in the case of Western classical music, also pervasive. To obscure the conceptual metaphors that underlie any knowledge domain, whether deliberate or as a matter of convention, slants the power dynamic toward the interests of the institution. This is precisely why, as observed by Christopher Hasty, "music theory is always an ethical question."[64]

Toward an Embodied Theory Pedagogy: Equilibrating the Speculative, Regulative, and Analytic.

Any teaching will value certain human potentials over others and thus, to some extent, shape the learner to reflect the prescribed vision. Prior to the end of the twentieth century, university lecture halls were the primary access point for higher level learning, and students were largely constrained by the conceptual systems — and thus, conceptual metaphors — presented to them. This is radically no longer the case. Never in history has information been so widely available outside institutional bounds. Theory's 'higher learning' content that evolved in the 1960's to address the expansion of college music is now readily accessible through thousands of web-based instructional pages, videos, and tutorials, all for the cost of an internet connection. Beyond standard classical instruction (which has a strong internet presence) anyone with interests in styles ranging from modern

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64. Hasty, Chris. 2012. Learning in time. *Visions of Research in Music Education, 20*. p. 5.

progressive metal,[65] to gypsy jazz,[66] to dark ambient lo fi chillhop[67] and beyond will find theoretical instruction directed toward their exact musical goals.

As explored in Chapters 2 and 3, one of the central questions driving curricular restructuring is: What does the music major offer to music learners of the Digital Revolution? Emerging curricular strategies, in various ways, aim to disrupt a reliance upon symbolic logic and procedural knowledge. Here it is appropriate to link symbolic logic and procedural knowledge to the theoretical traditions in which they present themselves: the analytic and regulative traditions, presented in Chapter 4. To recapitulate my argument in brief, the analytic tradition is concerned with excavating the forms (or logic) of existing works. In this mode, agency is vectored from the world toward the body of the learner (understood through Foucault's notions of bioethics/biopower). The regulative tradition is concerned with constructing systems of musical practice. Agency in this mode is seen as reciprocal, vectored bidirectionally between body and world (understood through Bourdieu's notions of practice and *habitus*). I have argued that a theory pedagogy post-Helmholtz inflated the value of the analytic and regulative, and devalued the speculative as mystical dreaming. Yet, a renaissance of speculation is blooming in the fertile soil of the digital age, and this is partly what curricular leaders are in the early stages of bringing about.

65. Music Is Win. 2016, Dec. 15. Secrets of Modern Progressive Rock/Metal. [https://www.youtube.com/watch?v=e41abRmbWw8] Ret. 4/7/19.
66. Gypsy Jazz Sectrets. 2014, Apr. 24. What Scales To Use In Gypsy Jazz? [https://www.youtube.com/watch?v=NQqdBWQdIk0] Ret. 4/7/19.
67. Soundontime. 2018, Sept. 28. All You Need To Know About Lo Fi Hip Hop. [https://soundontime.com/lo-fi-hip-hop] Ret. 4/7/19.

Here is where adopting an embodied mind perspective can help shift theory pedagogy's basic priorities toward a more holistic, effective, and ethical direction with regard to music learners of the twenty-first century. Inviting students to establish contact with theory's conceptual metaphors not only has the potential to clarify its endemic mysteries and paradoxes, it also opens the door for students to explore, evaluate, and integrate the metaphors that uphold their own embodied musical conceptualization. I mean "evaluate" specifically in a Gibsonian ecological sense, that conceptual metaphors represent affordances — potentials for specific actions — with respect to particular goals, and ways of imagining particular goals. By revealing the metaphorical character of music structure, learners have opened to them a path to engage with music at the level of affordances, a mode of theorizing in which their agency toward the world can be exercised.

This is the core of the speculative tradition, which, again, I have defined as the subset of philosophical thought concerned with basic musical categories, and the nature of the relationships between them.[68] In Chapter 4 I juxtaposed the speculative tradition with the phenomenology of Merleau-Ponty, who describes agency as vectored from the body toward the world, through what he terms "intentional threads." This oldest of the three theoretical traditions, stretching back to Pythagoras, does have modern day practitioners. This would include the group-theoretical approach (David Lewin), and the treatment of harmony through geometric spaces (Clifton Callender). Unsurprisingly, neither theory is acknowledged in the standard undergraduate theory sequence. What the dualist vision of theory pedagogy disregards about the speculative tradition is precisely what Lakoff and

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68. This definition combines those offered by Judy Lochhead and Justin London. See Footnotes 1, 2.

Núñez critique in present day mathematics education: that in the context of pedagogy, the speculative space has functioned to place the student in direct contact with the conceptual metaphors underlying their thinking about their practice.

A reemergence of the speculative space in music theory pedagogy today would accomplish a number of objectives. (1) Theory content would be expressly indeterminate. Statements made about music would be evaluated in terms of affordances, rather than in terms of validity via symbolic logic. So while statements, observations, and grounding metaphors might be equally valid, they would not necessarily be equally useful, with respect to students' backgrounds and goals. As an indeterminate field, it would embrace the inherent ambiguity and multiplicity in how musical patterns are experienced, and engage learners in the practice of reflecting upon how such experiences are enacted and developed through their own agency. Thus the speculative space functions as what van der Schyff describes as fostering a "phenomenological attitude in music education."[69] (2) The process of revealing the conceptual metaphors underlying music theory would be built into the curriculum. Students would then be encouraged to develop evolving narratives of their own experience — to identify linking metaphors of movement, tension, space and location. (3) When theory teaching begins at the level of the human body, its concepts become profoundly more accessible to all students, but especially to students whose primary experience lies outside the Western canon.

This characterization of the speculative space may resemble constructivist approaches, such as that described by Andrew Imbrie, wherein 'theory' is cast as a learning-

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69. Schyff, D van der. 2016. "From Necker Cubes to Polyrhythms: Fostering a Phenomenological Attitude in Music Education." Phenomenology & Practice 10 (1): 4–24.

by-doing. While overlap certainly exists, it merits reiteration that I am not advocating to replace the predominant curricular model with an exclusively speculative approach, which would invite open exploration, but deny learners important orienting feedback. Rather, the framing I present here stresses the importance of equilibrating the speculative, regulative, and analytic spaces at all levels of the undergraduate theory sequence. The speculative space reveals conceptual metaphors that underlie musical assumptions (e.g. gravity, source-path-goal schema), which are then enacted in the regulative space through practice (e.g. exercises based on appropriate reductions, such as voice-leading). Practices that are refined through *habitus* (a la Bourdieu) are placed in dialogue with a repertoire through the analytic mode. Analysis would not merely label notes and harmonies, but excavate layers of the composers' practice. A thorough analysis should then enliven speculation, which in turn informs practice, and broadens the repertoire being analyzed.

When the three modes are equilibrated, theory learning becomes a richly dynamic, holistic experience, one which can be described as embodied. The speculative mode, to use Schiavio's terms, focuses attention on learners' original teleomusical acts (see page 197) while the regulative proceeds to constitute those teleomusical acts. Musical analysis, given meaning through speculative reflection, is now less rhetorically inflected (as in the motto: *praeceptum – exemplum – imitatio*[70]) and becomes an exploration of theoretical pluralism. As Chemero observes, the open exploration of theoretical pluralism tends to be structured by a social pressure for lines of demarcation, the base condition of intelligibility.

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70. That is, learn a principle, locate and memorize an example, and imitate it, a motto of rhetorical pedagogy of the late fifteenth century.
McCreless, Patrick. 2002. Ch. 27: Music and rhetoric. Christensen. p. 856.

Conclusion

This chapter has aimed to establish (1) that Cartesian dualism — via Helmholtz' commitment to keep the "regions of physiology and aesthetics sufficiently distinct,"[71] — had the effect of reducing the curricular space for students to make contact with the conceptual metaphors underlying music's fundamentals; (2) that mid-twentieth century higher theory study standardized the acquisition procedural knowledge and symbolic logic as the *modus operandi*; and (3) That a non-dualist approach can be understood as a reassertion of the speculative theoretical tradition. Ultimately this grants to students a phenomenological responsibility, and positions them, in the words of Merleau-Ponty, as bodies postured toward the world, through which they might play a balanced role in mapping their musical horizons in an equilibrated, codetermined exploration not just of forms and structures, but at the levels of metaphor, intention, and action.

Chapters 2-6 have presented an interdisciplinary investigation of twenty-first century music theory pedagogy. This has been motivated by a more basic humanitarian question, one perhaps shared by most teachers: "How can I be of help?" Existential psychologist Carl Rogers asked this same question over the course of his illustrious career, and described the paradigm shift he underwent as a result: "In my early professional years I was asking the question: How can I treat, or cure, or change this person? Now I would phrase the question in this way: How can I provide a relationship which this person may use for his own personal growth?"[72] The instructor's primary task is not to inform, but to nourish a

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71. Helmholtz. p. 8
72. Rogers, Carl. 1995. On Becoming a Person: A Therapist's View of Psychotherapy. 2nd Ed. Mariner Books. p. 32.

creative space in which 'self-actualization' (to use Rogers' phrase) might occur through a transformative process of realizing their own potentialities.[73]

Students, in this embodied conception, are more than theory learners. They are theorists. Music theory transforms from a determined knowledge domain to-be-instilled, to an indeterminate mode wherein student and teacher are mutually transformed through a living engagement with the sonic world. The theory instructor awakens the potential of a class first by framing students as active participants in the theorization process. I have argued here that at the heart of this pivot to a non-dualist approach is the equilibration of the speculative, regulative and analytic spaces.

A pragmatic question remains: How is such an embodied approach manifested in the classroom and in a curriculum? At its base level, a non-dualist approach means that there can be no one answer. It is not a totalizing logic or method, but rather a perspective that provides an indeterminate field for we, the instructors and curriculum developers, to reconsider the fundamentals of musicking, and the accounts that theory provides. First, we must embrace the speculative tradition ourselves by taking up a phenomenological responsibility, closely examining what forms, structures, and metaphors underlie the fundamentals of our own musicking (inverting my thesis: theorist-as-student). It can then be asked, how can we link our grounding metaphors to those of our students? This will vary institution to institution, classroom to classroom, and student to student, a fact which is a feature, not a bug, of a non-dualist, indeterminate approach. This is to say, it is part of

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73. "The mainspring of creativity appears to be the same tendency which we discover so deeply as the curative force in psychotherapy—man's tendency to actualize himself, to become his potentialities."
Ibid. p. 351.

a living system. Following this, even if the regulative and analytic spaces appear unchanged — if voice-leading procedure, harmonic reductions, and Bach chorale analysis still take center stage in the curriculum — they will be enacted in the mode of self-actualization, with students having mapped the meanings of these actions onto a landscape of potential.

Still, an embodied approach invites the development of new curricular tools, and specific activities that optimize mutual transformation, model a theory-in-action, and focus on the development of embodied knowledge in the body is the center and source of theoretical explanations. Chapter 7 offers one such curricular tool. After much experimentation in the music theory classroom, I offer my personal adaptation of Butch Morris' Conduction® as a technique that places students in direct contact with embodied metaphors of music structure (Chapter 6), promotes music theory that is radically embodied and enactive (Chapter 5), equilibrates the speculative, regulative, and analytic traditions (Chapter 4), provides a tangible teaching strategy that responds precisely to contemporary calls for curricular reform (Chapter 3), addresses the primary shortcomings identified by students (Chapter 2), and, finally, counters the deficiencies of the conventional model of music education (Chapter 1).

Chapter 7. "Have an Idea!" Butch Morris' Conduction® in the Music Theory Classroom

"I need you to have an *idea*. We have all this theory, let's *do* something with it."[1]
— Butch Morris

Conduction®, simply put, is a vocabulary of ideographic hand gestures used by a conductor to sculpt ensemble music in real time. Its creator, Butch Morris, jazz luminary and cornet virtuoso, understood his method as a means of accessing and amplifying basic musical competencies, and applying this musicality toward the creation of new music. This chapter discusses how the Conduction system can be tailored to serve the goals of the music theory classroom with incredible efficiency, and how this application represents the kind of tool needed today to supplement conventional theory and musicianship curriculum.[2] Conduction is a embodied approach to structuring music in real time, which I have adapted for engaging with theoretical concepts gradually as they are introduced, allowing students to develop a sensorimotor repertoire[3] over the course of a theory sequence.

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1. Morris, Butch. 2011. In *Black February*. Produced and Directed by Vipal Monga.
2. Specifically this refers to competencies outlined by the National Association of Schools of Music, in the two general degree categories General Education (1-7), and Musicianship (1-5). https://nasm.arts-accredit.org/wp-content/uploads/sites/2/2015/11/BAorBS-Music.pdf. Accessed February 4, 2018.
3. Thompson describes the sensorimotor repertoire as the means by which an organism's environment emerges in process of self-actualization: "In the case of animal life, the environment emerges as a sensorimotor world through the actualization of the organism as a sensorimotor being. The organism is a sensorimotor being thanks to its nervous system. The nervous system connects anatomically distant sensory and motor processes, subsuming them in operationally closed sensorimotor networks. Through their coherent, large- scale patterns of activity these networks establish a sensorimotor identity for the animal—a sensorimotor self. In the same stroke, they specify what counts as 'other,' namely, the animal's sensorimotor world." Thompson, Evan. 2007. *Mind in Life*. *Mind in Life*. Harvard University Press. p. 59.

