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Metrical Interactions Between Body and Voice in Jewish and Greek Orthodox Liturgical Chant

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Abstract

Moving in Sacred Time:

Metrical Interactions Between Body and Voice in Jewish and Greek Orthodox Liturgical Chant

Rosa Abrahams

Whether in the Synagogue or the Greek Orthodox Church, worshippers are physically active throughout chanted prayer, exhibiting a variety of metrical interactions between their voices and bodily movements. Existing scholarship on rhythm and meter, embodied music experience, and ritual indicate that metrical synchronization is a fundamental mode of sonic and physical interaction. However, these literatures address neither how bodies move to semi-metered chant (music that is neither strictly metered nor completely un-metered), as is found in Jewish and Greek Orthodox liturgies, nor how bodily synchronization differs in worship settings from other music-movement contexts. In this dissertation, I explore these intersections of vocal and physical meter. Having conducted ethnographic interviews and observations in North American Jewish and Greek Orthodox congregations, I develop unique transcription methodologies which aid me in classifying types of movement made during worship, uncovering a range of ways that worshippers interact physically with musical prayer.

In Reform and Conservative Jewish worship, the impetus for movement tends to be centered on developing and maintaining focus during chanted Hebrew worship. Both congregants and clergy participants discussed in their interviews the importance of actively focusing on the text and on their own internal state. Further, they noted that making repetitive, free, ritually-inflected movements felt “natural” and aided them in these processes. Despite

expressing similar motivations, participants' physical movements differed significantly from one another, as did their methods of entrainment (to both music and other worshipping bodies), indicating that bodily synchronization is not necessary for communal worship or personal focus in Hebrew prayer.

In contrast, Greek Orthodox worship primarily involves extensive ritual choreography, rather than free, ritually-inflected movements. My participants — Greek Orthodox priests — emphasize the importance of sensory attentiveness in this context, as worshippers and especially as clergy. They strive to focus closely on specific aspects of the ritual at certain moments, creating fluid shifts in attention between all the senses. The sonic atmosphere often involves multiple streams of sound: between the chanters, choir, priests, percussive sounds of the incense censer, and the tolling of bells. These are engaged with and attended to in varying ways by the priests as they lead the congregation in ritual and prayer.

In both Jewish and Greek Orthodox worship settings, the ways in which body and voice enact worship and co-create ritual space are distinct from other musical embodied settings. Through participant interviews, my observations during worship, and the analysis of metrical entrainment (or lack thereof), human interaction with semi-meteredness and movement-music asynchrony in music as prayer is shown to be distinct from other musical ontologies. Moreover, embodied technique for worship is revealed as not only requisite to prayer experience, but also as integral in the development of prayer experience. In this deeper engagement with meter, music of worship, and embodiment, findings indicate that many prayer states hinge around asynchrony, flow, and an experience of "now-ness" that allows for a blending of attentiveness and unconscious movement on the part of the worshipper.

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Blaine Waterman, for welcoming me with love and warmth, for your generosity of spirit, and for your understanding as I complete what, at times, felt like endless years of schooling. My unending thanks to my sisters, Miranda and Diana Abrahams, for your companionship in life: for listening, commiserating, encouraging, joking, and family band-ing with me, and for always staying connected despite the distance. You are true friends, and phenomenal sisterlings.

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Glossary

This glossary is provided to define commonly used terms throughout the text. Many terms are also defined within the text itself, and terms with multiple pertinent definitions are only defined within the text. All Hebrew and Yiddish definitions are taken from the following source: Eisenberg, Joyce. 2001. *The JPS Dictionary of Jewish Words*. Philadelphia, PA: Jewish Publication Society.

Aliyah n. Hebrew (ah-LEE-yah); pl. **aliyot** (ah-lee-YOTE). Literally, "to go up." Refers in this context to the honor of being called up to the *bimah* to recite the blessings before and after the Torah reading.

Amidah n. Hebrew (ah-MEE-dah). Literally, "standing." Refers in this context to the central set of prayers in a Jewish service, said three times a day (traditionally), and recited while standing.

Ark n. English. The Holy Ark is the cabinet in the front of the Jewish sanctuary that holds the Torah scrolls.

Ashkenazic adj. Hebrew (osh-keh-NAH-sic). Refers to those Jews who lived in Germany, France, and generally in Central and Eastern Europe, and their descendants.

Bima n. Hebrew (BEE-mah). A raised platform or stage in the Jewish Sanctuary from which the Torah is read and services are conducted.

Chatimah n. Hebrew (cha-tee-MAH). Literally "seal." Refers in this context to the final line of a Hebrew blessing.

Chumash n. Hebrew (chu-MASH). Refers to a printed Torah text with commentary, rather than the Torah scrolls.

Erev n. Hebrew (ER-uh-v) Literally "eve, evening." Refers in this context to the evening before a Jewish holiday (including Shabbat).

Eucharist n. English. (YOO-kuh-rist). Refers in this context to the consecrated elements of the Holy Communion.

Gabbai n. Hebrew (GAB-eye). Refers in this context to the layperson/people responsible for keeping things in ritual order during a Torah reading, including announcing the names of those reading the Torah and those performing *aliyot*.

Haftorah n. Hebrew (hoff-TOE-rah). Literally "conclusions." A reading from the biblical book of Prophets that is recited in the synagogue immediately following the Torah reading. The Haftorah portion is connected to the Torah portion in a similar weekly cycle.

Havdallah n. Hebrew (hav-DOLL-ah). Literally, "separation." The ceremony that marks the end of Shabbat on Saturday evening, and separates Shabbat from the rest of the week.

Ison n. Greek (EE-son). Refers in this context to the drone or bass note in a Byzantine chant.

Kavannah n. Hebrew (kah-vah-NAH). Translates in this context to ritual intention or spirit.

Keva n. Hebrew (KEH-vah). Literally "fixed." Translates in this context to the ritual order of prayers or ritual obligations.

Kiddush n. Hebrew (KID-ish). Literally, "sanctification." Refers in this context to both the blessing recited over the wine as well as the Saturday afternoon snack or luncheon offered following Shabbat services.

Kippah n. Hebrew (KEE-pah); pl. **kippot** (kee-POTE). The small round head covering worn as a symbol of respect and religious observance in the synagogue.

Laos n. Greek (lAH-os). Literally, "people." Refers in this context to the people assembled in the Greek Orthodox congregation.

Lulav n. Hebrew (LOO-lav). Literally, "palm." A ritual object, made up of branches of palm, willow, and myrtle, that is used on Sukkot, a Jewish harvest festival.

Maariv n. Hebrew (mah-ah-REEV). Literally, "evening." The evening Jewish prayer service, conducted after sundown.

Mechitza n. Hebrew (meh-KHEE-tsah). The physical means of separation, usually a curtain or a small wall, between the men's and the women's sections in an Orthodox or very traditional synagogue. In some synagogues, the women's section is a balcony or raised gallery.

Mensch n. Yiddish (MENCH). Literally, "person." A caring, decent person — man or woman — who can be trusted. It refers in a much larger sense to acting in an honorable, proper way. The term is bestowed as a compliment on someone who has done the right thing without asking for thanks or credit.

Mikveh n. Hebrew (MICK-veh). Ritual bath, filled with natural water (rainwater or water from a spring).

Minyan n. Hebrew (MIN-yin). Literally, "number." A gathering of ten people, the minimum necessary for a communal religious service according to Jewish law.

Nusach n. Hebrew (NU-sakh). Refers in this context to traditional Hebrew chant system used in Jewish prayer services for prayers and blessings, but not in reference to the cantillation system for Torah or Haftorah readings.

Paten n. English (PAT-en). Refers to the plate, usually made of gold or silver, that is used to hold the bread during Holy Communion.

Seder n. Hebrew (SAY-der). Literally, "order." The traditional, ceremonial dinner on Passover (Pesach).

Sephardic adj. Hebrew (seh-FAR-dik). Refers to those Jews who lived in Spain, Portugal, the Mediterranean Basin, North Africa, and the Middle East, and their descendants.

Shabbat n. Hebrew (shah-BAHT). The Jewish Sabbath, day of rest. Begins at sunset on Friday night and ends on Saturday evening when three stars are visible in the night sky.

Shacharit n. Hebrew (SHOKH-hah-reit). Literally, "little morning." The traditional set of prayers said each morning at home or in the synagogue.

Sheliach Tzibur n. Hebrew (shah-LEE-akh tsee-BOOR). Literally, “emissary of the congregation.”

Shiva n. Hebrew (SHIH-vah). Literally, “seven.” The initial seven-day period of mounrning that follows Jewish burial.

Shul n. Yiddish (SHOOL). A common Ashkenazic word for synagogue.

Siddur n. Hebrew (sih-DOOR); pl. **siddurim** (sih-duh-REEM). Refers in this context to a Jewish prayer-book used on weekdays and Shabbat.

Tallit n. Hebrew (tah-LEET); pl. **tallitot** (tah-lee-TOTE). A scarf-like rectangular prayer-shawl with four fringes — *tzitzit* — one attached to each corner. Worn during all weekday and Shabbat morning services (not worn in the evening).

Tefillah n. Hebrew (teh-fee-LAH). Literally, “prayer.” Also another name for the *Amidah*, the standing prayer.

Torah n. Hebrew (toe-RAH). The first five books of the Hebrew Bible.

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Introduction

I stand by my seat in the provisional sanctuary of Temple Kol Torah[1], a small Conservative congregation in Chicago that meets in a rented social hall of another synagogue. Around me are the sounds of Saturday morning Shabbat worship: the female Hazzan's high soprano voice sings the Hebrew prayers from the front of the worship space, a voluminous prayer-shawl wrapped around her petite shoulders, her voice loud and confident, rising and falling in unpredictable rhythms with the chanted text. She leads a sonic muddle created by a few other women's thinner voices and several men's lower voices. They join her intermittently, almost keeping pace with her quick tempo.

I am situated in the left-side back row of the semi-circle of blue chairs. The four rows hold ranks of roughly 20 worshippers, all able to see each other and be seen by each other, and yet all ostensibly facing East towards the Hazzan and the Ark (which holds the Torah scrolls), the bank of windows looking out over the temple lawn and quiet street, and ultimately, to Jerusalem. As I glance away from the unseen, quite distant Western Wall to look around the room, I am greeted by a panoply of prayer-shawl enshrouded bodies in motion. An older man in the back is bowing so quickly, so aerobically, it seems to be a gym workout, while another slowly inclines his head and torso sporadically, taking time to glance around the space every few minutes and note any newcomers. A heavyset man towards the front sways back and forth, shifting his weight from side to side, his eyes roaming absent-mindedly around the space — often at the ceiling — barely glancing down at his open prayer-book. The petite woman next to him seems unsure if she will bow back and forth or sway side to side, and ends up doing a bit of both, her head buried in the text. At the podium in the front, facing the group of moving congregants, the Hazzan covers her face with her prayer-book and rocks back and forth emphatically, her voice never faltering as she sings.

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[1] All names have been changed for confidentiality.

As the room fills up with late arrivals — who seem to consider themselves on time, interrupting already praying congregants with kisses and whispered greetings — the landscape of movement continually shifts. There is the woman who joins her husband in the middle of the rows of chairs, but instead of standing beside his side-to-side rocking, his shifting of weight from one hip to another, she stays seated, immersed in her Torah commentary. Another husband and wife take their usual spot in the back row and begin to sway together, forward and back, without bending their heads. Although their voices match up and their movements are the same style, they are only actually in sync about a fifth of the time. As I scan the room, the congregants' movements appear more and more distinct, unique to each individual worshipper, and all the while their voices join together in the chant. Sometimes making eye contact and a nod of greeting, the congregants seem generally unconcerned with any connections, or lack thereof, between their moving bodies and singing voices. As they move through the liturgy, they really *move* through it, though each doing so seemingly to their own internal meter.

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In this dissertation, I explore how meter is enacted and interacted with in religious settings, particularly within the intersections of vocal and bodily meter during Jewish and Greek Orthodox liturgical chant. This project stems from scholarship in music cognition which indicates that metrical synchronization is not only a deeply ingrained way that humans interact with music, but also integral to communal experiences such as ritual, creating group cohesion and affect. While this research is fairly convincing in regards to the musics and settings with
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which it engages, such assertions do not necessarily extend to the communities and religious music I examine in the present study. This is due in part to the nature of the communities, and in part to the ways in which meter is configured in Jewish and Greek Orthodox ritual chant. As such, my investigation is founded on five main questions, which I will lay out here in brief, and address in full throughout the body of the work.