Conceived in the sphere of American experimental jazz, Butch Morris developed his system as a flexible alternative to notation for structuring a live performance. Morris went on to work with hundreds of ensembles around the globe, whether they were composed of classical musicians, jazz musicians, pop musicians, non-western musicians, non-improvisers, or eclectic blends. In his own words, "It doesn't matter what stylistic, social, cultural background someone comes from. [Conduction] applies to the individual, how they interpret, how they advance the collective knowledge that we gain."[4] Conduction is simply a means of coordinating a musical environment, and in a classroom, it can be used as a practice domain for any particular competency, or for productive exploration.

As a classroom activity, Conduction also aligns powerfully with the principles of the Universal Design for Learning (UDL). UDL is a curricular framework based on research in the learning sciences that guides the formation of flexible learning environments able to accommodate individual learning differences.[5] UDL is intended to increase access to learning by reducing physical, cognitive, intellectual, and organizational barriers. Consistent with this framework, Conduction provides a classroom with multiple means of representation, expression, and engagement with virtually every level of the undergraduate theory core.

Arthur C. Clarke is credited to have said: "Any teacher who can be replaced by a machine should be." Butch Morris is definitively not such a teacher. With an unyielding charisma Morris would implore his ensembles to "Have an idea!", to "Play it like you mean it!", and to "Play it like you're trying to sell it for two million dollars!" Here the "bodily

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4. *Black February.*
5. Rose & Meyer. 2002. *Teaching Every Student in the Digital Age: Universal Design for Learning* Alexandria, VA: ASCD.

intentionality" described by Merleau-Ponty, and aesthetic sense-making discussed at length to this point is made substance in the person of Butch Morris and his commanding pedagogy. In a classroom setting these exhortations have a similar power to motivate students to imagine, invent, and perform with conviction. Not only does this challenge students to strive for original ideas, it is a means for en-actively engaging with existing ideas. 'Having an idea' is thus a mode of projecting "intentional threads"[6] in an embodied act of speculation. Conduction in the classroom is an incredibly efficient, exciting, and rewarding learning tool; though it can also be unwieldy, arduous, and, in a word, messy. This messiness, however, is a feature of the method, but a bug. The sound of musical ideas in-formation reflects the process of enactive sense-making, and sounds a learner's progression from unconscious incompetence to unconscious competence[7] over the course of their theory sequence.

This final chapter discusses the ways in which Conduction realizes an embodied approach to music theory teaching, represents a tool that equilibrates the vectors of agency between body and world, and enacts mutual transformation. To set the scene, students bring their instruments to class, form an ensemble, and take turns conducting their peers, guided (to varying degrees) by notated and non-notated curricular goals to generate music and experiment with musical structure *in situ*. Listening skills, structural knowledge, analytical proficiency, and performance technique are interwoven in each of the three roles students play in a Conduction: individual performer, ensemble member, conductor. My own trial

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6. Merleau-Ponty. 1962. *Phenomenology of Perception:* The Spatiality of the Lived Body and Motility. London: Routledge. p. 106.
7. Maslow's four stages of competence: unconscious incompetence, conscious incompetence, conscious competence, unconscious competence.

and error experimentation with this method in the theory classroom has shown it to be a powerful heuristic and ludic medium[8] for engaging the *speculative* mode — through creative action through which original teleomusical actions are constituted,[9] and where embodied sense-making[10] is the primary learning objective. It also has the potential to engage the *regulative* mode — through rehearsing the emerging sensorimotor repertoire, as well as any virtually standard competency (e.g. scale fluency, chromatic harmonic procedure, voice-leading and counterpoint, etc.), and exploring non-Western theoretical systems (e.g. Balinese gamelan, North Indian tabla), and contemporary techniques (e.g. standard or free jazz, serialism, polytonality, spectral techniques). What happens after the Conduction can also be just as valuable. Recordings made in class allow students to engage in *analytic* mode — through dictation and analysis of Conduction, which can then be transposed, arranged, critiqued, and reflected upon.

Responding to the Call for New Tools

Ed Sarath, lead author of the TFUMM Manifesto, described the conventional approach as the interpretive-performer model, a model with a historical mission of preparing students for careers in orchestras. Sarath argues for the obsolescence of this model on two primary bases: (1) As orchestras around the world have been closing at an alarming rate, even as music programs grow, it is far more likely that students will find a

8. Moseley, Roger. 2016. Keys to Play: Music as Ludic Medium. University of California Press.
9. See page 197.
Schiavio, Andrea. 2014. "Music in (En) Action: Sense-Making and Neurophenomenology of Musical Experience." Doctoral Dissertation. p. 93.
10. See page 176.
Thompson, E., & Stapleton, M. 2009. Making Sense of Sense-Making: Reflections on Enactive and Extended Mind Theories. Topoi, 28(1): 29.

career engaging with contemporary and so-called "vernacular" music than with the conventional canon and its values. (2) Given the Afrological roots/contributions to "vernacular" music, music higher education requires a model that bridges these pedagogical traditions. Sarath proposes the alternative creative-composer/improviser model, which integrates the current model with both a multicultural model, while also returning to a pre-industrial European pedagogy. Under this model, students' primary focus shifts from interpretive performance to creative performance, from recreating a known work to crafting their own musical voice as a primary source. Rather than centralizing measured technicality and procedural execution, the learning outcomes of the creative composer/improviser model is grounded in the dynamic, phenomenological encounter with music structure.

Music theory, more than any other core course, can facilitate this shift from performer to creator, from interpreter to composer/improviser. While Butch Morris predates Sarath's model, he similarly positions the creative experience at the center of the theorization process. Morris writes:

> The inception of creativity comes from the 'IDEA,' and from the idea come questions. How you arrive at the answers to these questions will determine the foundation of the theory on how you approach your art.

Creativity pedagogy is not a "no wrong notes" method, contrary to how it is often characterized by advocates for musical literacy. The intuitive and the exploratory must, somewhat paradoxically, be taught. When discussing improvisation, educators must manage to communicate an approach or method despite having no a priori codes, no extant

music on which to stand. Improvisational conducting is one strategy that attempts to resolve the tension between the purity of a musical authority (as in autonomous music) and a democratic, transparent collective process. The concept of creativity is sufficiently abstract such that if it is not decomposed into tangible actions, into actual movements of the musculature, its meaning is highly limited in an educational setting. As a metaphor, when a child is taught to clean their room, the command "clean your room" is unlikely to result in anything but continued chaos. Instead, they must be guided through the hundreds of embodied micro-routines that culminate in the abstract state of a 'clean room.' Thus, to the extent that musical creativity is a goal of music theory curriculum, as stated in the NASM guidelines, then it is the educators' role to layer students through a similar embodied process of micro-routines.

Introducing Conduction

> I do Conduction, and it doesn't matter whether I do it with classical musicians or jazz musicians or traditional Japanese instruments, Korean instruments, Turkish instruments, funk musicians or pop musicians. I'm still showing everybody the same signs. 'This' means sustain. 'This' means repeat. 'This' means graphic information…[11]

Butch Morris' Conduction® system was created to be a flexible alternative to notation, allowing him to compose in real time using a vocabulary of directive hand signs and gestures. From 1985 to 2011 Morris used this approach to sculpt and shape sounds produced by a diverse array of ensembles from traditional jazz bands and symphony

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11. Morris, Butch. 2008. News and Notes: Butch Morris on the Art of Conduction. Interview, National Public Radio. Feb. 18.

orchestras, to contemporary experimental groups and non-western ensembles. It began as a composer's tool to "elaborate on and interpret notation," but as it developed it allowed Morris to eliminate notation altogether and arrive at what he termed a "real-time encounter" that allowed him to "find and express many directions that did not exist in either notation or improvisation."[12]

Morris' approach is not the only strategy for molding music in real time with bodily gestures, and he does not hesitate to position his own work against the background of that continuum, including Sun Ra's effective use of live on-stage conducted arrangements, the role-based structures developed by artists like Lukas Foss, Frank Zappa, and similar practices in antiquity. Walter Thompson's Soundpainting lexicon bares a strong resemblance to Conduction, with a language that uses over 1,500 gestures. Conduction, however, is unique in its specific vision to bridge several perennial divides in music practice — the western classical tradition with American jazz tradition, the composed with the improvised, the notated with the non/alternatively-notated, the articulated with the implied, abstraction with action, conventional with experimental. In bridging such divides, Conduction can also be a challenging concept for many to grasp for musicians and audiences alike, who aren't always sure what it is 'supposed' to sound like, or what they are intended to experience as a participant or listener. Of course, at its heart, Conduction is not a style or genre, but a highly flexible method of directing sounds, constrained only by what can be communicated with bodily motion, and by the imagination of the conductor.

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12. *Black February*.

Directives.

Conduction makes use of signs and gestures. While all hand directives are issued through bodily motion, signs communicate their directive statically, while the information contained in a gesture is specifically linked to the motion of the Conductor's finger(s), hand(s), arm(s), or baton. For example, an outstretched fist would be a sign directing a short note, while during a graphic gesture the specific motion of the baton is interpreted musically. Morris' posthumously published guide to this approach, "The Art of Conduction,"[13] identifies of a lexicon of over seventy directives, though generally only a small portion of the vocabulary is used in the majority of performance contexts. There are nineteen basic signs and gestures which give the conductor control over the following parameters: pitch/tonality, time-tempo/pulse-rhythm, specific events (e.g. a sustained tone), repeats, transformations (e.g. modulation, development), dynamics, articulation, store/recall, and score-related directives. The left hand is responsible for indicating the "what" that's about to occur, and the right hand (generally with a baton) executes the event on contact with the ictus. Maintaining eye contact with the Conductor is a critical aspect of Conduction, since, unlike notated music, there is no way of knowing when the conductor might give a cue.[14]

To illustrate one example, the Conductor's left hand extends out, flat, palm up, to indicate the coming directive for a sustained tone (Fig. 7.1). Once eye contact has been

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13. Morris, Lawrence. 2017. The Art of Conduction: A Conduction® Workbook. Karma.
14. If the reader is unfamiliar with Butch Morris and his Conduction approach, I refer them to the following video: Butch Morris demonstrates "conduction". 2016. Youtube. SFJAZZ. November 14. https://www.youtube.com/watch?v=lFdHksQedA8

Figure 7.1: "Sustained tone" directive

established with the intended musicians, the baton comes down and the players sound together. This tone can be specified, but is more commonly left to the discretion of the individual. The tone continues until the ensemble, or individual musicians, are directed to stop, transform (modulate, etc.), or repeated (generating a new set of sustained tones).

While any of these parameters could be in the hands of the conductor, distributing creative control throughout the entire ensemble was central to the synergistic ethos, the "realtime encounter" at the heart of Conduction. In a given performance Morris would rely on musicians to provide the initial ideas, the motifs and feel, which he would then transform, loop, morph, and germinate throughout the group.

Conduction as a Pedagogical Tool.

As a virtuoso cornetist, improviser, and composer, Butch Morris conceptualized Conduction more as an artistic tool than a pedagogical tool. Yet, video recordings reveal the strong pedagogical role Morris assumed whenever he held the baton. Morris was known for challenging his ensembles to "step up," to offer their best musical selves, to make every

note an extension of their personal sound. Musicians under Morris were firmly, charismatically directed to perform with conviction, while listening actively to the ensemble and responding to the sonic fabric being spun around them. They were charged to put their greatest skills on display, exhorted to embrace a greater freedom, and to face their own musical boundaries. To play under Morris was to learn — to learn to perform more vulnerably, to listen more acutely, to relate more intentionally, to imagine more boldly.

Morris regularly confronted his ensembles by saying "I need you to have an idea."[15] Morris warns "If you're a student of music and you don't have a question, you're in *trouble*." What kind of trouble? To Morris, music is an "open door," a revelatory opportunity realized only through bold, creative action. Morris, in a sense, critiques the performer-interpreter model, where a student may rarely have the opportunity to walk through this door in the transformative way Morris envisions, although they might be shown the door, and have it described to them with exquisite detail. Classically-trained, improvising violinist Mazz Swift participated in some early Conduction performances with Morris. She recalls — "The classical musician in me loved working with Butch. You're practicing getting the essence of you out, and also communicating that with other people." Swift herself left Juilliard due to a lack of the "organic,"[16] a quality she instead found learning from and performing with experimental artists like Butch Morris.

Conduction is thus ideal for a student-centered music classroom, and fostering students' phenomenological responsibility.[17] As part of the ensemble, students learn not

15. Ibid.
16. Swift, Mazz. About. http://www.mazzmuzik.com/sandbox/. Accessed September 13, 2017.
17. Schyff, Dylan Van Der. 2017. "Improvisation, Enaction & Self-Assessment." In The Oxford Handbook

only to explore their instruments, but to own the particularities of their sound, their ideas, and their theory of how events might and could unfold. Assuming the role of the conductor, however, reinforces a different set of competencies. In this position students take direct control over the structure and form of the ensemble's collective sound, relying on knowledge, intuition, and personal experience, while also taking risks, all in a collaborative classroom atmosphere.

Conduction in Theory Class.

Conduction finds a natural place in music theory, a discipline concerned with orienting auditory perception toward musical structure. Morris' ensembles were comprised of musicians adept at bringing "their own theory," the expressions of which Morris would subject to his own theory. "The content is coming from you, but the context is coming from me," he would say. "That's where the dialogue begins…structure/content, structure/content."[18] Conduction is presented here as a way of supplementing the passive learning that often characterizes the theory classroom, by inviting students to en-actively dialogue with concepts as they are introduced, and accrue a sensorimotor index of these concepts along the way.

Notation and Custom Directives.

Although Conduction was conceived in the milieu of experimental jazz, Morris, himself a progressive composer and improviser, explicitly developed his system as a bridge

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of Philosophical and Qualitative Perspectives on Assessment in Music Education. Oxford University Press.
18. *Black February.*

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between music cultures. One way this balance is achieved is through the open treatment of notation. Morris gives some credit for the invention of Conduction to his first conducting instructor, whom he asked how one might direct an orchestra to a particular section of the piece in the middle of a performance when it wasn't indicated in the score. He was swiftly informed that this maneuver simply wasn't possible. She told Morris that if he saw this as a problem, it was a problem he would have to fix on his own. Conduction was Morris' solution.

Any notated figure, idea, tune, or score, can be referenced at any point during a Conduction. Typically multiple tunes (figures, ideas, etc.) are provided on a notated page with each numbered. The conductor can initiate any of the tunes by holding up fingers with the left hand, followed by the cue with the right hand. Basic directives (such as gestures for repeating, imitating, or modulating an idea) allow the conductor to creatively and flexibly interact with notation, and to apply notated figures to one or multiple musicians at will.

While Morris provided a large lexicon of gestures, it has been useful to invent some custom directives specific to the goals of the theory classroom. An instructor should feel free to invent their own directives, and encourage experienced students to do the same. For instance, with the aid of a notated page of chords, sign language numbers 1-7 can be used to invoke a diatonic chord from the ensemble. This allows harmonic progression and voice leading principles to be enacted with an ease and efficiency unparalleled by any other approach in my experience. Custom directives can also be used to signify non-harmonic tones. For instance, drawing a 'candy cane' shape in the air can indicate an appoggiatura, oriented such to indicate the direction of leap and resolution. As a third example, Morris

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used thumbs-up/down directives to indicate an indeterminate modulation, depending on the context. In my classes a thumbs up/down with fingers half-way extended indicates diatonic modulation, and can be used to modulate pitches, triads, 7th chords, melodies and motifs, etc.

Example Conductions.

The protocol of gestures defined by Conduction was designed around Morris' understanding of basic, universal musical competencies. Benjamin Brinner's work with Javanese gamelan focuses strongly on musical competence, and is a useful basis for interacting analytically with Conduction: "Since musical competence encompasses all the types of knowledge and skills that a musician may need, it is an organic rendering of the 'systematics' of a musical tradition – the relationships between the things that are known."[19] Brinner begins modeling musical competence by defining "component clusters" of knowledge and skills that constitute a competence. His list of component clusters (or domains of competence) includes: sound quality, sound patterns, symbolic representation, transformation, interaction, orientation, ensembles, repertoire, performance context, and meaning or symbolism.[20]

Brinner's taxonomy can be used to map events in a Conduction chronologically, as seen below.

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19. Brinner, Benjamin. 1995. "Knowing Music, Making Music: Javanese Gamelan and the Theory of Musical Competence and Interaction." Chicago studies in ethnomusicology. Chicago: University of Chicago Press. Brown. p. 3.
20. Ibid. p. 40-41

Conduction #70 (Tit for Tat) Section 3

00:00 > Ensemble – in. Multiple instrumental voices play a brief bubble of contoured sound that has two distinct phases or syllables.

00:03 > Ensemble – out. Followed by a rest.

00:04 > Woodwind – in. Single woodwind voice plays a phrase with two distinct parts. Stops, then

00:08 > Ensemble – in. Multiple voices play a rapidly rising and falling phrase followed by a rest. 00:11 > Woodwind – in. Same voice as above plays a phrase, then

00:15 > Ensemble – in. Multiple voices answer with a very brief shape. Stops abruptly, then

00:16 > Woodwind – in. This back and forth, call-and-response between a single woodwind and a larger group of instrumental voices continues until

00:45 > At which time it sounds as if the entire ensemble is active, with some subset of instruments maintaining a cyclic underpulse.

02:36 > Ends Table 3: Temporal analysis of Conduction #70, third section.[21]

For a less distilled example, a prosaic description might clarify how a Conduction might unfold in a theory class. Please engage your most vivid auditory imagination, dear reader.

Envision an intermediate level theory classroom with approximately twenty students. All students bring their instruments to class, forming an ensemble that includes a few strings, brass, flute, clarinet, small drum set, bass, two pianists (sharing one piano, splitting upper and lower registers), and three vocalists. All musicians have an identical score with three lines, each with a different melodic or rhythmic figure, numbered 1-3.

To begin, the conductor (also a student) gestures 'number 1,' points to the clarinetist, and cues the entrance, who plays the tune as written. The conductor proceeds to loop the

21. Stanley, Thomas. 2009. "Butch Morris and the Art of Conduction." Dissertation. University of Maryland, College Park. p. 110.

line [forming a 'U' with the thumb and forefinger]. The conductor brings in a bass player, also cueing 'number 1', but starting half-way through the clarinetist's repeat. A group of vocalists are directed to produce a sustained tone of their choice. After some adjusting using 'repeat' and 'modulation' directives, the vocalists are singing a chord to the conductor's liking. Further adjusting produces two addition chords, which are linked together in a progression that harmonizes with the staggered 'number 1' in an interesting way. The strings are directed to imitate the vocalists, and then enter into a call-and-response with them. The conductor allows this texture to marinate for a full minute. Everyone listens, every player tightens and tunes to the sound.

The conductor senses the time is just right for a build. Low brass are brought in on 'number 1' in synchrony with the bass, and high brass with the clarinet, not too loudly just yet. Over fifteen seconds the whole ensemble is directed to crescendo and accelerando, and near a peak the directive is given to store this arrangement as Memory 1 [finger taps forehead and holds up one finger] to be revisited at any time (Fig. 7.2). The intensity continues to rise, but the tempo is gradually slowed, until the command is given for the ensemble to play a series of gloriously long, loud sustained chords, which linger with staggered breathing. Over seven seconds all are quieted to a near silence.

The chords are interrupted by a 'stop' at regular intervals, forming a slow rhythm, which is then repeated, then gradually modulated down, down, and down again, until gentle quarter note grunts are heard all around. In this somber, tonally unregulated moment, drums are brought it to provide some temporal structure with a low double-time groove, offset such that what were quarter notes are now beats two and four. Noting an interesting

Figure 7.2: "Memory 2" directive

Figure 7.3: "Develop" directive

dissonance between the flute and one singer, the rest of the students are removed one by one, until just the two are sounding over the groove, which begins to vary as the drummer tests the conductor. Playing with the interval, quietly, the conductor stretches it at first in oblique, then contrary motion, then brings it back. It is resolved it to a consonance, and returned it to its original place, until a pattern is formed. For these two, Memory 2 is assigned [finger taps forehead and holds up two fingers]. With the groove, and the pattern in place, 'number 2' and 'number 3' from the page are cued simultaneously, to the strings and brass respectively. Syncing with the groove, these two themes form a textbook second species counterpoint. Order, relatively speaking, has been restored.

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After two repetitions both groups are directed to develop [hands begin together, then move apart, as if opening a window (Fig. 7.3), at which time each individual develops the theme in their own manner. The room is quickly alive with baroque aleatory. Even the drummer finds a way to vary the theme with characteristic flams and ornaments. An ebb and flow develops as everyone listens for a place to contribute. The conductor simply listens to this negotiated development for thirty-two bars, witnessing rhythmic bunches congeal and distinguishable melodies emerge as the ensemble settles into itself. On the thirty-third bar they are brought back to the original 'number 2' and 'number 3,' except for the cellist, whose development had caught the conductor's ear. This student is invited to continue developing her idea, as everyone else is pulled out one by one. After a brief solo, a trombone is called upon to 'duet' with her, while staying in time. Locking in, responding to each other, they improvise an understanding. Like a good conversation, moments of surprising lucidity are punctuated by escalation, struggle, and uncertainty.

One by one individuals are brought in to openly add to the discussion. Some students find it easier to play what's on the page, while others push and pull the ensemble in new directions. The conductor is a spectator at this point, monitoring the emerging textures and tuning into what each player is adding. As each voice finds its place, Memory 3 is created [finger taps forehead and holds up three fingers], just in case an opportunity arises. The conductor then prepares the ensemble for a full stop. As the signal is given, 'Memory 2' is directed for the flautist and vocalist, challenging the two the recall and recreate the intimate moment. After some stumbling, the duet is relived, though the new context has somehow altered its meaning. Gradually instruments are layered onto the repeating pattern, until all are deeply, almost meditatively engaged in the simple resolving interval that had originally

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been sculpted from the unwitting offerings of two students at what may have otherwise seemed like an unremarkable moment in the music. Entering a crescendo, dynamically and rhythmically, the class rises to a peak, setting up a seamless return to Memory 1. The conduction ends with a sustained chord, and, for a bit of shtick, a staccato bump to cap the odyssey.

A few more students take their turns at the helm, and a brief discussion follows each. A stereo recording of the whole session is made available to the class for each student to analyze and critique (this activity is described on page 265).

Algorithmic versus Heuristic Tools.

When witnessing a Conduction take place, especially for those inexperienced with the notion of productive noise in music class, it isn't always obvious that serious musical problem solving is taking place at multiple levels simultaneously. Conduction's efficiency as a teaching tool stems directly from its ability to facilitate multiple levels. To illustrate this it is useful here to offer a computer metaphor.[22] As a problem-solving domain, this process can be likened to a computational heuristic, an alternative to the algorithm. The etymologies, in this case, clarify the distinction. 'Algorithm' is connected to the Greek *arithmós*, relating to a numerical process, while 'heuristic' is connected to the Greek *heurískō,* translated as "I discover." In computer programming both are used to solve different types of problems.

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22. This is not a hypocrisy. While Chapter 5 deconstructed computer metaphors for the mind, in this instance I am self-consciously offering an illustrative metaphor, rather than presenting a metaphor as a literal description.

The standard dualist model for music theory (discussed in Chapter 6) presents to musical problem solving as a classic algorithm: a set of well-defined instructions for carrying out a particular task. It must be both sound and complete, in that it must provide the correct answer. A classic algorithm tells you how to go from point A to point B with no detours in a manner that is predictable, deterministic, and not subject to chance.

Improvisation, broadly conceived, can be likened instead to a heuristic: a technique that searches for an answer by defining *how* to look, but not what to find, making its results subject to chance. A heuristic may not even know where points A and B are. Yet, a heuristic can often approximate the solution to a problem much more efficiently than would be possible using a classic algorithm. Heuristic rules are often used for detecting viruses and other forms of malware, scanning for code and behavioral patterns common to a class or family of viruses. To put it simply, while an algorithm gives the instructions directly, a heuristic defines how to discover the instructions for oneself.

Conduction can be seen not only as a heuristic, but as a hyper-heuristic. A hyper-heuristic approaches a solution by combining several heuristics simultaneously, while generating new heuristics and combining them recursively until a solution is found or approximated. Hyper-heuristics are used in machine learning as a way of reducing the amount of knowledge required to solve a problem. To extend this metaphor further, in the interpretive-performer model, the goal (i.e. 'problem') is the successful performance of a masterwork. Music theory, then, particularly in the historical tradition, aims to provide the knowledge required for successful interpretation and performance not of one masterwork, but a large but finite set of masterworks, or works roughly inspired by these masterworks. Until recently, the classic algorithm functioned well. However, two central issues have

arisen: (1) The musical goals students bring are increasingly outside of the presumed repertoire of possible material, resulting in (2) a rapid expansion in the knowledge required for successful interpretation and performance of an indeterminate range of musical applications. Thus, even if the classic method was once the most efficient solution to the problem of successful performance, it is increasingly untenable. In this situation educators might learn from the learning machines, and instead implement a pedagogical hyper-heuristic.

Conduction as a Hyper-Heuristic.

As a dialogue between conductor and ensemble, Conduction represents just such a hyper-heuristic tool. Let's reexamine the problem. If we move away from the interpretive-performer model, what replaces successful performance as the central 'problem' to be solved? Butch Morris suggests a problem set in one of his pre-show calls-to-action:

> Let's play some very important music. Important to you first, important to the ensemble second, to me third. I want you to call on all of your fantasy, and your creative ability. Take the ensemble someplace.