Music theorists studying primarily European-American Western Art Music, and more recently Western popular music, have similarly suggested that the more metered music is, the easier it is for individuals to entrain or synchronize with the pulse (both when acting as listeners and when acting as producers of the musical event). In contrast, music that seems to have no discernible pulse is considered not only un-metered, but also very difficult to entrain to. Due to the Western cultural embeddedness of the idea of "moving to music" as tied to "entraining to music", it is potentially difficult to imagine how to move to music that does not fit our expectations of "moveable" (a term here that might include sub-terms like "danceable", "match-able", "entrain-able" or even "groovy"). But in the worship settings I investigate, people are constantly moving to liturgical chant that isn't particularly metered (though I also wouldn't call it un-metered). As outlined in the ethnographic vignette above, these people do not move in the same way or at the same time, despite their physical and vocal engagement with the same musical prayer. These settings afford the opportunity to discover how worshippers negotiate the bodily experience of prayer to what I will term semi-metered music (defined below). Thus, my first two guiding questions of inquiry are as follows: *How is liturgical chant metered and embodied?* and: *What types of movements do people make during prayer in Jewish and Greek Orthodox settings?* Once these two questions are answered, an obvious follow up provides the third core question for the project: *What sort of metrical interactions occur between body and* *voice during worship?*

But to examine these first three questions, a problem presents itself (and my fourth question arises): *How does one best research what occurs in prayer settings?* The musics of Jewish and Greek Orthodox liturgical chant are oral tradition repertoires with their own theoretical underpinnings. When realized in worship, congregants and clergy both have a mix of prescribed movements and vocalizations, as well as opportunities for free movements and sounds. In order to understand how these worshippers were thinking about and experiencing embodied worship, I developed an ethnographic component to my research: a participant interview followed by several observations of that participant during worship. From there, I transcribed and analyzed my data, ultimately embracing an interdisciplinary approach from the viewpoints of music theory, music cognition, ethnomusicology, religious studies, and philosophy.

It is important to note that this project is about the *what,* rather than the *why,* of movement and musical metricity in worship. I am looking primarily at *what* people do, as well as what they say and/or think they do. While the motivation for their actions is often raised as an important factor for praying in a certain manner, I am not principally focused on *why* people pray as they do, especially from a theological perspective. As one participant, a self-defined Jewish atheist, noted when asked how she felt in the interview setting, "as long as the God stuff is taken out of it I'm ok with it. I mean because it's, sort of not the reason I do what I do. And so, you're not asking about that so that's ok" (Rebecca, Interview, August 2016). Rebecca is right — I'm not looking at the "God stuff" or the belief structure, or even the liturgy in a sense of why people move as they do. I am trying to discover what sorts of movements people are making, without particular engagement with possible theological reasons they have for making such physical choices. However, I am researching religious community practices, and I attempt to be respectful and exacting in regards to the representation of the rituals therein, as well as pertinent theological underpinnings that may be musically or physically affective for my participants. As such, this study is not theology — I am not trying to make any theological arguments, nor am I engaging fully with theological ideas — but it does deeply involve religion, religious practices, and my participants' own struggles and explorations with their respective beliefs.

Part of the power of this project is in thinking about both *music for prayer* and *music as prayer* as ontologically distinct from other types of musical experiences. The claims about synchronization, group cohesion and experience, and metered musics, all stem from music that is meant to be performed (either live or from a recording), in a setting that involves people listening in some way — either dedicated listeners, performers listening to each other, or those interacting with the music such as dancers. These are important ways of making and responding to music, but they do not account for worship settings where music is situated as non-presentational. Of course, all music — all actions in general — are performative, but not all are presentational. By presentational, I mean sounds that are meant to be attended to in a specific manner, in which the people who are moving are meant to be looked at (e.g., in the case of dancers) or the people are specifically not meant to be looked at (e.g., in the case of concert hall style listening wherein listeners are also told not to move). One might argue that ritual settings also involve these categories, and certainly there is a given level of overlap as individuals transition from secular to sacred spaces and soundscapes. But by regarding some musics as presentational and others as functionally sung or spoken text, their ontologies begin to diverge. Liturgical chant is in some ways like an illuminated manuscript: the words will be the same either sung or spoken, but the musical components simply elevate the prayer. As such, unlike presentational musics that are also aestheticized through analysis by music theorists and others, music for worship is a facilitator of prayer that requires different rules of conduct and expertise. Thus arises a fifth and final foundational question: *What does this research tell us (as music scholars) about the ontological standing of music for worship?*

Having posed these five grounding questions, I will address them within the body of my dissertation, proceeding in a four-chapter structure. Chapter one is a literature review, providing a background and grounding for my inquiry. I examine music theoretical scholarship dealing with rhythm and meter in both Western Art music and non-Western musics, and music cognition studies dealing with synchronization. I then turn to an overview of theories of movement and ritual from ritual theory scholarship, closing with a review of embodied cognition scholarship as pertains to movement and musical gesture. This review is not meant to be exhaustive, but rather is intended to consider existing research and approaches to meter, ritual chant, and movement from several viewpoints. While my own work is grounded in music theory, it is interdisciplinary at heart, and this is reflected throughout the dissertation.

Chapter two outlines my research methodologies. I provide a detailed explanation of my ethnography, including issues around movement analysis, and explain my style of transcription. This straightforward section is designed to give the reader an understanding of how I gleaned my results, which are in turn examined in chapters three and four. These final chapters are case studies: three is the Jewish case study; four is the Greek Orthodox case study. While their structures are slightly different, as suits differences in the communities and research findings, both provide a general background on the worship style, physical setting, and participants, and then proceed to use analytical musical examples to connect informant interviews with observations. While there are site-specific conclusions at the end of every chapter, a short set of general conclusions is provided at the end of the dissertation, along with directions for future research.

It is my aim that this project contributes to the world of academic scholarship in a number of ways. Methodologically, I hope that in joining interdisciplinary research in the humanities, music theory sees increased engagement with the wealth of complementary and challenging scholarship that the broader humanistic community has to offer. Repertoire-wise, it is deeply important that ritual music and religious experience be included in the scholarship of music. So much music is connected to spirituality and religion, and yet these features are sometimes ignored in favor of aestheticizing the musical object rather than acknowledging and engaging with its utility as a functional aspect of religious experience. Similarly, music is not alone in its importance for worship; movement and physicality — embodiment — is at the forefront of many religious settings, and especially so in Jewish and Greek Orthodox communities. There is much to learn about liturgical music and how it both exists as and becomes embodied through prayer, an experience which is itself both deeply embodied and intended to transcend beyond the body to its recipient. Thus, this dissertation is intended to do the work of recognizing not only what ideas and knowledge, and refinements and distinctions, these musical cultures have to offer to more conventional music theory, but also the place of religious experience as worthy of study in music academia. Prayer and worship are important components of daily life for millions of individuals. Those individuals are musical and movement experts of a specific kind, and it is my sincere aim to provide them with a voice, intertwined with my own music theoretical viewpoint, and in this manner to explore embodied experience in musical prayer settings.[2]

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[2] In this case, of course, these will be the individuals from the Jewish and Greek Orthodox communities in Chicago who participated in the research for this project.

Chapter 1

Before the Beginning: A Seating Chart for Interdisciplinary Scholarship

I. Introduction

In this dissertation, this "event", it is only fitting to begin with a seating chart. Every event has a seating chart of some kind. Formal gatherings such as state dinners, luxurious weddings, awards ceremonies, and meetings of Congress have strict and carefully thought out seating plans to ensure smooth social and functional relationships during the event. Informal events also have seating charts, though they are at times unspoken, or exist in the very absence of a seating chart: theaters and stadiums, classrooms, worship services, performance ensembles, cafes, courtrooms, and buses. We care what we do with our bodies in space, how they are related to other bodies with whom we share the space, and how they relate to the activities occurring within the space. Seating charts are a way of ordering and understanding our physical environment, as well as a way to plan how physical bodies will interact in future environments.

In conducting the research within this dissertation, I draw on several areas of scholarship, both within and outside of music studies. Unlike chronologically organized literature reviews which examine the progression of research from old to new, this review is organized spatially, thus necessitating the metaphor of a seating chart. In my review of the interdisciplinary scholarship below, instead of highlighting the progressive contributions to a single field or line of inquiry, I consider how scholars and their ideas speak to each other across disciplinary lines, examining scholars who are engaging with similar core sources, ideas, and themes. In situating and organizing these (bodies of) literatures within the space of this research event, I aim for an optimum organization. I strive to arrange the scholarship in a way that will help the reader to follow my connections of ideas and greet friendly scholarly faces prior to sitting down for the main course of the document: my own research on movement and liturgical chant. As this is an interdisciplinary scholarly event, none of the review below is exhaustive of a field, topic, or method.[3] It is, however, a process of inviting different bodies of scholarship to the table, all of whom discuss, in some sense, music, movement, meter, and ritual.

I will begin by reviewing music theoretical research and problematizing issues of music analysis for “metered” and “un-metered” musics in theory and ethnomusicology. Then I will move toward scholarship on synchronization, followed by a look at ritual theory and philosophy dealing with the body and music. Finally, I will briefly discuss research on embodied cognition and body movement. It is my aim that when all are seated, I will have successfully demonstrated how having all these bodies of literature and voices of scholarship in the room shape the questions and issues I pursue in the remainder of the dissertation.

II. Meter Scholarship

Music theoretical scholarship on meter and rhythm analysis has expanded and grown significantly over the past thirty years. Despite the breadth of musics studied, the most commonly employed (and subsequently extended) analytical methodologies are those arising from the study of notated European-American Western Art Music (EAWAM) by analysts working with music within, as well as outside, this repertory.[4] These methods can be loosely classified into two main categories: architectonic/prosodic, and processual, with varying emphases of cognitive strategies throughout both categories. Within both classifications, the ontology of "meter" as distinguished from rhythm and other musical features is a continual nexus of discussion. Breaking with this trend, I will not be offering my own definition here as it is not only beyond the scope of this project, but also is eclipsed by the importance in my own work of defining "meter" against a continuum of "meteredness" which additionally includes semi- and un-metered musics. I will return to a full-fledged definition of this continuum below, after providing an overview of current and past rhythm and meter scholarship as a way of situating my interventions.

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[3] Methods are mostly discussed in Chapter two, where I describe my own methodologies and how I came to use them through examination of existing scholarship.

Research on rhythm and meter includes extensive inquiry into what one might consider to be "metered" music: music with regular, recurrent pulses or events of similar durations, and possibly with some hierarchy of weak and strong beats. Analysis of this music can take an architectonic viewpoint, examining the music as synoptic (and ultimately focused on the score rather than the embodied listening experience) and presenting meter as a grid. Cooper and Meyer outwardly identify their inquiry as architectonic and the music they investigate as structured (in their view) by levels. They define architectonicism as follows:

> Most of the music with which we shall be concerned is architectonic in its organization. That is, just as letters are combined into words, words into sentences, sentences into paragraphs, and so on, so in music individual tones become grouped into motives, motives into phrases, phrases into periods, etc. This is a familiar concept in the analysis of harmonic and melodic structure. It is equally important in the analysis of rhythm and meter (1960, 2).

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[4] Given this imbalance in repertoire studied throughout the rhythm and meter literature, the reader will find me highlighting ways in which analysts deal with their theoretical models in relation to various types of non-Western or ritual musics.

The authors identify both meter and rhythm as architectonic, wherein grouping and hierarchy act as components of the musical architecture. They define meter as "the measurement of the number of pulses between more or less regularly recurring accents," noting that folk music, the "measured rhythm" of Gregorian chant, and other world musics may have "free rhythm": a term connoting instances where rhythm exists without the organizing element of meter (1960, 4). Cooper and Meyer's theory is a prosody based analysis, highlighting weak and strong beats and reinforcing both the conceptualization of metrical structure and synoptic score study over "in time" listening experience.

Similarly, Lerdahl and Jackendoff (1983) developed both tree structures and "dot-notation" to identify hierarchies arising from the metrical grid. Their theory is an exemplar of architectonicism. They examine metric hierarchy as patterns of weak and strong beats, regularly spaced at each level of the hierarchy, where a performer and/or listener might hone in on a specific level of the hierarchy. Although the authors liken their hierarchical analysis to the prosodic analysis of stressed and unstressed syllables — similar to Cooper and Meyer — Lerdahl and Jackendoff note distinct differences between the theories:

> What must be stressed is that, even though the two structures obviously interact, neither is intrinsically implicated in the other; that is, they are formally (and visually) separate. By contrast, Cooper and Meyer (1960) are concerned from the start with patterns of accentuation within and across groups. Though this concern is laudable, it leads them to assign accent to groups as such. And, since groups have duration, the apparent result is that beats are given duration…. The methodology of Cooper and Meyer — an adaptation from traditional prosody — requires that any group contain exactly one strong accent and one or two weak accents, and any larger-level group must fill its accentual pattern by means of accents standing for exactly two or three smaller-level groups (1983, 26-7).

Overall, Lerdahl and Jackendoff are committed to the distinction and separation of meter and grouping, which they see as conflated in Cooper and Meyer's theory. Despite their fastidious classifications of these aspects of rhythm and meter, however, Lerdahl and Jackendoff's theory ultimately lacks applicability to musics outside of what they term "Western tonal music," and what I termed above as European-American Western Art Music (EAWAM).

This repertoire omission is seen in many architectonic theories. Following Lerdahl and Jackendoff's (1983) influential text, Jonathan Kramer's 1988 book *The Time of Music* deals with similar issues, taking architectonicism to a new level. In his detailed study of time, rhythm, and meter in Western art music, particularly post-tonal music, Kramer asks an important question:

> If regularity is part of the definition of meter, then only some music is metric on all hierarchic levels — some folk music, some popular music, some nineteenth-century music that is pervasively constructed in four-bar phrases…. If regularity is a prerequisite for meter, then many compositions (for example, several by Stravinsky) are not metric at all. Most theorists who discuss this question do not question that existence of a rich hierarchy of accentual strength, but, since they generally fail to differentiate metric from rhythmic accent, they do not believe that an accentual hierarchy is necessarily linked to a metric hierarchy (98-9).