Thus, the collective goal of Conduction is to 'go someplace important.' This problem cannot be solved deterministically, in the algorithmic sense, but can be approximated in the cooperation of three independently heuristic levels: the individual, the ensemble, the conductor. (Fig. 7.4)

The individual is the first heuristic level. Rather than relying on the score, or even their knowledge of how music is canonically structured, each individual is confronted with the problem of determining the 'importance' of their own musical offerings. What is
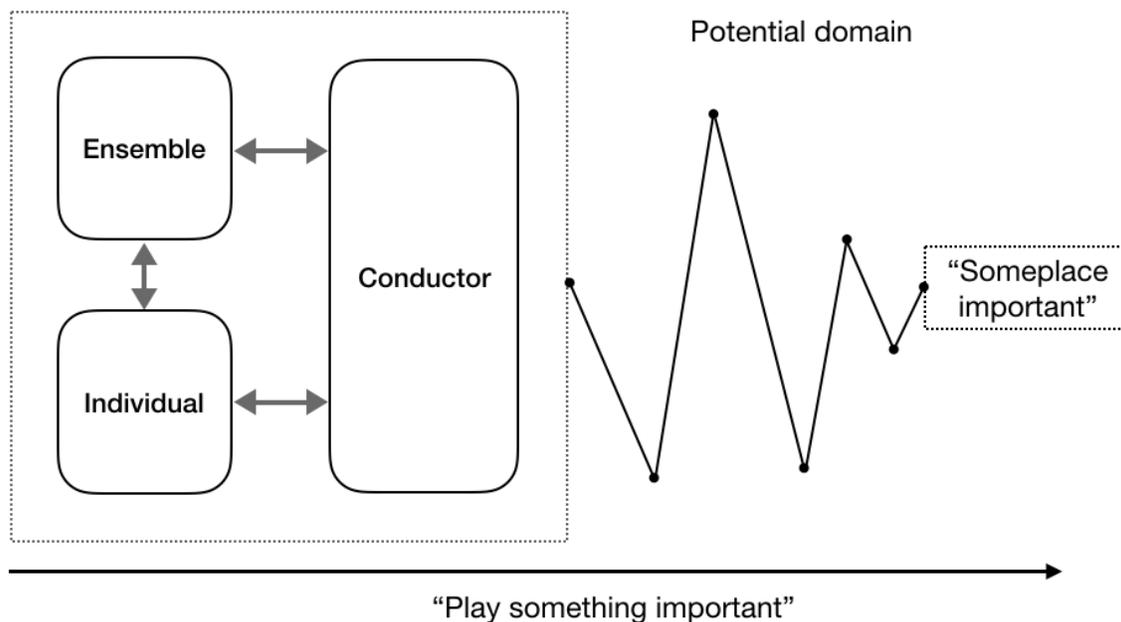
Figure 7.4: Heuristic levels in a Conduction®

"important"? In conventional jazz improvisation, 'importance' can at times be conflated with technical chops, idiomatic relevance, 'good taste,' or sophisticated referencing. But Morris' 'importance' is much more personal, perhaps even phenomenological, akin to Roland Barthes' description of the "grain of the voice"[23]: the significance opened up by the friction between music and something else. How often are music students directed to explicitly engage with this type of significance? In most of the world's art music traditions, including Western Art Music, the novice gains experience through the reproduction of qualified creative acts, along a path that grants the privilege of creative agency to those who have refined their actions sufficiently to start having their own ideas (Tinkle, 2015). This is, again, not unlike a classic algorithm: the novice becomes the complete artist as

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23. Barthes, Roland. 1977. "The Grain of the Voice.pdf." In *Image Music Text*, edited by Stephen Heath, 179–89. New York: Hill and Wang.

point A proceeds to point B. The utility of this tradition is self-evident: students interface with time-certified beauty that transcends their ability, and are provided a scaffolding for its proper reenactment. But when it comes to the questions posed by Morris, and Barthes, there is no such guiding framework. Conduction, as a classroom tool, invites the novice to nurture the growth of creative agency along the path of technical proficiency, good taste, sophistication, etc. Like a heuristic, this individual agency evolves through a recursive process of exploratory trial and error, prediction and reflection, exposure and consolidation.

The second heuristic takes place at the level of the ensemble. This requires the individual performer to listen critically to the ensemble, and imagine how the personally important might intersect with the collectively important. This requires each player not only to remain acutely aware of the entire ensemble for the duration of the piece, but be prepared to contribute meaningfully at every moment. Skilled listening is paramount in this second-order problem, positioning each player as the arbiter of what sounds 'fit' together, resulting in the development of a personal ethic of musical cohesion. Understanding of harmony, modality, tonality, motivic development, etc., transform from concepts, to tools for action. What is usually taught in counterpoint, form and analysis, can be explored in open experimentation. In line with those who have argued that voice-leading conventions have a grounding in human cognition (Huron, 2016)[24], the theory classroom morphs into a lab in which students can perform, observe, challenge, and relativize historical, conventional, and even experimental practices. The group enacts this negotiation of the

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24. Huron. 2016. Voice-Leading: The Science Behind a Musical Art. MIT Press.

musical material in real time, epitomizing peer-to-peer learning, and expediting the transformation of abstract theory into embodied, working knowledge.

The third heuristic forms when a student assumes the role of conductor. In this role students enact their understanding of harmony, melody, form, and perform real-time analyses, responding to the immediate auditory scene by generating content *in situ*, not unlike the way a quarterback monitors the entire field, and takes precise, decisive action. What might begin as a chaotic and clamorous goat rodeo, can burgeon into a delicately balanced work of synergy and musicality in the hands of a skilled leader; or, the very same ensemble may never get off the ground if the conductor fails to form 'an idea,' to create a context for the content supplied by the ensemble. The conductor sculpts this structure using directives to control repetition in the moment, as well as to store/recall particular moments, textures, or states. Just as the sources of these materials are other students actively discovering what is 'important' to them, and to the ensemble, the conducting student must confront the problem of "What do I want this piece to become?," or even its more synergistic phrasing — "What does the piece want to become?" In my experience in these classes, nothing brings the theoretical concern of large-order structure to the forefront of a student's attention like placing it directly in their own hands.

Students at the college level rarely encounter opportunities to improvise outside of the strictures of a highly standardized jazz curriculum, and these ensembles require a high level of technical mastery and reading ability prior to participation. Because Conduction centralizes dialogue, rather than performance, the point-of-entry is not only open to musicians of any type of ability, it scaffolds collaboration across traditions, genres, and abilities.

The conductor is above all responsible for maintaining what Morris referred to as the multi-analysis dialogue, which demands constant auditory scene awareness and the intentionality to both wrangle it and let it breath. Students invariably struggle initially in this role, usually by failing to provide a unifying idea to the group, or by forcing a rigid pre-visualized plan that simply does not grow as envisioned. Students (especially witnessing the struggling of their peers) quickly grow in confidence, and with confidence comes experimentation, eventually maturing into embodied sense-making, or 'idea-having.' Over a single semester students' ability to dialogue evolves, and this evolution is not so much the acclimation to the Conduction system, but a reflection of a working knowledge of structure, from small scale motifs and clusters, to medium scale cycles, to large scale form, unifying their aural skills, auditory imagination, fluency on their instrument, and sense of self-efficacy.

In this way, the fourth and final level of Conduction, viewed as a hyper-heuristic pedagogical tool, is the theory classroom itself, and the particular learning goals that define the trajectory toward "someplace important." The heuristic — the "I discover" — is maintained. Each level of the Conduction experience, from the individual to the collective to the emerging higher-order structure of the piece, facilitates personal musical discovery in real time. The cumulative effect of students being regularly challenged to 'have ideas' in the context of music theory is a deeply embodied sense of their musicality, a confrontation with their own limitations, the identification of musical goals, and the development of theoretical strategies pertinent to those goals. Conventional theory concepts are not abandoned, but instead are animated (in the true sense of *anima*), translated from textbook into sensorimotor repertoire.

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Additional Benefits

Analysis and Reflection.

Every music student knows — and many lament — that theory study entails copious pages of analysis. Generally, the object of analyses are canonical works or their derivations, for the purpose of excavating, appreciating, and recreating its virtues. Analysis of a classroom Conduction, however, brings with it a unique level of personal reflexivity. Even though Conduction often involves free association, improvisation, and real time composing, subjecting a recorded performance to analysis itself reveals copious pages worth of insight. Precisely because Conductions (in this classroom context) grow out of student decision-making, the recordings capture the process of collective sense-making, with everyone's ideas, intentions and meanderings laid bare for all to tease apart. It can be among the most eye-opening analyses students will do, as they witness their own artistic transformation over a single semester.

For this activity each student is given a stereo recording of the Conduction(s) from the day's class. While not every moment offers musical diamonds to be mined, generally students are struck by the beauty and intricacy of particular textures, voicings, and colors that morph and peak at moments throughout the Conduction. These moments can be dictated in notation and used as building blocks for a future Conduction or basis for a composition. Reflecting on the rhizomatic process that gives birth to these moments, evolving sometimes over several grueling minutes of disorderly sculpting, is an invaluable exercise. If one of the goals of the theory classroom, as stated by Anthony Burr, is to present

each composition as a highly "contingent collage"[25] that integrates personal history, sociocultural context, learned formal tactics, and pragmatic goals and constraints, then Conduction is the distributed task of creating this collage in real time, with the overlapping categories of contingency evolving *in situ.*

Through a musical analysis students discover patterns within their own musicality, patterns which can then be compared and discussed in class. Some patterns (e.g. a preference for a repeated motif), can launch discussion of traditional voice leading, perception, auditory scene analysis, and melodic contour in the context of language cognition. Other observed patterns might be profoundly individual, such as a composition student who discovers a new chord voicing, cluster, or ensemble arrangement. Students can also build on their analyses to be a more informed Conductor, and devise their own directives.

Through written reflection students articulate their process on the three heuristic levels (as individual, ensemble, conductor). In deconstructing their own decision tree they discover tendencies, habits, strengths and weaknesses that were embodied but not yet articulated. They can identify what they were hearing in the moment, but also the sounds that were present but unattended to. If the goal was to "Have an idea," recordings document the sounds of mutual transformation, exposing the dynamic overlap of the individual ideas, the ensemble's ideas, and the conductor's ideas. Through analysis students discover patterns within their musicality (understood as an ecological, rather than innate phenomenon), patterns which can then be compared and discussed in class. Analyses may

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25. Burr, A, 2018. Personal interview. March 15.

vary, which is grist for the collaborative theory mill. Students interface with the merits of their performance, as well as the glitches and lapses. These analyses can proceed to change the way students listen, and expand the perceptual tools they bring not just to Conduction, but to any musical encounter.

Diversity and Inclusion.

Jazz improvisation is pedagogically rich, and generally the only avenue for performative engagement with theoretical concepts available to undergraduates. Jazz, especially in the standard idiomatic form it takes in music programs, requires specialized skills and familiarity with a standard canon, and may not align with students' stylistic goals. The same can be said for liturgical organ improvisation. Conduction, as dually inspired by Morris' jazz roots and love of symphonic music, was designed to be pan-stylistic and multicultural in its accessibility.

Musician and producer Greg Tate, who participated in some early Conduction performances with Butch Morris, has experienced the power of Conduction to cross boundaries, saying: "All the unspoken racial division, genre division, technological division, all went out the window." Educators, take notice. Here we have a tool that facilitates musical synergy, while integrating participants' cultural backgrounds, stylistic backgrounds, instruments, and musical experiences. Tools, like this, that are actually optimized for such diversity, are in short supply.

Challenges.

It should be made clear that Conduction is no silver bullet. It offers a profoundly effective mode of enacting music study creatively and collaboratively. Yet, there are

difficulties, some native to the system itself, others in its application to the theory classroom.

First, eye contact between ensemble and conductor must be maintained at all times. Many musicians feel that this compulsory visual element limits the immersion that could otherwise take place. There are workarounds for this limitation, such as a directive to 'close eyes' for a set length of time or number of repetitions, or until an audible cue is heard.

While repetition is a basic building block of structure, it can be a necessary evil in the sometimes slow and unsure manner students attempt to trudge their way through the sonic mud. Repetition fatigue can set in for the ensemble in the form of physical fatigue (especially for brass instruments), or simple boredom. By the same token, attentive students gain some basic orchestration knowledge by watching their peers reach their physical and technical limitations. This is also an entry point for discussing and practicing minimalist approaches, and for cultivating an awareness of the subtleties of repetition.

The success of 'memory' directives relies on players' ability to recall what they were doing many minutes earlier. This is generally not an issue for instrumentalists, but vocalists without absolute pitch struggle to leap directly back to the moment. Singers can be instructed to take note of a reference pitch during 'memory' directives.

Control is a constant negotiation on all three levels, as plays of dominance and submission, action and passivity in the dialogue between individual, ensemble and conductor can be an obstacle to Morris' dream of "going somewhere important together." In a classroom setting the most common control-related issue is a novice conductor who lacks the confidence to lead, resulting in a wash of sound that never really goes anywhere. There may be a surfeit of ideas supplied, but the onus is on the conductor to construct the

pieces into a living, breathing musical organism. The variance of student backgrounds is a strength when weaving together a unique, diverse sound, but can be a challenge realizing that musical autonomy is itself a cultural variable. Students from a strict conservatory background will have little experience producing notes that haven't been notated, and need to grow in confidence before they can assemble a simple phrase. On the other hand, students with a jazz improvisation background may take umbrage with the precise control the conductor may exert, as intimated by improviser Mark Dresser: "I've seen Conduction be a disaster with people who just don't like to be controlled."[26] Personality differences also factor into which students tend to dominate regularly. These musical negotiations can be a springboard for powerful conversations about power, equity, shared spaces, and Morris' vision of Conduction as a sonic microcosm of democracy itself.