In addressing this issue of irregularity, Kramer proposes a Schenkerian-style understanding of regularity and irregularity in meter, asserting that metrical accents may be felt on multiple levels and that surface level unevenly spaced accents do not negate deep level, "evenly spaced" accents. He continues, "therefore, meter can be understood on all levels as fundamentally regular, but with frequent irregularities. And meter can be understood as deeply hierarchic, because the introduction of irregularities on one level does not necessarily destroy the fundamental regularity of deeper levels" (1988, 102).

Kramer specifically references "non-Western ritual compositions" as musics that do not have a clear beginning and ending in his discussion of intentional/structural associations of beginnings, endings, and middles.[5] He says, "[non-Western ritual compositions] seem like arbitrarily bound segments of internal continua rather than like closed statements" (137). Kramer goes on to note that this is likely due to differences in the meanings of time in different cultures. This is the extent of his interaction with such musics, and otherwise he focuses on Western art music.

Schenkerian-informed analytical methods ultimately assume a grid or "yardstick" and are thus architectonic in nature, even when they use psychological models for meter in music (e.g., Lester 1986). Such an architectonic view of meter, based on a metrical grid, requires of the listener three main parameters: that they 1) attend to meter within the musical stimulus, 2) perceive the meter and build a predictive entrainment model, and 3) continue to entrain, consciously or unconsciously, covertly or overtly, throughout the music so as to build a representation of a "yardstick."[6] Through this architectonic view of metrical prediction, semi-metered music would necessarily require a continual reconstruction of the psychological grid. As such, while this method of metrical analysis is useful for strictly metered music, its application to music that is not strictly metered — such as that which I investigate in this dissertation — implies effortful work on the part of the listener. This implication is not always realized in music experience. As Joel Lester notes (in relation to the scores for mid-twentieth century works by Babbitt), "that the rhythmic notation does not accurately represent the perceived rhythmic structures is more a reflection on the system of notation we have inherited than on the music" (1986, 126). Thus, while these grid-based, architectonic modes of analysis may work exceptionally well for the EAWAM for which they are devised, and possibly are applicable to some popular or twentieth century music as well (though their applicability in these areas has been extensively problematized [e.g., Butler 2006; Attas 2011; Murphy 2015; Knowles 2016]), the architectonic viewpoint of meter analysis is simply not productive when applied to the ritual chant I investigate.

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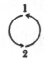
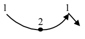
[5] Kramer's "middles" are what Christopher Hasty, whose theory will be discussed below, and myself call continuations.

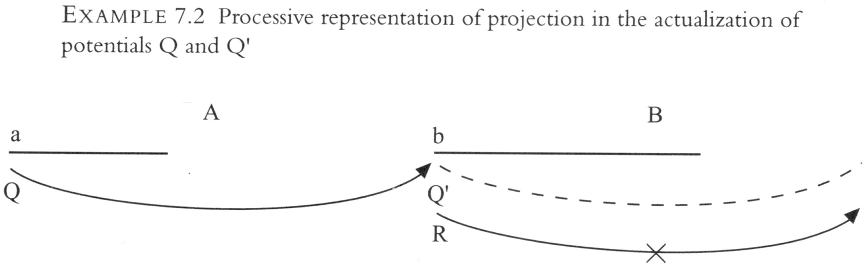
[6] These binaries will be further explored throughout this and the following chapters. At this moment, I'll note that I have omitted Arnie Cox's (2011; 2016) third binary category, intentional or unintentional, as the integration of attention to the building of a psychological model of metricity implies some aspect of intention. However, this third binary becomes vitally important when looking at the semi-metered instances I examine in my case studies and thus should not be dismissed entirely.

Process-based approaches to metrical analysis provide an alternative to thinking architectonically about rhythm and meter. These methods are based on "in time" listener experiences and as such lend themselves more readily to a variety of musical styles. A cornerstone conceptualization of such a process is Zuckerkandl's (1956) cycle, which he describes as follows:

> The entire process is therefore an "away from-back to," not a flex but a cycle, 
>, a constantly repeated cycle, for the "one" that closes one cycle simultaneously begins another. A measure, then, is a whole made up, not of equal fractions of time, but of differently directed and mutually complementary cyclical phases. But since in time there can be no real going back, and hence, strictly speaking, no real cyclical motion either, since, therefore, every new beat does bring us to a new point in time, the process can be better understood and visualized as a wave, 
> which also best corresponds to our sensation of meter. Our sympathetic oscillation with the meter is a sympathetic oscillation with this wave…. But if we now describe the intent of the musical experience of meter as a "to and fro," an "away and back," as a repeated cycle, as a wave, we no longer have the beats themselves in view: our little diagrams make it clear that our interest is not in the dividing points but in what goes on *between* them (168-9).

While hierarchy is still occurring in Zuckerkandl's conceptualization of meter, it is based entirely on the experience of feeling more- or less-accented beats, rather than identifying where the beats fall on a metrical grid. In this manner, the exploration of in-time experience as processual nuances the idea of repetition, allowing for the distinction between exact repetition (copy), and recurrence (similar, but not exact).[7] This has implications both for repeated or recurrent events as well as event durations.

Christopher Hasty's 1997 theory is based on the understanding of the listener's experience of event durations. According to Hasty, a listener will hear an event and when it is complete they will expect that the following event will be of roughly the same length. As shown in Hasty's figure, reproduced in my Figure 1.1 below, the projected Q$^{|}$ for event B is not realized, as no event C occurs after the sound + rest, as occurred in event A.



EXAMPLE 7.2 Processive representation of projection in the actualization of potentials Q and Q'

Figure 1.1. Example of projection, reproduced from Hasty's 7.2 (1997, 84).

Strongly influenced by the philsophy of Alfred North Whitehead, Hasty's theory focuses on the perception of events *in time*, considering "events" as durations rather than points. This cognitively informed viewpoint understands meter as made up of shorter and longer durations and our attentiveness to them.

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[7] These are my definitions of "repetition" and "recurrence", not directly Zuckerkandl's.

Justin London also approaches meter from a cognitive standpoint. He considers meter to be a behavior, arguing as follows:

> Meter is a particular kind of a more general behavior…. As such, meter is not fundamentally musical in its origin. Rather, meter is a musically particular form of *entrainment* or *attainment*, a synchronization of some aspect of our biological activity with regularly recurring events in the environment. Meter is more, however, than just a bottom-up, stimulus driven form of attending. Metric behaviors are also learned — they are rehearsed and practiced (2004, 4).

By casting meter as a form of entrainment (a concept I will return to below in the synchronization scholarship section), London relies on a listener response to the musical stimulus rather than composer or performer intention. Further, he suggests that entrainment behaviors are highly practiced and denote where a listener is paying attention. As entrainment (like meter, in London's perspective) is attentional, entrainment behaviors are intimately related to motor patterns (2004, 6). To support these assertions London depicts meter as a cycle, with beats as points around the cycle and arrows indicating "temporal flow" directionality. Figure 1.2 below shows an example of such a cycle, wherein all the beats are evenly spaced, creating a 3 pattern (the triangle). This could be understood as a measure of 9/8 wherein the "strong" pulse is the dotted quarter-note (thus creating the triangle).

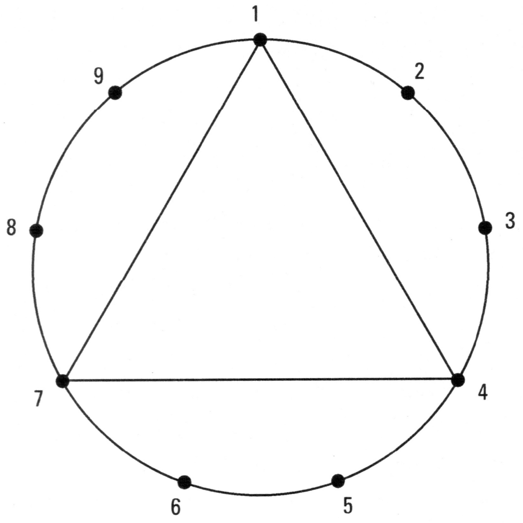

Figure 7.1. 9-cycle with 3-beat sub-cycle (isochronous beats).

Figure 1.2. An isochronous 9-cycle, reproduced from London's example 7.1 (2004, 101).

While London's theory of meter as a mode of attending (paraphrasing Gjerdingen 1989), is process oriented, his N-cycles, as shown above, invite synoptic, out of time readings, similar to those stemming from architectonicsim which employ a metrical grid (e.g., Lerdahl and Jackendoff 1983). Mark J. Butler critiques London's way representing meter as "an abstraction about metrical structure rather than a claim about specific experiences of time" (2014, 202). While London's cycle is more flexible than a linear grid, implying a sense of motion or effort as one moves around the circle, the design not go far enough in its effort to represent in-time, cognitive experiences. Still, as an analytical tool London's N-cycles prove useful in some meter analysis, dependent on repertoire (as I will further discuss below in my review of metrical analysis in non-Western music).

A few other scholars at the meter "table" must be acknowledged for their contributions to this body of literature. Scholars working with popular music (e.g., Temperley 1999; Butler 2006, 2014; Attas 2011; Murphy 2015; and many more) have successfully adapted components of the above theories of metrical analysis to serve ontological differences between meter in the EAWAM, for which the methods were originally devised, and popular music (broadly construed). Similarly, theorists working with post-tonal music (e.g., Roeder 1994, 2001, 2004; Horlacher 1995, 2001; Knowles 2016; and many more) also have dealt with adapting or extending existing methods for the particular analytical problems of their repertoire(s). I do not go into depth on these theories as I have already provided a review of the foundations from which they stem, and because there is a third group of analysts doing a similar type of adaptation and extension within a separate repertoire: that which music theorists consider to be "non-Western" or "world" music. These misnomers are meant to indicate music that neither stems from the EAWAM tradition (whereas post-tonal music grows out EAWAM), nor is 'Western' popular music. Thus, folk musics, other popular musics, ritual musics, and art traditions not of the Euro-American idiom fall into this broad category of "non-Western" / "world" music.[8] Scholars from both music analysis and ethnomusicology work with these musics, and despite little repertoire continuity, there are major themes connecting the ways in which these scholars deal with meter analysis. I will review some of these themes below, focusing specifically on metrical analytical methods.

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[8] For the repertoire I discuss in this dissertation — Jewish and Greek Orthodox liturgical chant — calling such music "non-Western" is both correct and incorrect. It is correct in that its origins are from ancient non-Western civilizations: specifically, Byzantine Greek and Tribal Jewish (Middle Eastern) societies. But incorrect in that the music I examine here is created and interacted with by Western people: individuals living in twenty-first century Chicago, leading Western-style lives, and immersed in the music of Western cultural origins such as EAWAM and popular music in addition to the liturgical chant they use in worship. As such, the "non-Western-ness" of the musical ancestry is complicated and made Western by the practitioners of such music. In this manner, my research on rhythm and meter of such chant diverges from other rhythm and meter scholarship on non-Western music, much of which examines what can be considered "traditional musics" in their "original" settings (albeit still practiced by contemporary individuals living in a world that is increasingly globalized).

While seemingly broad, rhythm and meter analysis in non-Western music tends to only concentrate on a handful of musical cultures and styles around the world. Much of the literature in this area is devoted to African musics, Javanese and Balinese musics, Latin American musics, and Indian musics. These tendencies are shown in the geographic breakdown of major studies on non-Western rhythm and meter analysis (table 1.1 below):

Culture/Geographical Focus	**Authors (in chronological order)**
Western Africa (Volta region of Ghana; Mali)	Agawu 1992; 1995 London and Polak 2014
Central Africa (Central African Republic and Republic of Congo)	Arom 1989 Fürniss 2006
Southern Africa (Zimbabwe)	Scherzinger 2001
Indonesia (Java; Bali)	Posnett 1990 Tenzer 2006 Roeder and Tenzer 2012
Turkey	Srinivasamurthy et. al. 2014 Holzapfel 2015
Middle East (Jewish Chant (general); Iran)	Frigyesi 1993 Blum 2006.
Europe (Bulgaria; Spain (Andalusia); Finland)	Buchanan and Folse 2006 Manuel 2006 Kauranne 2014
South Korea	Hesselink 2011
Latin American musics (Cuba; Brazil; Caribbean; Latin dance more generally)	Moore and Sayre 2006 Stanyek and Oliveira 2011 Clendinning 2014 Simpson-Litke 2014 Esparza et. al. 2015
India	Henry 1976 Widdess 1980 Clayton 1993; 2000 Widdess 2011 Srinivasamurthy et. al. 2014 Vedalli 2014
North America (Native American)	Levine and Nettl 2011
General Commentary/Western vs. non-Western Comparative Readings	Kolinski 1973 Agawu 1992 Clayton 1996 Rahn 1996 London 2004 Tenzer 2006 Tenzer and Roeder 2011 Bello et. al. 2015

Table 1.1. References organized by culture/geographical focus.[9]

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[9] Some citations are listed in more than one category, as they represent both a specific cultural investigation *and* general inquiry or comparative inquiry.