Finally, having 'an idea' on the spot is not necessarily an easy thing for a professor to do, much less students who may lack confidence in their abilities or who are intimidated by their peers. This is where Conduction shines as a confidence-building exercise. For perhaps the first time in their musical life students can be empowered to boldly explore, foster a musical instinct, and, even if just temporarily, sidestep a fear of wrong notes. As soon as a student is acknowledged for bringing an idea to the table, no matter how small, a rush of dopamine mitigates stress. Small ideas will begin to be linked together to form medium length ideas, sequences, themes, embellishments and then developments. Incredibly, the evolution of these productive skills enhances their ability to perceive and engage with larger forms and structures from the ensemble. Confidence grows by

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26. Borgo, David. 2007a. "Free Jazz in the Classroom: An Ecological Approach to Music Education." *Jazz Perspectives* 1 (1): 61–88.

witnessing oneself face a challenge and meeting it well. Perhaps best of all, the motley ensemble of odd instrument combinations played by students of diverse cultural and musical backgrounds, grows in confidence together. A student's confidence in their own ability to 'have ideas' crosses over into their larger sphere of musicking, in union with the overarching goals of the theory classroom.[27]

Sample Activities

The strategies an instructor might use are virtually inexhaustible. Students are also encouraged to invent their own gestures to conduct the ensemble. Below are six examples of Conduction activities tailored for specific competencies at fundamental, intermediate, and advanced levels of music theory. It is effective to treat them like games, challenges or puzzles for a conductor and ensemble to solve collectively.

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27. Specifically the following competencies outlined by NASM.
1a: Technical skills requisite for artistic self-expression
1d: Knowledge and skills sufficient to work as a leader and in collaboration on matters of musical interpretation. Rehearsal and conducting skills are required as appropriate to the particular music concentration.
1f: Growth in artistry, technical skills, collaborative competence and knowledge of repertory through regular ensemble experiences. Ensembles should be varied both in size and nature.
2a: An understanding of the common elements and organizational patterns of music and their interaction, the ability to employ this understanding in aural, verbal, and visual analyses, and the ability to take aural dictation.
2b: Sufficient understanding of and capability with musical forms, processes, and structures.
3: Composition/Improvisation. Students must acquire a rudimentary capacity to create original or derivative music. It is the prerogative of each institution to develop specific requirements regarding written, electronic, or improvisatory forms and methods.
5: Synthesis. Students must be able to work on musical problems by combining, as appropriate to the issue, their capabilities in performance; aural, verbal, and visual analysis; composition/improvisation; and history and repertory.
https://nasm.arts-accredit.org/wp-content/uploads/sites/2/2015/11/BAorBS-Music.pdf. Accessed February 4, 2018.

Fundamentals.

1. Exploring Modes and Scales

Scale proficiency is generally demonstrated through correct identification of scale degrees, key signatures, and scale types by ear and on paper. Identification alone, however, falls short of the fluency that only comes with deeply embodying scale structures. Before even introducing scales, as such, Conduction can be used to reveal the depth of students' a priori intuitions about pitch and pitch sets. This activity uses the sustained tone directive [left hand outstretched, flat face up] and the modulation directive [thumbs up/down generally directs modulation higher or lower by an indefinite amount, but can be changed to direct half steps, whole steps, diatonic, etc.]. Without any preparation, conduct a sustained pitch ('bah' or 'ah' for vocalists). Some classes will immediately gravitate to one pitch at the outset, others will need to be guided there by cancelling some students [waved off] then directing them to copy a neighbor [make eye contact, tug at the ear lobe while pointing to the person to be copied]. It usually takes no more than ten seconds to establish a single pitch, at which point I stop for three minutes and discuss some relevant concepts, such as language acquisition in infancy, the phenomenon of absolute pitch, or how we are able to match pitch. It doesn't really matter what is discussed, as the point is to distract them briefly and then direct them to again produce a pitch. Without fail the class will immediately recall the same pitch. The stability of short-term pitch memory has just been demonstrated. This is how the concept of tonal center is experienced prior to being articulated.

Split the class in half, and have one side drone the established pitch. Direct the second half to produce a new sustained pitch up, and direct them to agree on a pitch. Classes

generally settle on a pitch that forms a consonant interval with the drone. At this point I again stop and briefly discuss acoustic beats. I now direct individuals to form consonance or dissonant intervals over the drone not by name, but purely through their sense of beat roughness. A variation of Krumhansel's classic probe tone studies[28] can be the basis of a fun activity. While one student sustains a tone of their choice, the rest of the class on a sheet of paper rates the preferability, or 'fit' of the tone over the drone. After a few minutes the ratings are compared, and the traditional tonal hierarchy is invariably represented in the collective preferences. This is how a scale is illustrated through experienced prior to being articulated in notation.

Now is the time to identify scale degrees. Call the drone '1' and hold up one finger to direct that pitch. Once everyone is on 1, hold two fingers in preparation and ask them to try to intuit what '2' would be. There's generally enough experience in the room to correctly land on the second scale degree, and proceed in this way up the whole major scale without much intervention. Sign language numbers are useful when wanting to direct 'scale numbers' (scale degrees) above 5. After a few times performing the major mode up and down, leaps can be introduced by signing 1-3, 1-7 (below), 1-4, etc. Once the class sounds confident, it's time to invite a brave volunteer to direct the class. They will be tasked to use these scale numbers to create a phrase, and repeat it [thumb and forefinger shaped like a 'C' signifying "repeat this idea." Fig. 7.5] until the numbers are no longer required.

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28. Krumhansl, C. L. & Shepard, R. N. (1979). Quantification of the hierarchy of tonal functions within a diatonic context. *Journal of Experimental Psychology: Human Perception and Performance, 5*, 579-94.

Figure 7.5: "Repeat" directive

Multiple students will try this, and all have a great time all while reinforcing the scale by ear and number identity. The same activity can be applied to minor scales.

Future iterations of this activity include singing the note name in response to the scale number, i.e., in the key of D the conductor will direct 6 and the class will sing "B." Often times a student will invent a riff or phrase that becomes the bases of a song or composition. Kodály method hand signs can also be used instead of scale degrees.

2. Diatonic triad inversions

This activity uses the previously mentioned directives for sustained tone and modulation, as well as memory [forefinger touches forehead, then holds up a number]. Memory is used to 'store' ideas to be potentially recalled later in the performance. Divide the class into three sections. Using sustained tone and modulation generate a tonic triad in root position. The student is asked to link particular triads together, perhaps I - vi - IV - I, but using the fewest directives possible. This requires the student to know possible

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inversions of each chord and their common tones. Treating each section of the class like independent voices, the correct answer here would be three steps: raise the dominant to form the vi, raise the mediant to form the IV, then lower both the subdominant and submediant to return to I. Both voices in this last step can be moved simultaneously by making eye contact with both sections, and directing the diatonic modulation with the same gesture.

Traditional voice leading can be similarly enacted by splitting the class into four sections by voice and instrument range. A student will volunteer to guide the class through a short chord progression using proper voice leading. They can use any strategy to generate the starting notes, such as scale degree numbers, intervals signs [pinch thumb and forefinger together twice, followed by a number, modulating pitches up or down until in the desired position. Once each chord is in place, memory is used to lock the voicing, before moving on to shape the next chord. For a four-chord progression there will be four memory stores. Once the student is finished the stored memory chords will be performed in sequence, resulting in a complete progression. The attempt will be notated on the board and analyzed for errors. Critically, though, any errors or particular strengths will have first been heard and performed, before being notated. This activity not only strengthens harmonic awareness, it embodies the concept in a shared experience.

Students will also enjoy 'improvising' a four-voice piece using the directives they know. This is a great way to develop the auditory imagination. Nearly everyone agrees when a sound is especially good or bad, and these provide perfect teaching moments for discussing the theoretical bases of our reactions. Such opportunities effectively transform the lecture into a music theory lab.

Intermediate.

3. Improvisations

Conduction was created as a system for organizing improvisers, and is optimized for this. Its fundamental utility for the theory class is to challenge students to 'have an idea,' which they do whenever they take the baton and practice musical sense-making. As part of the ensemble, students should also be given the opportunity to generate ideas. Highly structured activities like the above should be balanced with opportunities for more open exploration of sonic space. The pedestrian directive [folding the fingers inward, like a 'come here' motion. Fig. 7.6] is used to invite a player to generate an idea, to fill the room with the sounds that they feel are most needed. The conductor can wait patiently for the player to find an intriguing phrase or motif, then direct them to repeat, then spread the idea throughout the ensemble using copy, and continue altering it at will, or allowing it to develop on its own. This provides students the chance to analyze the auditory scene evolving around them, and find a place for their own voice.

Figure 7.6: "Pedestrian" directive

These scenes tend to host equal portions of sublime and ridiculous, both of which are invaluable to analyze and discuss in retrospect. At times a conductor will labor to achieve a particular result that they find is actually quite underwhelming, while at other times stumble into a mesmerizing texture by complete accident. Student assumptions about what constitutes 'music' are frequently challenged through these early improvisations, but no one denies how enthralling it can be to open up to new worlds of sonic possibilities.

4. Neapolitan chord resolutions

Use a similar approach to the diatonic triad activities, direct a student to generate the four-voice progression i - iv - V - i. In the iv - V be sure the tonic moves to the leading tone, and subdominant up to the dominant. Repeat this voicing a few times with different orchestrations if possible, so that everyone has performed each voice. When the harmonic motion has been well-engrained, pause on the iv, raising the tonic up a minor second, which will form the Neapolitan chord. Continue to resolve the voices to the V in the same motion as the iv. This activity emphasizes the predominant function of the Neapolitan chord, and its derivation from the minor subdominant. Again, perform the progression multiple times with varying orchestration, so everyone has a chance to experience each voice in the proper resolution.

Once everyone is tracking, reinforce the idea in multiple keys and voicings. This exercise primarily challenges the conductor to understand what they're hearing and arrange voices in real time to form a chromatic alteration. This can be imitated for a number of chromatic alterations (augmented sixth chords, secondary and embellishing diminished chords, etc.). For an added ear-training challenge to the ensemble, create a directive for the

Neapolitan chord such that when a iv chord is generated, the gesture will direct all those playing a tonic to modulate up a minor second, and resolve appropriately, without any hints from the conductor. This requires each student in the ensemble to maintain awareness of their position in the harmony, and supports the development of embodied knowledge of chromatic procedures.

Advanced.

5. Common Chord Modulations

Key modulations are often one of the more difficult areas of theory study for students, requiring awareness of multiple keys, delicate voice-leading, and harmonic planning. Due to these procedural intricacies, study of modulations rarely graduate from the page to where it proves more useful: auditory and performative awareness. Conduction is ideal for practicing the construction, performance, and listening skills required to be fully proficient with modulations. This exercise should occur after the concept of common chord modulations has been introduced.

Begin with an exercise in auditory imagination. Establish a tonal center for the class by playing an authentic cadence on the piano, and direct students to replay this key in their imagination. After thirty seconds, play a new tonic, and challenge students to establish this new key in their auditory imagination. After thirty seconds, play the old tonic chord followed by the new, and challenge students to imagine a way to connect the two keys. This imagination stage is an important step of rehearsing the next step.

Now, invite a volunteer to conduct the class. Direct the student to establish the home using diatonic harmony directives [e.g. holding sign-language numbers signifying chords]. Once established, conductors will then (1) prepare, (2) pivot, and (3) establish the new key using chromatic signs [thumbs up/down] and three instances of memory [pointing to forehead]. This can be tedious at first, but eventually a fully-formed modulation will emerge. The ensemble can then be challenged to identify the pivot chord. This can be repeated by multiple students, exploring several solutions of varying sophistication. This approach can also be used to explore chromatic pivots, such as diminished seven chords and Augmented six chords. Through this exercise students work through the structural challenge of constructing a convincing modulation, but also tune their ear to anticipate and imagine openings for modulations in music they perform, arrange, and compose.

6. Polytonality

By the end of the theory core the typical theory student is able to identify instances of polytonality in an analysis, but have limited exposure to the sound of polytonality. The opportunity to perform in class means that students can develop a sense of the sound of bitonality and polytonality, and the characters of various key combinations. Conduction gives students the rare chance to experiment with polytonality with the immediacy of a keyboardist, though with none of the requisite technical chops. One or more short melodies can be provided, or even written by students, which can be modulated freely using modulation directives. Melodies should include each scale degree in order to create a more accurate experience of the interactions between keys. Begin with bitonality. Performing a melody in unison, then split into two groups, and modulate around the circle of fifths in

order to hear the effect of key proximity. After completing the circle, change both keys and challenge students to identify the relationship between them. Instead of performing a given melody in unison, it can be interesting to conduct a more aleatoric texture by staggering entrances and varying tempos.

One effective method of immersing students in the sound of simultaneous keys is to conduct groups to improvise freely within two or more keys, or even invented scales. For instance, conduct one half of the class to improvise freely in D major, and the other half in B major. The unique quality of consonances and dissonances churns, creating many interesting moments, but after a few minutes an overall sense is formed. This can be done with three or more simultaneous keys, though the effectiveness decreases the more a class is subdivided.

Conclusion

Butch Morris' Conduction® system offers a rich, heuristic tool for learning music theory concepts in the classroom, one which (1) addresses recent challenges presented to conventional approaches, (2) efficiently rehearses Performance, Composition/ Improvisation, and Synthesis competencies outlined by the NASM, and (3) which aligns with the Universal Design for Learning (UDL) framework. Theory professors and instructors in proactive music programs are encouraged to experiment with Conduction in the classroom using the above approach, and tailor it to their own classrooms. Conduction can be used periodically, regularly, or be used as the basis of a stand-alone theory/aural skills course or performance ensemble. Butch Morris' posthumously published text —

"The Art of Conduction" — can be consulted for a more thorough guide to his lexical vocabulary.