Although there are, of course, many other musics discussed in the literature, this centralization around the study of specific musical cultures is significant, as it demonstrates pockets of expertise amongst a wide expanse of musical cultures. Of the two main volumes of analytical work in “world music” (Tenzer 2006; Tenzer and Roeder 2011), an effort is made to include musics such as jazz, contemporary experimental art music, and early music (e.g., fourteenth century chant), as an attempt to fulfill the “world” aspect of “world music”. These efforts keep the volumes from appearing to “other” non-Western musics and cultures, and simultaneously allows for engagement with musics of Western origin in “non-traditional” manners. For example, one essay undertakes the investigation of Western music through the transcription of a piece for which a score already exists. In this manner, the analyst begins from the listener’s perspective, engaging a tension between listener/analyst outlooks which arises throughout the literature (see Tenzer 2006).

The emphasis of the cognitive and of listener-centered analyses can be seen in both the “world music” analyses of literature with an ethnomusicological bent, as well as analyses of art music or popular music. One such approach is that of Justin London’s N-Cycles (2004), discussed above. In the context of “world music” and specifically African timelines, the non-isochronous beat pattern is shown as an irregular polygon (figure 1.3. below) in contrast to the regular polygon created by an isochronous beat cycle, as seen above in figure 1.2. [10] In the non-isochronous cycle the 2-2-2-3 beat pattern (timeline) creates a polygon reflecting the “irregularity” of the non-isochronicity.

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[10] Timelines and music theory have a rich and growing analytical relationship, too expansive to be dealt with in depth at present. I refer the reader to writings by Agawu and London (cited above) as an entry point into this area of scholarship.

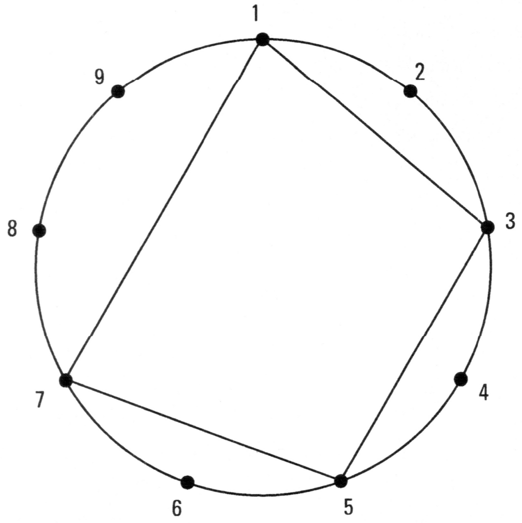

Figure 7.2. 9-cycle with 4-beat sub-cycle (non-isochronous 2-2-2-3 beat pattern).

Figure 1.3. A non-isochronous 9-cycle, reproduced from London's example 7.2 (2004, 101).

Since these diagrams represent patterns of entrainment rather than rhythmic notation, their design initiates the binary of isochronous and non-isochronous meters rather than breaking down non-isochronous meters into distinctive additive rhythms. As London focuses on the cognitive processing of these meters, his graphs privilege metric regularity. He notes, "maximally even attentional patterns make good perceptual sense even when the events in the environment are not perfectly regular, as it provides the best attentional net to catch a given number of events per unit of time" (2004, 106).[11] Again, although London, like Hasty, espouses a theory based in the cognitive processing of meter, unlike Hasty's analytical model, London's diagrams demonstrate a synoptic viewpoint rather than a truly processual analysis of meter in music. Synoptic viewpoints are easy to fall back on due to the prevalence of score-based analyses amongst Western music analysts. It is often especially difficult to tease out rhythm and meter from other parameters (e.g., melody, harmony, timbre, texture), as shown in the architectural, processual, and cognitive approaches discussed above. Further, the absence in many cultures of musical notation means that although a synoptic viewpoint is necessarily avoided, these parameters are more easily conflated both in the culture itself, as well as in analysis thereof. A multitude of parameters aid in the grouping mechanisms that inform listeners' perception of a musical event.

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[11] This marked asymmetry of "isochronous" and "non-isochronous" echoes other similar asymmetrical binaries that are problematic in this literature, such as "Western" and "non-Western", "metered" and "un-metered", and so on. This is a deeply seated problem in academic language in general, but also a problem for understanding the culture of the music with which one is dealing; "un-metered" music is not abnormal or irregular to those who are culturally immersed in that specific musical language. Music studies shares this issue with disability studies (a marked term in and of itself), gender studies, and more.

As such, it may be beneficial to drawn on multiple forms of meter analysis. For example, the concept of grouping in meter analysis stems from Lerdahl and Jackendoff's hierarchical theory of grouping structures (1983), while the concept of event perception in time is tied to Hasty's processual theory of listeners' experiences of sound event duration (1997). Although conflating these theories that are in many ways opposed to each other may seem problematic, because the music I am dealing with here is not only un-notated but also not strictly metered, it invites exploration from multiple viewpoints and a flexible definition of meter and metrical analysis. As such, I join with theorist Nancy Murphy, following the approach taken in her 2015 dissertation. Murphy utilizes a flexible definition of meter that molds to the musical context and specific examples, suggesting: "Rather than investigating whether the song has meter or not, we can instead examine how it demonstrates a potential to create regular meter, and to what degree, if any, that potential is realized" (2015, 2-3). As shown in figures 1.4a-b, Murphy uses a combination of architectural (e.g., Lerdahl and Jackendoff 1983), projective (e.g., Hasty 1997), and prosodic analytical techniques (e.g., Cooper and Meyer 1960), which highlight the depth and complexity of meter in her object of study, and subsequent range of metric perception.

Figure 3.10: Dylan, "With God on Our Side," metric grid with eighth-note tactus

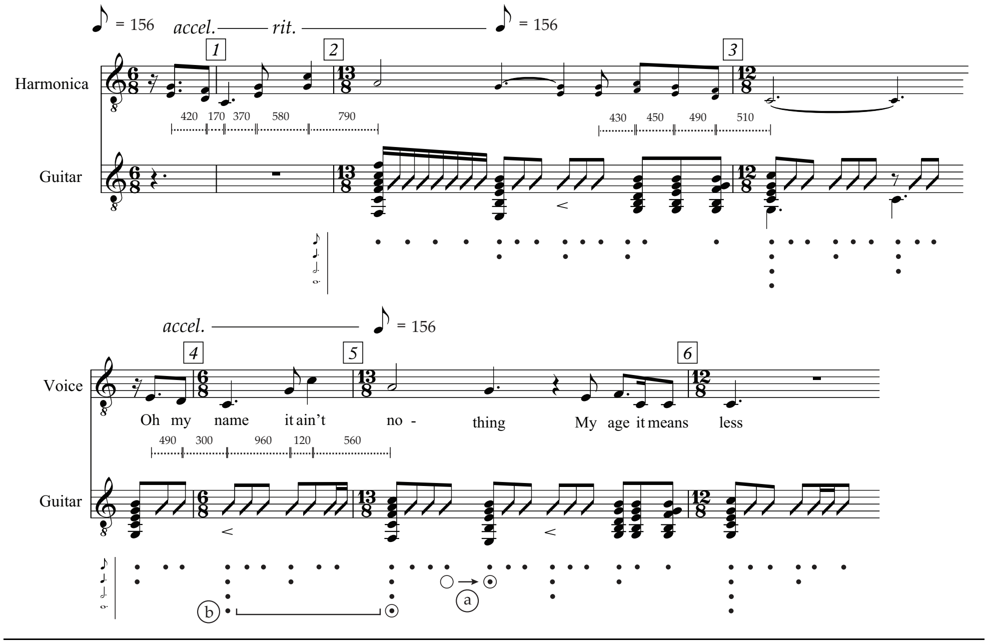
♪ = 156
accel.
rit.
♪ = 156
Harmonica
Guitar
420 170 370 580 790
430 450 490 510
1
2
3
accel.
♪ = 156
Voice
Oh my name it ain't no - thing My age it means less
490 300 960 120 560
4
5
6
a
b

Figure 1.4a. Reproduced figure 3-10 from Murphy (2015, 67). Shows architectural analytic techniques and phrase IOIs.

Figure 3.11: Dylan, "With God on Our Side," projective-meter transcription

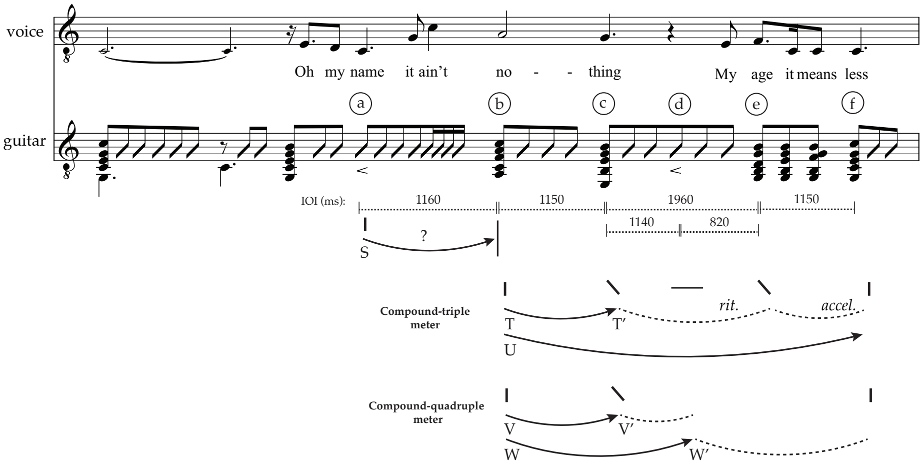
voice
Oh my name it ain't no - - thing My age it means less
a
b
c
d
e
f
guitar
IOI (ms):
1160
1150
1960
1150
1140
820
S
?
Compound-triple meter
T
T′
U
rit.
accel.
Compound-quadruple meter
V
V′
W
W′

Figure 1.4b. Reproduced figure 3-11 from Murphy (2015, 70). Shows projective analytic techniques and phrase IOIs.

While the repertoire I study here is quite different from Murphy's repertoire, this multi-faceted approach also works well for the liturgical chant I investigate. It allows meter and lack of meter to exist on a continuum, leaving most of the space for the free metered, flowing, and flexibly timed performances of liturgical chant.[12] Such a flexible conception of meter is shown below on a continuum, wherein the largest segment comprises what I term semi-meteredness (figure 1.5).

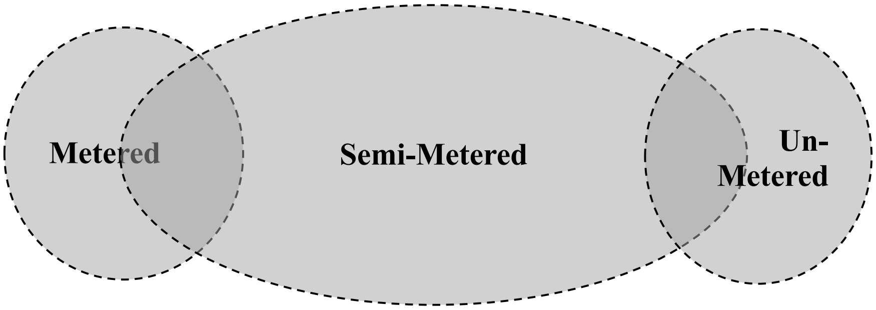

Figure 1.5. Continuum of meteredness.

I consider music that is semi-metered to be music which allows for varying levels of attention and entrainment to meter on the part of the listener and/or performer. Meter, as it figures here, is centered around bodily engagement. By characterizing meter and semi-meteredness in this manner, I subvert the weight of the notated score entirely; scores become merely illustrative tools for the sonic experience, not objects for analysis or re-creations of the musical events they depict. This definition therefore sidesteps some of the issues that metered, score-based musics encounter within metrical analysis, such as the application of a grid and synoptic analysis, instead favoring process-oriented analysis of “in-time” listening experiences.

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[12] These terms, "free" and "flowing" are drawn from Clayton (1996; 2000) and Frigyesi (1993), respectively. I will discuss their uses of these terms further below.

My understanding of semi-meteredness is drawn, in part, from ethnomusicological research on rhythm and meter in non-Western music (broadly construed) and the concept of “free meter” which is explored extensively therein. Notably, ethnomusicologist Martin Clayton’s article, “Free Rhythm: Ethnomusicology and the Study of Music without Metre” (1996) draws together several texts on free-rhythm from previous music studies literature. This article, though predating his 2000 monograph *Time in Indian Music*, shares many similarities with Clayton’s well known and larger study of Indian raga. Clayton utilizes the term free-meter saying, “In general, this term and its various synonyms refer to music without metrical organization” (1996, 323). His definition implies a lack of metric hierarchy, or indeed any grouping mechanisms that would produce a sense of meter with points of arrival and departure. Thus, one might consider “free metered” music and “un-metered” music to have quite a bit in common. In contrast, to say something is “semi-metered” is to understand it as having a variable degree of metric organization, dependent mainly on the experience and ability of the individual to perceive said organization within the musical event. For instance, one who is an expert listener of George Crumb might perceive some metrical structures in places where another’s first time hearing would likely result in the assessment that the music is completely “un-metered”. Thus, while “free-meter” is distinct from “un-metered”, Clayton’s definition implies that they share more with each other than they do with my definition of “semi-metered”.

Despite variable terminology — Frigyesi (1993) uses her own term, “flowing rhythm”, for a similar phenomenon — Clayton expresses great concern for the general lack of engagement with variations of meteredness in the wider scholarly literature. He views Western musicology as dismissive of free metered musics, regarding them as unimportant, and ethnomusicology as under-theorizing free meter in musics and cultures where the concept is important. Clayton addresses this under-theorizing by showing that free meter occurs in both “folk” and “art” practices throughout the world, as well as in religious musics, noting its commonality in free rhythm text recitation of Christian, Jewish, Islamic, Hindu, Buddhist and Shinto traditions, and some Korean shaman ceremonies (1996, 324).[13] By using a comparative approach, Clayton casts free-meter as a marked term against “music” more generally, which implies meteredness. This markedness is one aspect of the under-theorization Clayton references, especially given the delicacy with which ethnomusicological inquiry treats comparative readings (326). In characterizing free meter as he does, Clayton’s initial definition is surpassed and “free-meter” moves into closer dialogue with my term “semi-metered”, away from the term “un-metered”.

In discussing meter, scholars use the terms “rhythm” and “meter” in different ways, and this is also the case with “free-rhythm” and “free-meter”. To further complicate matters, many scholars seem to use these terms at once interchangeably *and* distinctly, making terminological differences and similarities difficult to demarcate. According to Clayton (1996) the types of musics and settings involving free-meter are mostly solo performances, although notable exceptions include unison and polyphonic styles of eastern Europe and Java. This highlighting of solo performance is understandable: free-meter is clearly easiest to perform with only one musical line (as well as lending itself easily to transcription and analysis). Free meters occur more often within vocal music than instrumental music (except in many Asian art genres), as they are then tightly tied to text content and speech rhythms. Free metered sections in larger works tend to be placed as introductions to metered sections (1996, 342). Clayton notes that a given music may have some aspects that seem metrical (e.g., a certain level of periodicity), and yet have other aspects that imply uneven meters (e.g., irregular beat durations within the levels of periodicity). London (2004) would, of course, call this a non-isochronous meter.

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[13] Even in the most immersive EAWAM theories of meter, Gregorian chant and the more general “Eastern” musics are referenced as examples of “un-metered” music that still contains certain types of group organization (e.g., Zuckerkandl 1956, 171; Cooper and Meyer 1960, 4; Lerdahl and Jackendoff 1983, 18).

Given my metrical continuum and the variety of terms and parameters surrounding meter in non-Western musics, it seems that multiple ways of understanding meter should be acknowledged, rather than adhering to a singular definition. Clayton (1996) underlines this very point, stating, "we cannot make generalizations at this stage about the range and type of musical forms described as free rhythm, although the tendencies noted above suggest that it ought to be possible to develop a typology of free rhythm styles" (325). However, Clayton himself provides an excellent example of a scholar who struggles to navigate the difficulties of defining these terms. As Clayton goes on to begin defining the parameters of free metered musics, he arrives at a cognitive representation, one implicitly echoed by London. Clayton begins with the simple: "the rhythm of music without metre," but also more narrowly "the rhythm of music without pulse," (327) falling on both Kolinski's (1973) definition of meter as well as Cooper and Meyer's (1960) definition.[14] Clayton then synthesizes these definitions with Lerdahl and Jackendoff's (1983): "regular pattern of strong and weak beats to which [the listener] relates the actual musical sounds" (Lerdahl and Jackendoff 1983, 12).[15] Clayton employs these theories to suggest that we understand meter generally as a cognitive representation inferred by the listener from the music, rather than an "objective quality of the music itself" (1996, 328). As such, Clayton's argument directly relates to other such cognitive approaches discussed above (e.g., London 2004, Hasty 1997), wherein the listener can understand meters in a variety of manners, since meter is constructed by the listener instead of being a Platonic parameter of the music. Yet, Clayton's use of the above definitions relies on a psychological construction of meter that is grid-like, laid across the musical texture as a given by the listener, rather than unfolding, duration by duration, in real time, a la Hasty's theory.

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[14] "Organized pulsation functioning as a framework for rhythmic design" (Kolinski 1973, 499); "Measurement of the number of pulses between more or less regularly recurring beats" (Cooper and Meyer 1960, 4).

[15] Note that while Kolinski is working with non-Western music, both Cooper and Meyer and Lerdahl and Jackendoff developed their theories of meter and rhythm around Western Art Music specifically.

Another scholar dealing with free-rhythm and meter, Judit Frigyesi, also engages in a discussion of musical representation, foregrounding issues of language and notation. Her argument is strong and worth quoting at length:

> The difficulty in entertaining these questions results from the fact that our musical perception and analytical thinking developed largely through the study of metric musics. In common usage, the very notion of rhythm is equated with metricity; we hear only too often that music without clear beat is said to have "no rhythm"…. Defined as the opposite of metric rhythm, free rhythm (or non-metric rhythm) would imply a rhythmic structure in which no periodicity whatsoever is perceivable…. The difficulty lies in the fact that although most of the so-called free rhythms are not entirely metric, they are not entirely free either. This intermediate ground between metric and nonmetric rhythm has received so little scholarly attention that we hardly acknowledge that it exists at all…. These free rhythm styles cannot be conceived as occasional deviations from a basically metric structure; they appear to be independent of any familiar concept of metricity (1993, 62-4).

Frigyesi is concerned with negotiating between non-Western analytical practices and EAWAM analytical and conceptual conventions. While she goes on to posit a preliminary method for the analysis of free-rhythm, she ends up using a system of unbarred staves from Western style transcription, marked by brackets and phrase lines. She tries to straddle "metered" and "unmetered", "rhythmic" and "arrhythmic", ultimately falling between these terms in her attempt to theorize with highly descriptive language. Frigyesi's work is echoed in Clayton's concerns of transcription, where he asks, "whose experience do you want to hear in our transcription?" (1996, footnote 11). Clayton elucidates further saying:

> Free rhythm presents a problem because it is so difficult to produce a transcription on which to base an analysis. Transcription implies subjective interpretation of rhythm and thereby constrains and pre-empts analysis, and therefore analysis must somehow reach an advanced stage before meaningful representation becomes possible — yet this is contrary to the habits of many music analysts (1996, 326).

Clearly, language and methodology struggle against one another to be expressive and decipherable in regards to the sonic world(s) being investigated. It is then especially difficult to distinguish between "common sense" and "scholarly" definitions of meter (Clayton 1996, 328). Moreover, it allows for over-simplifications such as Clayton's diagram (shown below) showing a graphic representation of rhythm without perceived pulse-based periodic organization (329).

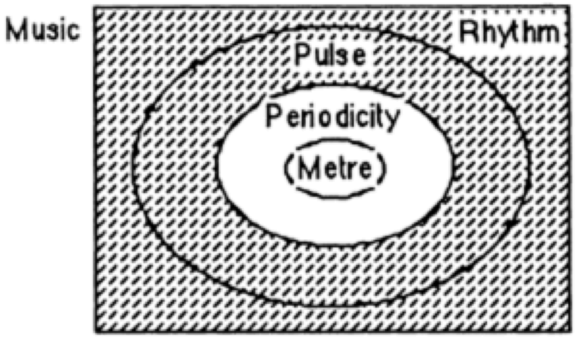

FIG. 1 The organization of rhythm in music: the shaded area is referred to as 'free rhythm'.

Figure 1.6. Clayton's figure 1 reproduced, showing organization of rhythm (1996, 329).

This diagram, and both quotes from Frigyesi and Clayton directly above, begin to address the enmeshment of analytical method and transcription surrounding the issue of rhythm and meter.

Despite the integration of the two aspects within the scholarship review, I will fully address my intervention in the methodologies, including transcription, in chapter two.

One of the main contributions of rhythm and meter analysis in non-Western music inquiry is the way embodiment has been overtly and productively drawn into this scholarship. Many of the musical cultures examined do not distinguish music from dance, or single out "rhythm" as a separate concept from "meter" or even from "music".[16] While sometimes difficult to best communicate such complex interweaving with discrete nature of Western academic language, thinking about meter and music in this manner can be quite helpful in better understanding the physical issues at play when undertaking music analysis.

In a 1996 article, Jay Rahn examines rhythmic aspects of African music (broadly construed) using motor patterning as an analytical tool. Rahn shows how distinct components can become highly integrated wholes, engaging with issues of complementation, braiding and circularity, and pendularity and cyclism, as well as general cognate patterns (such as 3+3+2).[17]

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[16] In fact, in some scholarship, authors get stuck on issues of ontology and semantics. For instance, throughout Agawu's 1995 text on Northern Ewe music, the placement of "rhythm" as a keyword is quite prevalent, while in the Ewe language there is no single word for "rhythm" (5). Music, dance, and rhythm are conflated as simultaneous concepts, and rhythm is embedded within daily social activities and ideas at both high and low levels of specificity. Agawu cites various possibilities for defining or translating "rhythm", noting the difficulty and post-colonial influence on the separation of aspects of music (harmony, melody, timbre) in Ewe language (6). He arrives at the conclusion: "the absence of a single word for 'rhythm' in Ewe suggests that rhythm refers to a binding together of different dimensional processes, a joining rather than a separating, an across-the-dimensions instead of a within-the-dimension phenomenon" (1995, 7). As such, Agawu's study of rhythm in Northern Ewe culture does not deal solely with what a Western listener might call "music" or "music making activities". On the contrary, Awagu explores rhythms of the Ewe society, including games (both children's and adult's), announcements, rituals, and the daily schedule. All of these moments have music that can potentially be embedded within them, but main focus of Agawu's analysis is on the daily timekeeping and rhythms/rituals of Northern Ewe life. Thus, he presents an embodied understanding of Ewe culture that highlights the rhythmic aspects of non-musical activities, showing rhythm as an integrated concept rather than one belonging solely to music making.

[17] As noted above, these patterns are also called timelines and have their own rich analytical literature, See footnote 7, above.

Part of Rahn's goal is to refute the use of the "European-derived framework" and instead advocate for an "emerging paradigm" (1996, 73). Thus, his first analysis assumes a "four-square meter", with the even meter privileged hierarchically above the syncopated meter. By looking at mathematical calculations of syncopations in time-lines (in relation to set theory), Rahn exposes the ways in which these analytical techniques seem to have little bearing on the real-time experience of hearing the music. As such, he asserts motor patterning as integral to rhythmic performance, a key feature of which is understanding the moment before the attack as a physical beat. Rahn notes:

> There is sufficient basis to understand the notes of music as symbols, not merely of sounds heard in certain ways but also of sounds produced in certain ways; and to hear such sounds with a motor imagery that can, in principle, be shared with others…. Problematic for a merely sonic analysis of music, this effect [off-beat clapping] is thoroughly straightforward if one accepts the axiom that every act of performance implies a counter-act; every clap of hands that is heard implies a pair of hands unclapped and unheard; every key pressed, a key released; etc. Such alternations are cyclic and highly compatible with diatonic braiding (1996, 84-5).

Rahn's motor-focused approach to composite rhythms, and his corresponding diagrams (using Western-style notation) are extremely helpful. Further, the listener viewpoint Rahn advocates for echoes emphases on cyclic hearing and periodicity heard in many other texts, both Western and non-Western.

Although it is clear that embodiment may be approached from both a cultural standpoint, without separating it from rhythmic or other musical parameters, and as well as from an analytical standpoint, taking the embodied performance and listening experiences into account for analysis, there is still much that can be done in this area.[18] A good example of using embodied analysis to understand rhythmic and metric parameters on the part of the listener is the recent work by Rainer Polak and Justin London on Malian drumming and dance (2014).[19] Here, the researchers examine different pulse levels expressed by dancers in different sections of a long form dance with drumming accompaniment. Although the faster, more complex drum patterns are used for the older and more experienced dancers, these dancers express a slower pulse level in their movements than the young dancers who move to the slower music. This inverse relationship is understandable in terms of the logistics of dancing, but it also shows a complex awareness of pulse hierarchies, and of the ties between dance and communal status.

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[18] Examples of embodiment research from the performer perspective have been prevalent at recent conferences. Examples include presentations such as Jane Piper Clendinning's 2014 paper, wherein she used performer embodiment to analyze Steel Pan performance, examining the types of movements a

In short, recent research has taken a turn towards an even stronger emphasis on embodied understanding in analysis of music in non-Western cultures, along with an emphasis on the performer or dancer, rather than the listener. Analysis of dance itself, as a component of the larger rhythmic or metric analyses, is also prevalent (e.g., Posnett 1990; Roeder and Tenzer 2012). This trend is possible, in part, due wider exploration and access in fieldwork, and the video-recording of such fieldwork, which allows researchers to "relive" again and again the ephemeral music experiences of oral traditions.

Within this section I have moved from strictly metered music analysis through discussions of semi- and un-metered music and into the incorporation of the body in meter

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performer can, and cannot, make when playing the steel drum at varying levels of difficulty (Analytical Approaches to World Music Conference, July 2014). Similarly, Rebecca Simpson-Litke used salsa music and dance to show the rhythmic constraints on the dancer, based on embodied performance (Society for Music Theory Annual Meeting, November 2014). Works such as these demonstrate that the performer viewpoint is a fruitful avenue for examining rhythm and meter in non-Western musics. However, when the analytical outlook is shifted to the performer, rather than the listener, a certain level of expertise and methodological adjustment is required on the part of the analyst. In both Clendinning's and Simpson-Litke's work, the researcher had first-hand experience as a performer (player and dancer respectively), which helped them shape their analyses around embodied experience.