This dissertation opened by inviting students to speak into the curricular space. It is now appropriate to close this final chapter with a few statements offered voluntarily by students who have engaged with Conduction in this theory context, which I feel realizes what Roland Barthes described as the real product of the composer, the substance of the musical work, which is "to give to do, not to give to hear, but to give to write."[29]

> "It's an amazing way to get used to analysis, since its music I was a part of when it came together."
>
> "It's really helpful, even fun, to analyze the notes that *we* made."
>
> "It helps me see that there's more in the music than it sounds like. It's a lot more clear, and less frustratingly complex this way."

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29. Barthes, "*Musica Practica*," in Image, Music, Text, pp. 149-154

Conclusion

A theory intends to explain. Yet it is not required, nor always useful, for an explanation to be tendered with words. If we think with our bodies and with things, and know more by doing than by seeing things (Kirsh, 2013), then we theorize — process and explain complex phenomena — not just with symbolic and metaphorical language, but with our bodies, with things, and by doing. By examining music theory pedagogy through the interdisciplinary lens of embodiment, this dissertation has aimed to broaden the explanatory potential of core theory study.

By reviewing music theory's perceived curricular deficiencies as seen by students and by reform leaders in schools and departments of music, Part I concluded that (1) conventional theory education remains an overall useful experience for music learners, but (2) rapid transformations in modes of music production and consumption, technologies of knowledge transfer, and an increasingly globalized aesthetic are challenging its explanatory power in today's musical landscape. Institutions are experimenting with curricular reforms in response to these tectonic shifts, yet efforts are hindered by insufficient language and a lack of a coherent framework for envisioning a positive trajectory for change. Part II set out to construct the required pedagogical framework through a diachronic look at theory pedagogy from the standpoint of body-world relations and embodied cognition. What emerged was a model that evaluates theory concepts from an ecological perspective as affordances, and delineates the vectors of bodily agency enacted within the primary music theoretical traditions — the speculative, regulative, and analytic. Part III then argued that the reemergence of speculative music theory moves curriculum toward a more equilibrated dynamic of agency, one that elevates the aim of mutual transformation of student,

classroom, and society. Finally, I provided Conduction® as a proof-of-concept curricular tool that realizes an embodied paradigm for learning and producing musical theory.

This linear argument culminates in my thesis — Student-as-Theorist — which I offer as an answer to calls for new curricular tools (such as those made by the TFUMM Manifesto for Change), as well as a response to critics of such change. The pedagogical framework I have proposed is not a fixed curriculum or methodology, but an indeterminate methodological field through which educators, institutions, and curriculum reformers might evaluate and reimagine their theory programs. The embodied approach I have described does not seek to repeal Western art music traditions, nor devalue canonical composers or works, but rather to revivify tradition through recourse to its own past. As laid out by the Manifesto:

> From this standpoint, the longstanding conventional model of music study in vogue throughout tertiary programs actually represents a radical departure from the European classical tradition. TFUMM proposes a return to the authentic roots of this heritage in a way that is relevant to our current musical lives.[1]

By "authentic roots" the Task Force is referring specifically to improvisational practices that flourished in Western music until the late nineteenth century. While I make no claims as to the 'authenticity' of my or any paradigm, by engaging the speculative tradition (represented in part by the phenomenological turn in music education), and charting a path forward for its reintegration into curriculum, I believe I have successfully defended the value of the particular sphere of classical music's heritage that has been overshadowed by the imperatives of Modernist education (such as the objectivism, knowledge-as-information, learning-as-inscription, and musicianship as innate and/or brain-based).

Speculative theorists of the twenty-first century (i.e. today's students) open themselves to

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1. Campbell (et al.). 2016. p 12.

a world in unprecedented transition. The conventional focus on procedural knowledge and symbol system competency, while valuable, falls short of nourishing the reflexive, phenomenological responsibility required to navigate, negotiate, and generate the required explanations for today. To borrow Helmholtz' observation of late nineteenth-century music, the twenty-first century "requires a more abundant means of expression, and consequently to a certain extent admits into its circle what in itself would be contrary to the gratification of the senses."[2] This nourishing demands more of the educator than an inscription of external musical objects, but the guided process of structuring musical actions in a personal, visceral mode of incorporation.[3] When music is treated as a rhetorical text, students interact with the pheno-textual elements of the music work; however, as suggested by Barthes, the real product of the composer, the substance of the musical work, is "to give to do, not to give to hear, but to give to write."[4]

When a curriculum privileges the regulative and the analytic at the expense of the speculative, it determines how the student operates in relationship to their world, limiting the potential for self-actualization to occur. Whereas a curriculum designed around the *equilibration* of these three orientations presents music theory as an indeterminate field oriented toward mutual transformation. This, I have argued, is one way to understand the implicit trajectory of current curricular reform, and it is my hope that this dissertation further illuminates this and related paths through the framework I have defined and interdisciplinary language I have brought to bear on this topic.

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2. Helmholtz. 1895. p. 311.

3. This wording is taken from David Borgo's paraphrasing of an interview with bassist Bertram Turetzky: "Turetzky is referring to a disjuncture between inscribed and incorporated forms of knowledge. Many music programs place undue emphasis on the normalized, abstract, and detached mode of inscription, rather than the more visceral and personal mode of incorporation." Borgo. 2007b. p. 66.

4. Barthes, "*Musica Practica*," in Image, Music, Text, pp. 149-154

Overall this dissertation has been motivated by a basic humanitarian question: How can I be of help? Situated with my personal problematic, and the meanings music has held for me since I first adopted my instrument as a curative tool, the explorations detailed here present theory pedagogy as a site for establishing musical relationships which the student might continue to use for their own personal growth, and for nourishing a transformative process of realizing their own potentialities, as situated within a community, a society, and the world. Students, in this embodied conception, are more than theory learners; they are theorists. A teacher can do no more for the student, for themselves, and for the world, than to awaken and empower maximal potential.

Works Cited

Texts

Adams, John (HellTweet). 2017. "Harvard Music Department's new curriculum requirements..hmmm...need to learn more, but at first glance, they seem a little disturbing." April 1.

Ali-Choudhury, R., Bennett, R. & Savani, S. 2009. "University marketing directors' views on the components of a university brand." *International Review on Public and Nonprofit Marketing*. 6: 11

Applebaum, Yoni. 2012. "How the Professor Who Fooled Wikipedia Got Caught by Reddit." The Atlantic. April 15.

Babbitt, Milton. 1965. "The Crisis in Theory Teaching: The Structure and Function of Music Theory." *Journal of the College Music Society* 5.

Balio, Andrew. 2015. "Political Activism Comes to the American Conservatory." The James G. Martin Center for Academic Renewal. April 15. Retrieved from https://www.jamesgmartin.center/2015/10/political-activism-comes-to-the-american-conservatory

Ball, T. 1977. "On the Unity and Autonomy of Theory and Practice." in Political Theory and Praxis: New Perspectives, ed. T. Ball, Minneapolis, University of Minnesota Press.

Bannon, Nicholas. 2010. "Embodied Music Theory: New Pedagogy for Creative and Aural Development." *Journal of Music Theory Pedagogy* 24: 197–216.

Barab, Sasha, Anne Arici, and Craig Jackson. 2005. "Design-Based Investigation of Enjoyment and Meaning in Learning." *Educational Technology* January-Fe: 15–21.

Barroso, C.; Ganley, C.; Hart, S.; Rogers, N.; Clendinning, J. 2019. The Relative Importance of Math- and Music-Related Cognitive and Affective Factors in Predicting Undergraduate Music Theory Achievement. *Applied Cognitive Psychology.* 2019:1-13.

Barthel, B. Y. M., Stocking, G., Holcomb, J., & Mitchell, A. 2016. "Nearly eight-in-ten Reddit users get news on the site." Washington, DC: Pew Research Center.

Barthes, Roland. 1977. *Image Music Text*, edited by Stephen Heath. New York: Hill and Wang.

Bennett, Jane. 2010. *Vibrant Matter: A Political Ecology of Things*. Durham and London: Duke University Press.

Bennett & Hacker. 2003. Philosophical foundations of neuroscience. Blackwell Publishing. Malden, MA.

Bernstein, R.J. 1983. Beyond Objectivism and Relativism: Science, Hermeneutics, and Praxis. University of Pennsylvania Press.

Birnbaum, M. H. 2004. "Human research and data collection via the Internet." Annual Review of Psychology, 55, 803–832.

Block, Ned, ed. 1980. Readings in Philosophy of Psychology. Vol. 1. Cambridge: Harvard.

Boatwright, Howard. 1963. Indian Classical Music and the Western Listener. Bharatiya Vidya Bhavan. 2nd ed.

---- 1965. "The Crisis in Theory Teaching." *Journal of the College Music Society*. 5.

Borgo, David. 2012. "Embodied, Situated and Distributed Musicianship." In *Sound Musicianship: Understanding the Crafts of Music*, edited by Andrew Brown, 202–12. Cambridge Scholars.

---- 2007a. "Free Jazz in the Classroom: An Ecological Approach to Music Education." *Jazz Perspectives* 1 (1): 61–88.

---- 2007b. "Musicking on the Shores of Multiplicity and Complexity." *Parallax* 13 (4): 92–107.

Born, G. 2005. On Musical Mediation: Ontology, Technology and Creativity. *Twentieth-Century Music, 2*(1), 7-36.

Bowman, Wayne D. 2004. "Cognition and the Body: Perspectives from Music Education." In *Knowing Bodies, Moving Minds: Toward Embodied Teaching and Learning*, edited by Liora Bresler, 29–50. Netherlands: Kluwer Academic Press.

Braga, Michela; Paccagnella, Marco; Pellizzari, Michele. 2014. "Evaluating students' evaluations of professors." Economics of Education Review. Volume 41, August.

Brinner, Benjamin. 1995. "Knowing Music, Making Music: Javanese Gamelan and the Theory of Musical Competence and Interaction." Chicago studies in ethnomusicology. Chicago: University of Chicago Press.

Buelow, G. 1983. "Rhetoric and Music." Johann Mattheson and the Invention of the *Affektenlehre*. In New Mattheson Studies. Cambridge University Press.

Bunce, Louise; Baird, Amy; Jones, Siân E. 2017. The student-as-consumer approach in higher education and its effects on academic performance. *Studies in Higher Education*. 42:11. p. 1958-1978

Burk, W. J., Steglich, C., Snijders, T. 2007. Beyond dyadic interdependence: Actor-oriented models for co-evolving social networks and individual behaviors. International Journal of Behavioral Development, 31, 397–404.

Burnard, Pamela. 2012. Musical Creativities in Practice. Oxford University Press.

Byros, Vasili. 2009. "Towards an 'Archaeology' of Hearing: Schemata and Eighteenth-Century Consciousness." *Musica Humana* 1 (2): 235–306.

Cage, J. 1967. "A Year from Monday: New Lectures and Writings." Middletown: Wesleyan University Press.

Campbell, Patricia S.; Sarath, Edward; Myers, David. 2016. "Transforming Music Study from Its Foundations: A Manifesto for Progressive Change in the Undergraduate Preparation of Music Majors." In Redefining Music Studies in an Age of Change. Routledge.

---- 2016. "The Lay of the Land." Ch. 1. "Redefining Music Studies in an Age of Change." Routledge. 2016.

Case, John. 1974 (1588). The Praise of Musicke. *Music & Letters.* Vol. 55. No. 4. Oxford University Press.

---- 1588. Apologia Musices tam Vocalis Quam Instrumentalis et Mixtae.

Chattah, Juan. 2012. "Redefining the Aural Skills Courses Within the Experiential Music Curriculum at the University of Miami – Frost School of Music." *NASM National Meeting 2012* 88th Annua (703): 13–19.

Chemero, Anthony. 2009. "Radical Embodied Cognitive Science". MIT Press. Cambridge.

Christensen, Erik. 2012. "Music Phenomenology: A Tool for Describing the Listening Experience, from Music Listening, Music Therapy, Phenomenology and Neuroscience." *Music Listening, Music Therapy, Phenomenology and Neuroscience*.

Christensen, Thomas. 2002. "Introduction." In *The Cambridge History of Western Music Theory*. Cambridge University Press.

Clark, A. 2001. Mindware. New York: Oxford University Press.

Clark, A. & Chalmers, D. 1998. "The Extended Mind." *Analysis* 58:10-23.

Clarke, E. 2005. Ways of Listening: An Ecological Approach to the Perception of Musical Meaning. Oxford University Press, Oxford.

Coburn, C. E., Russell, J. L. 2008. District policy and teachers' social networks. Education Evaluation and Policy Analysis, 30(3), 203–235.

Conard, N.J.; Malina, Maria; Münzel, Susanne. 2009. New flutes document the earliest musical tradition in southwestern Germany. *Nature* 460. p. 737-740.

Cope, David. 2014. Experiments in Musical Intelligence, 2nd Edition. A-R Editions.

Cross, I. 2010. "The evolutionary basis of meaning in music: Some neurological and neuroscientific implications." In Clifford F. (Ed.), The Neurology of Music. Imperial College Press, London. p. 1-15.

Csibra, Gergely; György Gergely. 2011. "Natural Pedagogy as Evolutionary Adaptation." *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 366 (February): 1149–57.

Csordas, Thomas. 2015. Chapter 2: Toward a Cultural Anthropology of Body-World Relations. *Phenomenoloy in Anthropology: A Sense of Perspective.* Indiana University Press.