[19] For further studies on Malian drumming performance, I direct the reader to Polak, London, and Jacoby, 2016.

analysis. Additionally, language, notation, and the "Western" / "non-Western" repertory binary has been problematized. In other words, theorists, musicologists, and ethnomusicologists have been seated, so that their presence may be felt in the space of the dissertation. I now move into a review of the intersections of my research with music cognition scholarship, thereby inviting those dealing with empirical music and movement analysis into the room.

III. Synchronization Scholarship

Arising from music cognition research, synchronization scholarship affords new understandings of interactions between music and movement. Moreover, because of the differences in methodologies and aims, this body of research maintains its own predilections to specific music ontologies, as well as the ways in which meter is figured therein. Here, instead of thinking temporally about scholarship it is more helpful to think spatially, examining not only how the music cognition literature interacts with the main questions at hand in this dissertation (concerning metrical interactions between body and voice in chant), but also its intersections with the music theoretical and ethnomusicological literature discussed above. The disciplinary seams between these fields, and their figuring of music, meter, and synchronization specifically, gives rise to the main problems at dealt with in this dissertation.

The field of synchronization studies in music cognition broadly addresses both behavior and music. While much of the earlier research in this area is based on studies of tapping and synchronization with isochronous beeps (see Repp 2005), the field has expanded to include rigorous exploration of the following areas: brain and neural mechanisms involved during synchronization (Chen et al. 2008; Grahn and Watson 2013; Chemin et al. 2014, Merchant et al.

2015), human-animal comparisons in synchronization abilities and tendencies (Patel et al. 2009; Patel 2014), body movement analysis (Luck and Toiviainen 2006 and many others cited below), and the effects of synchronization on factors such as likeability, mood, and interest in a stimulus (Malloch and Trevarthen 2009 ed. collection; London 2011). I will focus my present review on research concerning body movement analysis.

Music's way of inviting the human body to move in time appears as a common theme throughout the synchronization literature. This musical affordance is traced back to early childhood development and infant-mother bonding, suggesting that synchronization and the resultant mimesis (the coupling between body and sound) have developed as evolutionarily advantageous reactions to music. Richard Parncutt cites this connection saying, "prenatal theory can contribute to an explanation of musical universals such as specific features of rhythm and melody and associations between music and body movement" (2009, 119). Other researchers have also noted the connection between mother-child connectivity and learning, and group cohesion and interaction, especially in regards to music (e.g., Phillips-Silver 2009; Malloch and Trevarthen 2009). Group cohesion clearly has evolutionary advantages: the more a community sticks together and is synchronized in feelings and actions, the harder it is to separate the weak from the herd, or for a significant threatening force to attack the group. Further, many individual benefits result from strong group cohesion, such as coordinated movements, enhanced cognitive and social skills, emotional conjoinment, social bonding, and affective engagement, all of which are considered important for group survival (Thompson 2009).

In his study on ritual and rhythm, János Maróthy explains that sonic patterns become synchronized with bodily movement both inwardly, through neuronal activity, and outwardly, through group synchronization (1993). Casting rhythm as a way of organizing and structuring group activity and movement, Maróthy sees both ritual speech and song as important for religious experience. This aligns with Dalla Bella et al.'s (2013) research findings that rhythmic speech and music have similar effects on entrainment, while non-isochronous speech has little effect on body movement synchronization. They note:

> Coupling movement to an external auditory rhythm is supported by a dedicated neuronal network involving both subcortical areas (e.g., the basal ganglia and the cerebellum) and cortical regions (e.g., temporal cortex, premotor regions, and the Supplementary Motor Area). In sum, the pervasive tendency to couple movement to musical beats is a human trait with a defined neuronal substrate which may have played an important role in the origin of music (2013, 1).

Dalla Bella et al. posit that music, unlike speech (though both are complex auditory stimuli), has specific components that make it good for synchronization. Their results suggest that it is the rhythmic and metrical aspect of music that engages bodily entrainment. Justin London's (2011) study looks at this coordination of structure and synchronization. He investigates the interaction between synchronization speed, which he posits has to do with musical structure and beat speed, and tempo. London's findings indicate that the rhythmic surface and other salient features of the music greatly affect judgments of tempo and tactus.

The methodological design for London's study falls amongst other such "tapping studies" wherein participants are asked to tap along or entrain to varying auditory stimuli. Some of these studies, such as the majority of those conducted by Bruno Repp (see his 2005 literature review for in depth discussion) deal with the "grid" approach to musical meter. Such research asserts that synchronization occurs when a listener is able to create a psychological construct of regular pulses in their mind and is thus able to predict when the next beat or pulse will occur. In this way, listeners are able to tap along with the beat — their tapping coupled almost perfectly with the tactus because of their ability to predict it — as opposed to tapping just after the tactus, as a reaction to the pulse stimulus, rather than a prediction. Mainly listener centered and based largely on the fine-motor task of tapping a finger or hand on a button or trackpad, these studies demonstrate humans' somewhat unique ability to predict and synchronize with a regular beat.[20] However, the tapping studies do not fully engage with large motor movements, such as those with which I am presently concerned.

Research on gross-motor movements involves many more variables than the tapping studies, and there is even more complexity when multiple moving bodies are studied. As such, some research in this area focuses on an individual and their body movements in response to or along with an auditory stimulus, while other studies examine pairs or groups of people, in response both to each other and to auditory stimuli. Main topics arising from this type of research include group cohesion, evolution, entrainment in young children, mirror neurons, and dance. As the methodological paradigms vary widely, I will review a few recent works in the area of body studies, in an attempt to provide a sense of the above topics as seen through the lens of music cognition.

There is a wealth of bodily movement research in early-childhood rhythmic experience. In one oft-cited studied, Jessica Phillips-Silver and Laurel L. Trainor tested to see if movement affects auditory encoding of rhythm patterns in infants (2005). The series of experiments trained 7-month-old children in listening to two minutes of stimuli: the repetition of an ambiguous (accent-less) rhythmic pattern. Researchers used a head turn procedure to allow babies to choose how long to listen to the same music, now accented in either a duple or triple pattern. Their findings indicated that musical synchronization is possible at a very early age and is likely involved in the development of the vestibular system. Further, they noted that music and personal movement are together important for rhythmic perception of auditory information.

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[20] Fascinating research on synchronization and beat entrainment in animals has been conducted, and while beyond the scope of the current literature review, I encourage the reader to explore research by Patel et al. (2009 and 2014), Patel (2014), and Merchant et al. (2015).

Personal movement has generally been shown to be essential for musical engagement. Music theorist Arnie Cox posits the "Mimetic Hypothesis" (2011), focusing on a kind of musical empathy wherein a person viewing another person completing a movement will, overtly or covertly, consciously or unconsciously, intentionally or unintentionally, attempt to mimic the movement. This is due to the presence of mirror neurons that activate in order to "mirror" what a person is observing, even if the observer does not or cannot physically mimic the actual movements. For Cox, this type of imagery in music is understood as embodied empathy. He notes, "part of how we comprehend music is by way of a kind of physical empathy that involves imagining making the sounds we are listening to" (2011, 3). Imagining making these sounds is, in part, imagining the physical attributes of sound-producing gestures used.

Cox's hypothesis spans several ways of interacting with music, including but not limited to: performing music with other performers, listening to music with other listeners, listening to a performer(s), and listening to a recording. Mirror neurons are used to explain aspects of everyday interactions between people, and issues of synchronization come to the fore in their application to musical activities.[21] Are listeners synchronizing with the performer or the imagined performer? Are they synchronizing with the rate (the meter? Pulse? Tempo?) of the music to which they are attending? Here, findings from tapping studies fall short.

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[21] Discussed at length below, in the context of embodied cognition (section V).

Cox has continued to develop his theory of mimetic engagement with music in his more recent work (particularly 2012, but also 2016), focusing on the duality of performer/listener. He proposes what he calls “tripartite subjectivities”, asserting that music producers/makers/performers have first-person experiences and listeners have second person experiences. (Third-person experiences occur, according to Cox, when the listener and/or performer moves out of their initial role and is a mere observer).[22] While he acknowledges that listeners may develop quasi-first and quasi-third person subjectivities, he does not closely address what happens when listeners are also performers, or have the opportunity to become performers, or when the performance is considered a communal activity, as in the worship settings I explore. Therefore, while Cox’s theory has great weight for my development of a method of movement analysis, discussed in depth in chapter two, his theory is not directly applicable to the settings I am investigating, as categories of “listener” and “performer” are far more fluid in worship settings. One might argue, “but categories of clergy and congregant *are* fairly rigid,” which is true. Yet, while these roles provide liturgical structure, the ontological setting of the music, space, and purpose of worship services is exceptionally distinct from presentational music performance.

Hove and Risen (2009) have investigated mimicry in conjunction with likeability by using a tapping paradigm. In a series of experiments, they tested whether participants tapping in synchrony with an experimenter reported higher levels of likeability for the experimenter. This turned out to be the case, and was also supported by a final test of participants tapping with a metronome, which showed no significant change in the perceived likeability of the experimenter. Hove and Risen founded their study on the following assumption:

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[22] This type of tripartite musical experience structure is also referenced (in different terms of course) in Godøy and Leman (2010), discussed below in the embodied cognition and movement section (V).

> As with mimicry, synchrony may promote self-other overlap in neural representation, with corresponding effects on affiliation. In addition, because synchronous behavior is often associated with close, communal relationships (Smith 2008), synchronous behavior may be interpreted as evidence of a close relationship, which in turn, could promote more closeness (2009, 951).

Hove and Risen's work, like Cox's, is based on a combination of behavioral concepts drawn out of mimicry, group cohesion, and evidence of mirror neuron activity. The next step for these studies may be to move beyond tapping or passive listening studies and into the analysis of full body movement.

Examples of research that does examine full body movements includes that of Janata, Tomic, and Haberman (2012). Although mainly construed as a tapping study, researchers here used video analysis, as well as survey responses, to better understand the composite experience of sensorimotor coupling between listening bodies and music. They first tried to get a sense of how "groove" is understood conceptually by their undergraduate study participants. From the student responses on a questionnaire, the authors developed the following working definition of groove: "the groove is that aspect of music that induces a pleasant sense of wanting to move along with the music" (2012, 56).

Janata, Tomic, and Haberman then investigated the interrelationship between the perceived groove, the familiarity, and the enjoyment of music. Correlations were found for both groove and enjoyment, and groove and familiarity, with faster tempo music and music from the soul/RandB genre having the highest rates of groove. Finally, during the "in-the-booth" part of the study, researchers tried to understand how sensorimotor tasks shape the experience of being in a groove. Participants had three possible conditions: no tapping (with music); bi-manual isochronous tapping (with or without music); and free-form bi-manual tapping (with music). These tasks were preceded and followed by a simply survey, and by the positive and negative affect schedule (PANAS) to see how the participant's mood was affected. Overall, subjects seemed to enjoy tapping with music — in either the isochronous or free-form condition — more than they enjoyed the non-tapping condition. What is innovative in this experiment, however, is the examination of spontaneous movement in the no-tapping trials. The authors hypothesized that this type of free movement with any body part would be higher for "groovier" pieces. Using a video recording that captured the full body image during the trials, the researchers noted that the amount of spontaneous movement did increase in response to high-groove stimuli, but that low- and mid-groove comparisons seemed to have no change. Surprisingly, enjoyment of task didn't increase with the free-form situation.

From this robust set of data, Janata, Tomic, and Haberman tried to develop a quantitative metric that looked at correspondence between tapping responses and temporal structures, drawing on an earlier meter-finding computational model by Tomic and Janata (2008). This worked, for the most part, at predicting sensorimotor coupling between listeners and musical examples. However, the authors failed to assert that the musical stimuli aren't changing in response to the listener (and thus it is only the participant who couples *to* the music).

In contrast, Peter Martens' 2012 study examined participants tapping along while watching and listening, or only watching/only listening, to a string quartet. The video-recording of the quartet showed them playing the same excerpt twice, in the same tempo, but expressing different tactus (pulse) levels. The participants examined how the performers moved, decoding the main pulse with which to synchronize from the video. This brings in aspects of auditory synchronization, as well as visual synchronization and mimicry (similar to Hove and Risen 2009 and Cox 2011, discussed above). Findings showed that tempo and structural form were important for participants to synchronize, as was visual information. While Martens' research goes against other work that indicates it is more difficult to synchronize with visual information than with auditory (Hove et al. 2013), the findings do align with common sense: being able to see the entire body of the performer means that their breathing and preparatory gestures would be visible, providing clues for predictive synchronization.

Another investigation of "real-life" visual cues for synchrony is found in the work of Luck and Toiviainen (2006), as they look at synchronization and conductor movements by using optical imaging techniques, (with uncertain, preliminary findings). Moreover, arguably one of the more sophisticated full-body movement studies (Leman and Nevada, 2010), involves three-dimensional full body motion capture of dancers doing the Samba or the Charleston (styles chosen for their mutuality as repetitive dances). These movements were then matched onto parameters in the musical excerpts such as meter, loudness, and velocity. The findings appeared as a set of basic gesture types and spatio-temporal frames for understanding music and movement interaction in dance. While Leman and Nevada's study seems open-ended, the methodology used may be helpful in future dance and movement research. Generally, as the ecological validity of the testing paradigm remains difficult in this set of studies, it is still clearly an area for further research. Overall, studies in the arena of body movement and synchronization are the most disparate, indicating a truly emergent field. Still, it is clear from the above research reviewed that, despite all that is unknown about the ways in which the body interacts with and responds to music, it is important and relevant to take the *entire body* into account.

Empirical scholarship is not the only area of scholarly literature that deals with the body. For instance, performance studies scholar Ben Spatz discusses the concept of embodied technique in his book, *What a Body Can Do* (2015). Here he examines embodied knowledge and technique, arguing that humans come to know the world through technique. Spatz posits:

> *Embodied practice is epistemic*. It is structured by and productive of knowledge. Accordingly, an epistemological account of embodied practice is one according to which such practice actively encounters and *comes to know* reality through technique, rather than simply producing or constructing it (2015, 26, emphasis in original).

Embodied technique does not assume a universal or ideal body. Rather, "it approaches embodiment as a field of variation, between individuals and also within the lifetime of an individual being. This field of relative reliability and variation is what affords embodied technique as an area of knowledge" (2015, 43). In this way, Spatz argues, "every area of technique has its basis in the materiality of human embodiment, including our capacities for rhythm, vocalization, movement, empathy, imaginative play, and vastly more" (43). Such a conceptualization of how individuals learn, know, and practice physicality and spatiality is especially helpful for considering prayer movements (as I will do in the subsequent chapters). In drawing the concept of embodied technique into the arena of prayer and community worship, it follows that individuals come to know spiritual and ritual feeling through different kinds of technique: singing, listening, observing, and moving. By moving in specific ways worshippers access space, both internally and externally, for ritual experience.

The music scholarship reviewed above —that dealing with meter, synchronization, and some movement (more to come below) — speaks to each other in different ways. By incorporating varying disciplinary perspectives on meter and synchronization, it is my aim to deepen, rather than cherry-pick, the understandings of how bodies interact with music. Thus, since the music scholars are all now “present” in the “room”, seated at their respective tables, I turn to a discussion of ritual theory and religious studies scholarship. This body of literature contributes greatly to understanding how movement and chant are figured within ritual, and as such, is quite useful in thinking about the particulars surrounding ritual experiences with music and the body.

IV. Ritual Scholarship

In investigating scholarship on ritual chant from outside of music studies, it is immediately apparent that my project is set apart from the majority of existing scholarship in that I focus on the interaction between body movements and vocal liturgical chant in daily or weekly congregational ritual settings. In contrast, the existing literature is most heavily concerned with ecstatic ceremonies that invite moments of trance and extreme bodily experiences during prayer (e.g., Goodman’s catalog of ecstatic and trance body positions [1986 and1988], and Fachner and Ritter’s [2004] empirical work on the same). David de Coppett defines ritual as the following:

> Ritual is formulaic spatiality carried out by groups of people who are conscious of its imperative or compulsory nature and who may or may not further inform this spatiality with spoken words (1992, 18).

In other words, ritual is first a physical, spatial endeavor with requirements as to space and behavior. Understanding ritual in this way, the importance of bodies for group cohesion cannot be overstated. Yet does this group experience require ecstasy or trance? Not necessarily. It seems that ritual experience hinges on the re-experiencing of specific ritual emotions and it is only through prescribed bodily actions and synchronizations that these specific emotions are recalled and re-felt (Schüler 2012). Sebastian Schüler's work stresses the importance of both individual actions and embodiments of ritual emotions, as well as group actions, moving from the individual to the collective as reflective of individual experience (2012, 95).

Synchronization is noted as crucial to the creation of group cohesion within religious communal experience. Sociologist and philosopher Émile Durkheim's seminal study of religion, *The Elementary Forms of Religious Life* (1912), sets a foundation of religious experience as a collective and ultimately social behavior, wherein group cohesion figures to produce and recall psychological experiences. He notes:

> The general conclusion of the book which the reader has before him is that religion is something eminently social. Religious representations are collective representations which express collective realities; the rites are a manner of acting which take rise in the midst of the assembled groups and which are destined to excite, maintain or recreate certain mental states in these groups (1912; translated edition 1915, 14).

Those following Durkheim have similarly noted an expectation of what Durkheim calls "collective effervescence" within ritual. In his Durkheimian study on synagogue song, Jonathan L. Friedmann asserts:

> The act of praying together, sometimes regardless of the words being recited, can forge and maintain group cohesion. This is particularly true for intensely emotional group prayer experiences. According to Durkheim, individuals engaged in emotionally charged rituals tend to lose track of their separate identities, and become absorbed in the group…. People gathered around symbolic objects, sounds, or activities produce an external force or constraint that reduces self-awareness and stimulates group-consciousness — a phenomenon Durkheim termed "collective effervescence" (2012, 66).

Music is well suited to create this "collective effervescence". As arts scholar Ellen Dissanayake notes, it is because of music's temporality, emotionality, and the way in which listeners are compelled to entrain to music that makes it a central part of most worship settings (2009).

Similarly, ritual theorist R. A. Rapport notes that the rhythmic aspects of liturgy, as well as the speed and specificity of the service order, provide simultaneous familiarity and novelty. He argues:

> At the same time that the tempos of particular ritual performances proceed at frequencies in the range of those of breath, heartbeat, or brainwave, the tempos of liturgical orders, marked by the recurrence of rituals as wholes, are of an entirely different magnitude. The rhythms dominating a certain ritual may be of the order of heartbeats, but that ritual may recur only once a week, or a year, or even less frequently. It is worth noting yet again the emphasis on punctilious performance characteristic of ritual, to underline further that that which is performed at rapid tempo and in tight coordination, and which through that tempo and coordination unites participants more tightly than they are under ordinary circumstances, is, *in being punctiliously repeated from one performance to the next, experienced as never-changing*. We observe in liturgical orders that which is at once both quick and changeless (1999, 222, emphasis in original).

Rapport frames ritual as “*the* basic social act”, one which “establishes, guards, and bridges boundaries between public systems and private processes” (1999, 138). This conceptualization of boundaries as within and around ritual is also key in the study of religion and religiousness more generally. Ritual theorist Catherine Bell notes how the separation of sacred and profane — central to many, if not most, religious traditions — is showcased through ritual action, differentiating these polarities by way of acting (in all senses of the term) differently (1992, 91). These ways of acting and distinguishing the sacred from the profane are foremost performed in and with the body.

Bell continues,

> The strategies of ritualization are particularly rooted in the body, specifically, the interaction of the social body within a symbolically constituted spatial and temporal environment. Essential to ritualization is the circular production of a ritualized body which in turn produces ritualized practices. Ritualization is embedded within the dynamics of the body defined within a symbolically structured environment. An

> important corollary to this is the fact that ritualization is a particularly 'mute' form of activity. It is designed to do what it does without bringing what it is doing across the threshold of discourse or systematic thinking (1992, 93).

Surprisingly, as we consider the sonic, thinking about ritualization as a 'mute' activity, is particularly helpful. As I demonstrate in the subsequent chapters, throughout my ethnographic investigation of ritual experience by way of participant interviews, most, if not all, participants noted that they had never before fully explicated their movement choices and patterns, or even discussed how their movement interacted with their religious or social experiences during worship. If, as Bell asserts, ritualization does not require or even invite explicit discussion or analysis, my participants certainly crossed that boundary during their interviews.

But Bell goes a step further, noting not only that ritualization requires the body, and tacit embodied experiences, but also that through practice of ritualized activity, bodies themselves become ritualized. She describes this process as follows:

> The implicit dynamic and 'end' of ritualization — that which it does not see itself doing — can be said to be the production of a 'ritualized body.' A ritualized body is a body invested with a 'sense' of ritual…. Ritualization produces this ritualized body through the interaction of the body with a structured and structuring environment…. Hence, through a series of physical movements ritual practices spatially and temporally construct an environment organized according to schemes of privileged opposition. The construction of this environment and the activities within it simultaneously work to impress these schemes upon the bodies of the participants. This is a circular process that tends to be misrecognized, if it is perceived at all, as values and experiences impressed upon the person and community from sources of power and order beyond it…. Rapport makes a similar point in describing how the act of kneeling does not so much communicate a message about subordination as it generates a body identified with subordination. In other words, the molding of the body within a highly structured environment does not simply express inner states. Rather it primarily acts to restructure bodies in the very doing of the acts themselves. Hence, required kneeling does not merely *communicate* subordination to the kneeler. For all intents and purposes, kneeling produces a subordinated kneeler in and through the act itself (1992, 98-100).

Bell then continues, asserting that ritualization cannot be extricated from the historical and ethical contexts of the individual (following John Blacking, 1977), but that it also cannot be discussed only in these terms. Indeed, ritualized bodies *must* be understood within the present, current context which, "is being reproduced in a mis-recognized and transformed way through the production of ritualized agents" (100). Although Bell defines ritualization as "the production of ritualized acts" and "the strategic production of expedient schemes that structure an environment in such a way that the environment appears to be the source of the schemes and their values" (140), she does not provide many concrete examples to help explain her definitions. As such, I am left to interpret her conceptualization of ritualization within this later explication of ritualized bodies and the cyclical nature of body techniques, which themselves merge into "habitus" through practice. In this manner, the individual moves from practicing ritual to ritualization.

Similar to Bell's discussion, sociologist Nick Crossley emphasizes the knowledge of body techniques as prominently non-verbal. He suggests,

> Embodied knowledge is not discursive knowledge and cannot be put into discourse without distorting it…. To study body techniques is to study knowledge and understanding in the only form in which exist: that is, in the form of embodied and practical competence…. Body techniques are both technical and bodily. They are revealed as technical because it is not obvious to everyone how to do them and they must be learned, sometimes with difficulty. They are revealed as specifically body techniques and embodied forms of knowledge and understanding because what matters is the ability to do them. Some people can do the technique without having a reflexive, intellectual grasp upon how they do it or what it is that makes a technique work; they 'just do it'. Others may appear to grasp the principle intellectually or discursively but still fail to execute the technique properly. It is the technically correct performance of the technique, however, which tends to count as knowing or understanding it for those involved. The knowledge and understanding involved in body techniques consists in embodied competence (2007, 87-8).

Note that here, again, the term “body techniques” arises. Such “knowing” of the body is found throughout the study of the body and religion, which in and of itself ranges across ritual theory, religious studies, anthropology of religion, history of religion, and sociology of religion. Despite myriad questions/conversations on the topic, however, scholars continually focus their inquiries around issues of *how*: how does one study the body in research, and how do bodies inform and expand understandings of the religious and the social? The resistance to, and engagement with, Cartesian mind/body dualism is continually addressed, demonstrating the nearness of these disciplines to early philosophy, unlike the more cognitive research reviewed above.[23] Crossley directly addresses the place (or, as he asserts, the lack of a place) that mind/body dualism assumes in sociological research (2007, 81). He notes,

> The conceptual architecture of dualism, centered upon mind and body, is not the conceptual architecture of sociology…. We have talked about ‘behavior’, ‘actions’, ‘interactions’, ‘praxis’ and ‘practices’; that is, about phenomena which are neutral with respect to the mind/body problematic and transcend it…. We are talking about what people do, a physical activity, but we understand that activity to be meaningful, purposive, intelligent, relatively rational etc., and thus mindful (81).

Crossley accuses philosophy as historically guilty of dualism, and identifies specific philosophers trying to rectify this aberration through an engagement with the body and embodied experience (i.e., Merleau-Ponty, 1965). He further notes sociology’s blunder of, as he puts it, the “absent body”, wherein a discussion of “the body” or “the mind” implicitly assumes a dualistic approach (82). Following Leder (1990), Crossley explains, “my experience is embodied but it is *not an experience of* my body. It is an embodied experience of the world around me. And for the world to be perceived by me it is necessary that my body, as a site of experience, sinks into the background and does not become the object of its own experience." (82).

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[23] For further interaction between the philosophical and the cognitive, see Crossley 2007 or Durkheim 1902.

This is an important distinction for studying embodied experience. As a human being in the world, one might take for it granted that they experience the world as mediated through their body — after all, how else would one do so? But in investigating *experience* (and thus, embodied experience) it is easy to get sidetracked into investigating *the body* instead, thereby reinforcing, rather than avoiding, Cartesian dualism. Even those engaging directly with this issue edge dangerously close to dualistic rhetoric. For instance, in one of the most often quoted articles in the literature on sociology, religion, and the body, "Techniques of the Body" (1973), author Marcel Mauss notes: "The body is man's first and most natural instrument. Or more accurately, not to speak of instruments, man's first and most natural technical object, and at the same time technical means, is his body" (75). In Mauss's attempt to avoid using the term "instrument" to describe the body (and thereby invoking an understanding of the body as a tool separate from the self that is used to mediate experience, following a Cartesian dualism model), he instead frames the body as a "technical object" and a "technical means". The use of the term "object" completely undermines his own attempt to move away from dualism. Yet, thinking about the body as the "means" through which we *are*, does assist in laying the groundwork for an understanding of body techniques.[24]

Mauss goes on to describe body techniques as actions that are both "effective" and "traditional", similar to actions of magical, religious, or symbolic nature (1973, 75). While he does not go into detail on the latter types of actions, he does explain that to be “traditional” means that there is a history of the technique within the culture of the individual, and that the technique may be transmitted (orally) to others. “Effective” simply implies that a body technique is an action that *does something*.[25] Mauss uses the term “habitus” to initially describe body techniques, noting: “These ‘habits’ do not just vary with individuals and their imitations, they vary especially between societies, educations, proprieties and fashions, prestiges. In them we should see the techniques and work of collective and individual practical reason rather than, in the ordinary way, merely the soul and its repetitive faculties” (73). He goes on, listing examples of body techniques at length. While most of these appear culturally restrictive and dated as a set of classifications, Mauss ends with a statement that has proved evocative for scholars drawing from his work: “What emerges very clearly from them [the body techniques] is the fact that we are everywhere faced with physio-psycho-sociological assemblages of series of actions. These actions are more or less habitual and more or less ancient in the life of the individual and the history of the society” (1973, 85).