Dahlhaus, Carl. 1990. "The Theory of Harmonic Tonality." In *Studies on the Origin of Harmonic Tonality*, 115:310–12.

Dalcroze, Émile Jaques. 1980 (1921). "Rhythm, music and education." Trans. H. Rubinstein. The Dalcroze Society Inc., London.

Daly, Alan. 2010. Social Network Theory and Educational Change. Harvard Education Press.

Daly, A.J. & Finnigan, K.S. 2010. A bridge between worlds: understanding network structure to understand change strategy. *Journal of Educational Change* 11: 111

Demos, Alexander P., Roger Chaffin and Topher Logan. "Musicians Body Sway Embodies Musical Structure and Expression: A Recurrence-Based Approach." *Musicae Scientiae*. 1–20. 2017.

Dennett, Daniel. 2011. "Shall We Tango? No, but Thanks for Asking." *Journal of Consciousness Studies* 18 (5)

---- 2006. Higher-order truths about chmess. *Topoi*: 40.

Descartes, René. 1961 (1618). *Compendium of Music*. trans. Walter Robert, notes by Charles Kent. n.p.: American Institute of Musicology.

Descartes, Rene. 1984 (1641). *Meditations on First Philosophy*, in *The Philosophical Writings of René Descartes*, trans. by J. Cottingham, R. Stoothoff and D. Murdoch, Cambridge: Cambridge University Press. Vol 2.

Dewey, John. 1997 (1916). Democracy and education. Free Press. Later Printing Edition.

Di Paolo, E.A. 2009. Extended life. *Topoi*. 28, p. 9-21.

Directory of Music Faculties in Colleges and Universities, U.S. and Canada. 2016-2017. The College Music Society.

Drake, J. 2017. Musical Theory and Musical Judgment—Both Optional at Harvard. *Vision and Values*. March 8.

Dunsby, Jonathan. 2010. "Reflections on Music Theory Pedagogy: Virtual and Archaeological Known Unknowns." *Journal of Music Theory Pedagogy* 24: 175–96.

Dwyer, R. 2015. "Unpacking the Habitus: Exploring a Music Teacher's Values, Beliefs and Practices." *Research Studies in Music Education* 37 (1): 93–106.

El-Ghadban, Yara. 2009. "Facing the Music: Rituals of Belonging and Recognition in Contemporary Western Art Music." *American Ethnologist.* 36/1.

Erlmann, Veit. 2010. "The Labyrinth of Reason: Hermann von Helmholtz's Physiological Acoustics and the Loss of Certainty." In Reason and Resonance: A History of Modern Aurality. 422. Cambridge, London: Zone Books.

Evans, J. R. & Mathur, A. 1983 "The value of online surveys." Internet Research, 15, 195–219. 2005. Gibson, James. The Senses Considered as Perceptual Systems. Praeger.

Eysenbach, Gunther. 2004. "Checklist for Reporting Results of Internet E-Surveys (CHERRIES)." *Journal of Medical Internet Research* 6(3):e34.

Ferrara, Lawrence. 1984. "Phenomenology as a Tool for Musical Analysis." *The Musical Quarterly* 70 (3): 355–73.

Fodor, J. 1980. "Methodological solipsism considered as a research strategy in Cognitive science." *Behavioral and Brain Sciences.* 3.

Forkel, J. 1967 (1788). Allgemeine Geschichte der Musik, Göttingen, Schwickert. facs. Graz, Akademische Druck- und Verlagsanstalt.

Forte, Allen. 1977. Music Theory in Re-Transition: Centripetal Signs." *College Music Symposium* 17/1. Spring. p. 156-59.

Foucault, Michel. 1977. Discipline and Punishment. New York: Vintage.

---- 1997. "On The Genealogy Of Ethics: An Overview Of Work In Progress." Ethics: Subjectivity and Truth. The New Press.

Garland-Thomson, Rosemary. 2009. "Staring: How We Look". New York: Oxford University Press.

Gibson, James. 1979. The Ecological Approach to Visual Perception. Houghton Mifflin.

Gilovich, Thomas, Dacher Keltner, and Richard E. Nisbett. 2006. *Social Psychology*. New York: W.W. Norton.

Girard, Aaron. 2007. "Music Theory in the American Academy." Harvard University.

Gjerdingen, R. 2007. Music in the Galant Style. Oxford University Press.

Goehr, Lydia. 1992. The Imaginary Museum of Musical Works. Oxford University Press.

Gosling, S. D. Vazire, S., Srivastava, S., & John, O.P. 2000. "Should we trust web-based studies? A comparative analysis of six preconceptions about Internet questionnaires." *The American Psychologist* 59: 93–104.

Gutierrez, James. 2018. "Students Evaluate Music Theory Courses: A Reddit Community Survey." *College Music Symposium* 58 (2): 1–27.

Haraway, Donna. 2008. "When Species Meet". Posthumani. Minneapolis: University of Minnesota Press.

Hasty, Chris. 2012. Learning in time. *Visions of Research in Music Education, 20*.

Heble, A. Laver, M. (Ed.). 2016. "Improvisation and Music Education: Beyond the Classroom." Routledge Studies in Music Education.

Helmhotlz, Hermann. 1895. "On the Sensations of Tone: As the Physiological Basis for the Theory of Music." Edited by Alexander Ellis. 3rd ed. London: Longmans, Green, and Co.

Hiser, Kelly (@kellyhiser). 2017. "So if you find yourself defending music theory, know that what you're really defending is white supremacy." April 2. Tweet.

Hund, J. 2014. "What is the Discipline of Music Appreciation? Reconsidering the Concert Report." *Journal of Music History Pedagogy* 4(2): 255–72.

Huron, D. 2006a. On teaching voice leading from perceptual principles. *Music Theory Pedagogy*. Vol. 20.

---- 2006b. Sweet Anticipation: Music and the Psychology of Expectation. Cambridge, Massachusetts: MIT Press.

---- 2010. *Voice Leading: The Science Behind a Music Art*. The MIT Press.

Husserl, E. 1901. "*Logische Untersuchungen. Zweiter Teil: Untersuchungen zur Phänomenologie und Theorie der Erkenntnis*." Max Niemeyer, Halle. [Logical investigations. Second part. Investigations concerning phenomenology and the theory of knowledge. Martinus Nijhoff, The Hague, 1984].

Hutto, Daniel. 2011. "Philosophy of Mind's New Lease on Life: Autopoietic Enactivism meets Teleosemiotics". *Journal of Consciousness Studies.* 18. No.5–6,2011. p. 44–64.

Hutto, D. & Myin, E. 2012. "Radicalizing Enactivism: Basic Minds without Content". MIT Press.

Hurley S. 1998. Consciousness in action. Harvard University Press, London.

Hyer, Brian. 1996. Before Rameau and After. *Music Analysis* 15. 81.

Ihde, Don. 2007 (1976). "First Phenomenology." In *Listening and Voice*, 25. State University of New York Press; 2nd edition.

Imbrie, Andrew. 1965. "The Crisis in Theory Teaching: A Grain of Salt." *Journal of the College Music Society* 5.

Ingold, Timothy. 2007. Materials against Materiality. Archaeological Dialogues. Cambridge University Press.

Jackson, Myles W. 2006. "The Fetish of Precision: Scheibler's Tonometer and Tuning Technique." In *Harmonious Triads: Physicists, Musicians, and Instrument Makers in Nineteenth-Century Germany*, 152–81. The MIT Press.

Jesse, David. 2016. "Wayne State drops math as general ed requirement." Detroit Free Press. June 12.

Johnson, M. 1987. The body in the mind: The bodily basis of meaning, imagination, and reason. Chicago, IL, US: University of Chicago Press.

Johnson, Vicky. 2015. "Competencies, Curricula, and Compliance: An Analysis of Music Theory in Music Education Programs in Texas." Dissertation. Boston University College of Fine Arts.

Judson, Kimberly M.; Aurand, Timothy W.; Gorchels, Linda; Gordon, Geoffrey. 2008. Building a University Brand from Within: University Administrators' Perspectives of Internal Branding, *Services Marketing Quarterly*. 30:1, 54-68.

Kagan, Susan. 1992. Archduke Rudolph, Beethoven's Patron, Pupil, and Friend: His Life and Music. Pendragon Press.

Kirsh, David. 2013. "Embodied Cognition and the Magical Future of Interaction Design." *ACM Trans. Computer-Human Interaction.* 20 (1): 3:1–3:30.

Kirsh, D. & Maglio, P. 1994. "On Distinguishing Epistemic from Pragmatic Action." *Cognitive Science* 18.

Kozak, Mariusz. 2015. "Listeners' Bodies in Music Analysis: Gestures, Motor Intentionality, and Models." *Music Theory Online: Society for Music Theory* 21 (3)

Krumhansl, Carol. 1985. Perceiving Tonal Structure in Music: The complex mental activity by which listeners distinguish subtle relations among tones, chords, and keys in Western tonal music offers new territory for cognitive psychology. *American Scientist.* Vol. 73, No. 4. July-August. p. 371-378.

Krumhansl, C. L. & Shepard, R. N. 1979. Quantification of the hierarchy of tonal functions within a diatonic context. *Journal of Experimental Psychology: Human Perception and Performance*. 5.

Kumar, B.A. & Chand, S.S. 2019. Mobile learning adoption: A systematic review. *Education and Information Technologies.* Volume 24. Issue 1. p. 471–487.

Lakoff, G. & Johnson, M. 1999. "Philosophy in the Flesh: the Embodied Mind & its Challenge to Western Thought." Basic Books. NY.

Lakoff, George & Núñez, Rafael. 2001. "Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into Being." Basic Books.

Larson, Steve. 2012. "Musical Forces: Motion, Metaphor, and Meaning in Music." Indiana Univ. Press.

Leifer, V. 2017. "Music Department to Adopt New Curriculum Beginning Fall 2017." The Harvard Crimson. March 22. Retrieved from: https://www.thecrimson.com/article/2017/3/22/music-concentration-changes

Lettvin. Maturana. 1959. What the frog's eye tells the frog's brain. Proc. Inst. Radio Engr. vol. 47. pages 1940-1951.

Leonard, K.P. April 1, 2017. "Music Privilege Walk Statements." Retrieved from https://kendraprestonleonard.hcommons.org/2017/04/01/music-privilege-walk-statements. April 10, 2019.

Lerdahl, Fred. 2009. Genesis and architecture of the GTTM project. Music Perception, 26, February.

Lerdahl, Fred & Krumhansl, Carol. 2007. "Modeling Tonal Tension." *Music Perception* 24 (4): 329–66.

Lochead, Judy. 2011. Ch. 46: Music Theory and Philosophy. in "The Routledge Companion to Philosophy and Music." Routledge.

---- 2015. Reconceiving Structure in Contemporary Music: New Tools in Music Theory and Analysis. Routledge.

London, Justin. 2011. Ch. 45: Musicology. in "The Routledge Companion to Philosophy and Music." Ed. Theodore Gracyk, Andrew Kania. Routledge.

Lovejoy, Arthur. 1936. *T*he Great Chain of Being. Harvard University Press.

Luckman, C. 1996. "Defining experiential education." *Journal of Experiential Education*. 19(1). 6-7.

MacNell, Lillian; Driscoll, Adam; Hunt, Andrea. 2015. "What's in a Name: Exposing Gender Bias in Student Ratings of Teaching." *Innovative Higher Education*. Volume 40, Issue 4, August.

Marghetis, Tyler & Nuñez, Rafael. 2013. "The Motion behind the Symbols: A Vital Role for Dynamism in the Conceptualization of Limits and Continuity in Expert Mathematics." *Topics in Cognitive Science* 5 (2): 299–316.

Matja, J.R., & Schiavio, Andrea. 2013. "Enactive Music Cognition: Background and Research Themes." *Constructivist Foundations* 8 (3).

Maturana, H. Varela, F. 1980. "Autopoiesis and Cognition". D. Reidel Publishing Company. Dordrecht, Holland.

McClary, Susan. 2006. "Constructions of Subjectivity in Franz Schubert's Music." in Queering the Pitch: The New Gay and Lesbian Musicology. Ed. Philip Brett, Elizabeth Wood, Gary Thomas. CRC Press.

McLaren, Peter. 2014. Life in Schools: An Introduction to Critical Pedagogy in the Foundations of Education. 6th Ed. Routledge.

Means, Barbara; Toyama, Yukie; Murphy, Robert; Bakia, Marianne; & Jones, Karla. 2010. Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies. U.S. Department of Education. Center for Technology in Learning.

Merleau-Ponty, Maurice. 1968. "The Intertwining — The Chiasm." In *The Visible and Invisible*, 130–55. Routledge.

---- 1962. "The Spatiality of the Lived Body and Motility." In *Phenomenology of Perception*. London: Routledge.

Merriam, S. B. 2009. Qualitative research: A guide to design and implementation, San Francisco: Jossey–Bass.

Miller, T. W., & Dickson, P. R. 2001. "International journal of on-line market research." *International Journal of Electronic Commerce.* 5, 139–167.

Miller, Daniel (Ed.) 2005. "MATERIALITY." In *MATERIALITY*. Durham and London: Duke University Press.

Mithen, S. J. 2006. The Singing Neanderthals: the Origins of Music, Language, Mind and Body Cambridge: Harvard University Press.

Mishra, Punya & Koehler, Matthew. 2006. "Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge." *Teachers College Record*.

Morris, Butch. 2008. News and Notes: Butch Morris on the Art of Conduction. Interview: National Public Radio. Feb. 18.

Moseley, Roger. 2016. *Keys to Play: Music as Ludic Medium*. University of California Press.

N.A. 2017. "This romanticization of musical illiteracy is risky." April 5. The Guardian: Music. Retrieved from: https://www.theguardian.com/education/2017/apr/05/this-romanticisation-of-musical-illiteracy-is-risky. April 10, 2019.

Naxer, Meghan M. 2016. "Malleable Mindsets: Rethinking Instructional Design in Undergraduate Music Theory." University of Oregon.

Nettle, B. 1983. "The Study of Ethnomusicology." University of Illinois Press. Urbana.

Newfeld, Christopher. 2016. The Great Mistake: How We Wrecked Public Universities and How We Can Fix Them. Johns Hopkins University Press.

Nietzsche, F. 1886. Beyond Good and Evil. Prelude to a Philosophy of the Future.

Noë, Alva. 2009. Out of Heads. Hill and Wang. New York.

---- 2004. Action in perception. MIT Press. Cambridge, Mass.

Núñez, Rafael. 2016. "How Much Mathematics Is Hardwired, If Any at All." Chapter 3: Minnesota Symposium on Child Psychology. 38: 83–124.

---- 2012. "On the Science of Embodied Cognition in the 2010s: Research Questions, Appropriate Reductionism, and Testable Explanations." *Journal of the Learning Sciences* 21 (October 2011): 324–36.

---- 2011. "No Innate Number Line in the Human Brain." *Journal of Cross-Cultural Psychology* 42 (4): 651–68.

---- 2006. "Do Real Numbers Really Move? Language, Thought, and Gesture: The Embodied Cognitive Foundations of Mathematics." In *Unconventional Essays on the Nature of Mathematics*, edited by Reuben Hersh, 160–81. Springer.

O'Regan. Noë. 2001. "A sensorimotor approach to vision and visual consciousness." *Behavioral and Brain Sciences*, 24(5), pp.939-973.

Obrecht. Guy. 2011. "The Crystallization of the New, New Music at UCSD" *College Music Symposium* 51.

Olivennes, Hannah. 2017. "Boaty McBoatface: From Internet Joke to Polar Explorer." New York Times: Europe, March 13.

Overy, Katie & Istvan Molnar-Szakacs. 2009. "Being Together in TIme: Musical Experience and the Mirror Neuron System." *Music Perception* 26 (5): 489–504.

Paglieri, F. (Ed.). 2012. "Consciousness in Interaction: The role of the natural and social context in shaping consciousness." Advances in Consciousness Research. John Benjamins Publishing Company.

Plat, Hugh. 1653. The Jewel House of Art and Nature.

Purwins H., Perfecto H. Gratchen M., Hazan A., Marxer R. & Serra X. 2008. Computational models of music perception and cognition I: The perceptual and cognitive processing chain. *Physics of Life Reviews.* 5.

Putnam, H. 1981. "Reason, Truth, and History." Cambridge University Press. Cambridge.

Rameau, Jean-Philippe. 1722. *Traite de l'harmonic reduite a ses principes naturels* (1722), in *Jean-Philippe Rameau: Complete Theoretical Writings* by Erwin R. Jacobi. Review by: Paul Henry Lang, The Musical Quarterly, Vol. 57, No. 4 (Oct., 1971), Oxford Univ. Press, p. 677-684.

---- 1754. *Observations sur notre instinct pour la musique, Préface.*

Reichardt, Jasia. 1978. Robots: Fact, Fiction, and Prediction. Penguin Books.

Reybrouck, Mark. 2005a. "Body, mind and music: Musical semantics between experiential cognition and cognitive economy." Trans: Transcultural Music Review.

---- 2005b. "A biosemiotic and ecological approach to music cognition: Event perception between auditory listening and cognitive economy". *Axiomates:. An International Journal in Ontology and Cognitive Systems.* 15(2), pp. 391-409.

Robin, William. 2017. "What Controversial Changes at Harvard Mean for Music in the University." April 25. https://nationalsawdust.org

Rogers, Carl. 1995. On Becoming a Person: A Therapist's View of Psychotherapy. 2nd Ed. Mariner Books.

Rogers, Michael. 1984. "Teaching Approaches in Music Theory: An Overview of Pedagogical Philosophies." Southern Illinois University Press.

Rogoff, Barbara. 1995. Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J. V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind*. Cambridge University Press.

Rose & Meyer. 2002. *Teaching Every Student in the Digital Age: Universal Design for Learning* Alexandria, VA: ASCD.

Ross. 1995. "What is wrong with school music?" British Journal of Music Education. 12: 185

Rowlands, M. 2003. Externalism: Putting Mind and World Back Together Again. Acumen/McGill-Queen's University Press.

Samson, Jim. 2018 "Canon (iii)." Grove Music Online. Retrieved from: www.oxfordmusiconline.com/subscriber/article/grove/music/40598 (accessed Dec., 2018)

Sanders, John. 1993. "Merleau-Ponty, Gibson, and the materiality of meaning." Man and World 26.

Sarath, Edward. Music Theory Through Improvisation: A New Approach to Musicianship Training. Routledge. 2009.

Schaal D. W. 2005. Naming our concerns about neuroscience: a review of Bennett and Hacker's philosophical foundations of neuroscience. *Journal of the experimental analysis of behavior*, *84*(3), 683–692.

Schiavio, Andrea. 2019. "The Primacy of Experience: Phenomenology, Embodiment, and Assessments in Music Education." Chapter 4 in The Oxford Handbook of Philosophical and Qualitative Assessment in Music Education. Ed. by David J. Elliott, Marissa Silverman, and Gary E. McPherson. Oxford Handbooks.

---- 2014. "Music in (En) Action: Sense-Making and Neurophenomenology of Musical Experience." Doctoral Dissertation. University of Sheffield.

Schiavio, A. & Cummins, Fred. 2015. "An Inter (En) Active Approach to Musical Agency and Learning An Inter (En) Active Approach to Musical." *International Conference on the Multimodal Experience of Music. Proceedings of ICMEM 2015. Sheffield: HRI*, 1–12.

Schiavio, A. & Schyff, Dylan van der. 2018. "4E Music Pedagogy and the Principles of Self-Organization." *Behavioral Sciences* 8 (8): 72.

---- 2016. "Beyond Musical Qualia . Reflecting on the Concept of Experience." *Psychomusicology: Music, Mind, and Brain* 26 (4): 366–78.

Schiavio, A., & Menin, D. 2013. Embodied music cognition and the mediation technology. A critical review. In *Psychology of Music*. 41(6).

Schmidgen, Henning. 2014. *The Helmholtz Curves: Tracing Lost Time*. First Edit. New York: Fordham University Press.

Schmidt, Denise; Baran, Evrim, Thompson, Ann; Mishra, Punya; Koehler, Matthew; & Shin, Tae. 2009. "Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice Teachers." *Journal of Research on Technology in Education* 42 (2). International Society for Technology in Education.

Schoenberg, Arnold. 1978. *Theory of Harmony*. Trans. Roy Carter, Faber and Faber. p. 345.

Schyff, Dylan Van Der. 2017a. "Concepts for an Enactive Music Pedagogy: Essays on Phenomenology, Embodied Cognition , and Music Education." Dissertation. Simon Fraser University.

---- 2017b. "Improvisation, Enaction & Self-Assessment." Chapter 17 in The Oxford Handbook of Philosophical and Qualitative Assessment in Music Education. Ed. by David J. Elliott, Marissa Silverman, and Gary E. McPherson. Oxford Handbooks.

---- 2016. "From Necker Cubes to Polyrhythms: Fostering a Phenomenological Attitude in Music Education." *Phenomenology & Practice.* 10 (1): 4–24.

Shatz, I. 2016. "Fast, Free, and Targeted: Reddit as a Source for Recruiting Participants Online." *Social Science Computer Review*, no. November: 1–13.

Shouldice, H. N. 2014. "Teachers' Beliefs Regarding Composition in Elementary General Music: Definitions, Values, and Impediments." *Research Studies in Music Education* 36 (2): 215–30.

Silber, J. 1969. "Preface" from "A Report on an Experimental General Music Program." Mandeville Special Collections RSS1225. Box 4. Folder 16.

Simones, Lilian, Franziska Schroeder, and Matthew Rodger. 2015. "Categorizations of Physical Gesture in Piano Teaching: A Preliminary Enquiry." *Psychology of Music* 43 (1): 103–21.

Skundergard, K.; Kirsh, David; Dahlbäck, N. 2012. "Maps in the Head and Maps in the Hand." *CogSci 2012*. no. 1994: 2339–44.

Small, Christopher. 1998. Musicking: The Meanings of Performing and Listening. Wesleyan.

Snow, Charles Percy. 2001. [1959]. The Two Cultures. London: Cambridge University Press.

Stanley, Thomas. 2009. "Butch Morris and the Art of Conduction." Dissertation. University of Maryland, College Park.

Steege, Benjamin. 2012. *Helmholtz and the Modern Listener*. Cambridge: Cambridge University Press.

---- 2013. "Society for Music Theory." Conference Proceedings, edited by M. Buchler and V. Long, 97.

Straus, Joseph. 2011. "Extraordinary Measures: Disability in Music." Oxford University Press.

Taruskin, Richard. 2018. "The Many Dangers of Music." Lecture delivered at the University of San Diego. March 22.

Taussig, Michael. 1993. "Mimesis and Alterity: A Particular History of the Senses." Routledge.

Tenzer, M. 2011. Analytical and Cross-Cultural Studies of Music. Oxford University Press.

Thompson, Evan. 2008. "Precis of Mind in Life: Biology, Phenomenology, and the Sciences of Mind." *Isis* 99 (5): 886–87.

---- 2007. "Mind in Life. Mind in Life". The Belknap Press of Harvard University Press.

Thompson, Evan & Stapleton, M. 2009. Making Sense of Sense-Making: Reflections on Enactive and Extended Mind Theories. *Topoi*. 28(1): 29.

Tinkle, Adam. 2015a. "Experimental Music with Young Novices." *Leonardo Music Journal* 25 (1): 30–33.

---- 2015b. "Sound Pedagogy: Teaching Listening since Cage." *Organised Sound* 20 (02): 222–30.

---- 2015c. "The Expanding Universal: Participation and Pedagogy in Experimental Music." Dissertation. University of California San Diego.

Torrance, S. 2005. In Search of the Enactive: Introduction to the special issue on Enactive Experience. *Phenomenology and the Cognitive Science.* 4(4).

Tran, Cathy. Smith, Brandon. Buschkuehl, Martin. 2017. "Support of Mathematical Thinking through Embodied Cognition: Nondigital and Digital Approaches." *Cognitive Research: Principles and Implication*s.

Varela, F., Thompson, E., & Rosch, E. 1991. The Embodied Mind. MIT Press. Cambridge, MA.

---- 1992. "The Embodied Mind: Cognitive Science and Human Experience." MIT Press. Revised edition.

Walser, Robert. 1991. "The Body in the Music: Epistemology and Musical Semiotics". College Music Symposium. Vol. 31. p. 117-126.

Ward-Steinman. 2016. Advances in Social-Psychology and Music Education Research. Routledge.

Weber, William (et al.). 2001. "Conservatories." Grove Music Online. Oxford University Press. Jan. 10.

Webern, A. 1963. *The Path to the New Music*. trans. by Leo Black. Bryn Mawr. Pennsylvania: Theodore Presser.

Welch. 2001. "The misunderstanding of music." Institute of Education, University of London.

Williamson, Richard. 2013. "Managing Competency-Based Grading in Music Theory." *Journal of Music Theory Pedagogy* 2.

Wilson, Chris. 2010. I'll Be Bach. Slate; Music. http://www.slate.com/articles/arts/music_box/2010/05/ill_be_bach.html. Accessed Dec. 10, 2018.

Wilson, Margaret. 2002. "Six Views of Embodied Cognition." *Psychonomic Bulletin & Review* 9 (4): 625–36.

Wilson, R. & Dewaele, J. M. "The use of web questionnaires in second language acquisition and bilingualism research." *Second Language Research*. 26, 103–123. 2010.

Witzleben, J. L.. 1997. "Whose Ethnomusicology? Western Ethnomusicology and the Study of Asian Music." Ethnomusicology Vol. 41, No. 2, Special Issue: Issues in Ethnomusicology (Spring - Summer, 1997), pp. 220-242.

Woo, Y., Kim, S., & Couper, M. P. 2015. "Comparing a cell phone survey and web survey of university students." *Social Science Computer Review*. 33. 399–410.

Zbikowski, Lawrence. 2006. "The Cognitive Tango." In *The Artful Mind: Cognitive Science and the Riddle of Human Creativity*, edited by Mark Turner, 115–31. New York: Oxford University Press.

---- 2005. "Cognitive Science, Music Theory, and Music Analysis." *Musiktheorie Im Kontext: 5. Kongress Der Gesellschaft Für Musiktheorie*.

Media

Black February. 2011. Produced and Directed by Vipal Monga.

Interviews

Burr, Anthony. 2018. Personal interview. March 15.

Chattah, Juan. 2018. Personal interview. February 16. 2017.

Clark, Suzannah. 2017. Personal interview. October 13.

Rice, Timothy. 2017. Personal interview. September 27.