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[24] In fairness to Mauss, some of the terminology difficulties described here may be the fault, in part, of the translator of the article. That said, obviously such terminology is core to Mauss's assertions and it is thus my expectation that any translator would pay special attention to the framing of these terms.

Scholars building on Mauss’s work have developed ways in which one might think about transmission and locality of knowledge. For example, Lawrence E. Sullivan’s (1990) discussion of history of religion centers around issues of researching the knowledge of the body. Sullivan notes, “knowledge is transmitted in a critical apprenticeship or in a critical ritual experience — that is, in a bodily experience — rather than through the transmission of narrative, doctrine, or discourse. In other words, the knowledge of the body that we wish to study and understand is itself often transmitted through culturally shaped experiences of the body" (87). Later on he continues, sounding very much like Mauss: "Since the body is so often demonstrated to be a primary instrument of knowledge, and since the understanding of the body can vary markedly from one culture and epoch to another, we may have to add to our customary list of hermeneutical reflections yet another question: What kind of challenge is our own bodily existence to the study of religion?" (1990, 99). Sullivan's final question — the potential difficulties in multiple levels of bodily mediation of individual experience in the study of religion, a bodily activity — is not one that Mauss investigates. Still, Sullivan draws on Mauss's ideas of the body as an "instrument" that is, as Mauss puts it, "traditional" (though I would instead suggest an updated term such as "enculturated" or "situated").

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[25] While not specifically stated, my assumption is that “doing something” has a wide range of interpretations including overt and covert effectiveness, and effectiveness intra-personally as well as inter-personally.

Thinking about bodily actions (or techniques) as sites of historical and cultural grounding, as well as transmissible from one person to another, dovetails with a second "theme" in this literature, that of the aforementioned "*habitus*". In a Bourdieuian sense, the habitus is similarly historically and culturally situated. Bourdieu describes it as follows:

> The *habitus*, a product of history, produces individual and collective practices — more history — in accordance with the schemes generated by history. It ensures the active presence of past experiences, which, deposited in each organism in the form of schemes of perception, thought and action, tend to guarantee the 'correctness' of practices and their constancy over time, more reliably than all formal rules and explicit norms (1990, 54).

Further, he continues:

> The *habitus* — embodied history, internalized as a second nature and so forgotten as history — is the active presence of the whole past of which it is the product…. The *habitus* is a spontaneity without consciousness or will, opposed as much to the mechanical necessity of things without history in mechanistic theories as it is to the reflexive freedom of subjects 'without inertia' in rationalist theories (1990, 56).

Bourdieu's *habitus* is necessarily an evolving and flexible state of an individual, wherein "embodied history" is the foundation for body techniques or action (a la Mauss). The individual acts out of this situatedness, but also is affected by the experiences they encounter, incorporating said experiences into their individual habitus and thus developing their bodily actions and techniques.[26] This flexibility of behaviors and techniques, of the way one uses one's body, is quite important to the study of religious movement. Catherine Bell's definition of Bourdieu's habitus is similarly helpful here, as she explains, "For Bourdieu, the habitus is, most simply, the set of habitual dispositions through which people 'give shape and form to social conventions.' A more complete definition would add that the habitus is the principle by which individual and collective practices are produced and the matrix in which objective structures are realized with the (subjective) dispositions that produce practices" (1992, 79).

Considering the habitus as an organizing principle of practices and actions, one that evolves and intersects individual and cultural/communal experience, is exceptionally helpful in navigating the space (or lack thereof) between the individual and their cultural context. Bell uses the term "ritual mastery", related to Bourdieu's "practical mastery", in a manner reminiscent of Spatz's embodied technique, discussed above. Bell argues,

> Ritual mastery implies that ritual can exist only in the specific cultural schemes and strategies for ritualization (i.e. For the production of 'ritualized' practices) embodied and accepted by persons for specific cultural communities. Ritual mastery also indicates something of the 'work' of ritualization, specifically, the production of a ritualized social agent in whose body lies the schemes by which to shift the organization or significance of many of culturally possible situations (1992, 107-8).

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[26] Bourdieu's "habitus", like Mauss's "body techniques", is referenced almost ubiquitously throughout literature on religion and the body. Although I will not go further into the details of his theory now, as they will lead away from the investigation of religious movement, his influence on theories of movement and religious experience should not be undervalued by the reader.

Coming from a different perspective, ethnomusicologist Judith Becker also engages with Bourdieu's habitus, describing it as follows:

> *Habitus* is an embodied pattern of action and reaction, in which we are not fully conscious of why we do what we do; not totally determined, but a *tendency* to behave in a certain way. Our "*habitus of listening*" is tacit, unexamined, seemingly completely "natural." We listen in a *particular* way without thinking about it, and without realizing that it even is a particular way of listening. Most of our styles of listening have been learned from unconscious imitation of those who surround us and with whom we continually interact. A "*habitus of listening*" suggests, not a necessity nor a rule, but an inclination, a disposition to listen with a particular kind of focus, to expect to experience particular kinds of emotion, to move with certain stylized gestures, and to interpret the meaning of the sounds and one's emotional responses to the musical event in somewhat (never totally) predictable ways. The stance of the listener is not a given, not *natural*, but necessarily influenced by place, time, the shared context of culture, and the intricate and irreproducible details of one's personal biography (2004, 71, emphasis in original).

Becker continues to trace this habitus of listening throughout her investigations of several distinct music-cultural settings, showing how listening attitudes, including posture, identity, interaction, movement (gross-motor and fine-motor), and affect change from culture to culture, musical setting to musical setting. Although Becker's work in *Deep Listening* (2004) deals with ritual and trance, and I do not deal with instances of bodily trance in my own research settings, Becker's assertion of the embodied cognition of musical experience demonstrates not only the breadth of the Cartesian rejection, but also the importance of considering movement and music as both biologically and culturally constructed (37-8). [27]

In a similar vein, sociologists of religion, Mellor and Shilling propose "body pedagogics", a concept related to, but not the same as body techniques or habitus. The authors problematize current sociological trends that sideline religion as a "dependent variable" and one that is not only distinct from the social but also is a form of false consciousness (drawing from scholars such as Foucault and Said). In engaging with this argument, the authors suggest the following:

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[27] I discuss embodied cognition in depth below.

> We propose that religion should be understood as a social fact possessed of the potential to produce culturally sanctioned *embodied orientations* to self and world, characterised by a *transcendent* configuration of *immanent* social realities. This interpretation, we suggest, can be formulated into a framework which views religious life as a form of embodied pedagogics, or *body pedagogics*…. Our focus on religious body pedagogics is concerned not only with embodiment as a *location* for social facts, structures or images of symbolic importance, but as a physical and experiential *mediator* of these phenomena and the basis on which a creative religious habitus can be produced as a potential outcome of these processes. We use the term body 'pedagogics', rather than 'pedagogies', in order to demarcate our approach towards these issues from the more conventional cognitive focus of much educational pedagogy (2010, 28, emphasis in original).

This way of describing the body as a mediator is potentially problematic. Thinking about the body as the *site* of experience (as Crossley suggests, quoted above), is significantly different from the body pedagogics that Mellor and Shilling describe. In their depiction, the mediation of the body as a pedagogical tool again places the body in service of the mind, which is not always the way "body as mediator" is construed in embodied cognition literature. I will return this point below, in the embodied cognition section (V).

Mellor and Shilling continue to describe religions as, "structured around processes through which individuals are integrated into, and empowered to act creatively within, societies in a way that is grounded in their embodied cognition *and* emotions" (29, emphasis in original). Such societies give way to body pedagogics, the study of which involve, in their opinion, investigation of three components; institutional means of transmission of "embodied techniques, dispositions and beliefs," as the experiences of this transmission, along with the "embodied outcomes" of transmission process (30). Mellor and Shilling are therefore interested not only in what an individual is doing in a religious setting, but also in how they might be experiencing what they are doing internally, and the connection (if any) between the internal and external aspects of body techniques. They identify the combination of these "external manifestations" and "internal dimensions" as a "religious habitus" (30), looking at how components of religion and religious experience begin to shape individual identities.

Using two case studies, Mellor and Shilling argue for these pedagogics as components of the goal-directedness of institutionalized religious systems, examining broadly Christian (e.g., ingesting the Eucharist) and broadly Islamic bodily movement (e.g., positions for daily prayer). They argue as follows:

> What we are suggesting, from a sociological point of view, is that the 'directional logic' of a religion is more to do with the *embodied orientation* towards social realities that it generates, rather than the 'plausibility' or otherwise of its philosophical orientations. This is the context within which the key body pedagogic *outcomes* arising from the means, and experiences noted above, concerned with the attempted transmission of a specific religious habitus, become so important. …. Being 'Christian' or 'Muslim' is not simply to do with having different 'faiths' (Ruel, 1982). Instead, it is about possessing specific embodied orientations, experiences and outcomes (2010, 33-4, emphasis in original).

But what happens when a specific religious habitus is not prescribed, or is only semi-prescribed as the ideal type of the body pedagogic? This seems to be the case in my experience of the Jewish worship communities, wherein a body pedagogic that closely follows the trajectory laid out by Mellor and Shilling diverges from the transmission of a specific religious habitus in how it becomes imbued by individual experience and embodied orientation towards aspects of religion and religious experience. The movements that I will discuss in chapters two and three are on the one hand specific in how they are practiced, and on the other hand are never enacted in the same manner, one person to another. This divergence can be especially true of those who self-identify as Jewish atheists but continue to practice the body pedagogics of the religion as if they were not.

In yet another way of using both Bourdieu's habitus and Mauss's body techniques, Thomas J. Csordas's 1994 text, *The Sacred Self*, examines religious movement in the context of Charismatic Christianity. He describes the habitus as a regulator for improvisation in religious ceremonies (106). Instead of always depicting the habitus and body techniques as unconscious, motivating factors that affect individual action and filter individual experience without necessary self-reflection, Csordas asserts that, in fact, the only reason an individual can be self-reflexive is *because* of their embodiment. He notes, "We can reflect on our own experience because of the essential alterity that allows us to experience our own body as an object, an 'other'" (1994, 278). Navigating such tricky terrain in "objectifying" the body, Csordas describes the movement from self-awareness of our bodies as distinct to the focus of being *in* our bodies, without awareness or reflexivity of the mediation of the world we are experiencing. This shift is a goal, for instance, in many ecstatic religious ceremonies, as demonstrated in Csordas's research on Charistmatic Christianity. These two experiences of the body — being distinct and being in — are variable, flexible, and multi-dimensional in and of themselves. Further, as Csordas notes, "The notion of habitus suggests that self process and habitus are mutually constitutive. This notion of self is cross-culturally useful as soon as it is granted that the existential condition of the habitus, embodiment, is generalizable as the ground of culture, the self, and the sacred." (1990, 276-7).

In examining embodiment in relation to religion, it is imperative to examine not only the cultural and historical grounding of body techniques, but also the self-awareness of this habitus and the engagement of the self with the notion (albeit tacit) of said habitus. Csordas distinguishes between gesture and body technique through examination of the Charismatic Christian practice of "laying on of hands", arguing that this practice lies in between these concepts:

> As a gesture, its performative efficacy is inseparably linked with the prayer to which it is an accompaniment. It implicitly enacts two important psychocultural themes upon the afflicted person: it is a gesture of *intimacy* and protection as well as a gesture of *control* and the application of power. As a technique, the laying on of hands is variable…. Leaving variations in touch to the spontaneous coordination of the habitus thus bears the implicit significance of enacting another of our key psychocultural themes (1994, 51-52, emphasis in original).

From his description, it is clear that Csordas sees gesture as imbued with intention and some amount of affective power, and significantly, as tied to a prayer (in this instance). In contrast, a body technique is perhaps more automatic and less purposeful (though still culturally and historically driven). A body technique is a way of physically engaging in the world in an implicit manner, in order to explicitly achieve the goal-directedness of the gesture.

Having reached the end of my review of ritual scholarship, a lingering tension emerges: the research reviewed thus far is largely theoretical, and yet there still exists a large body of work on embodied cognition that could alter these philosophical arguments on the body, ritual, and music. Indeed, the embodied cognition scholarship that I will discuss below aids in shedding light on processes of bodily learning and experience from an empirical viewpoint, and works alongside some of the research discussed above to address the problems encountered in Cartesian language. But I have placed it at the end of this first chapter — in terms of the seating chart, I've seated these scholars at the back of the room — for two reasons, both having to do with the way the scholarship review in this chapter ties into and speaks to my own research.

First and foremost, my own methodology and data analysis is much more closely aligned with the anthropological methods of most of the above studies, and my conclusions are heavily influenced by philosophical inquiry. I have not followed an empirical model and thus a complete review of empirical literature on embodied cognition seems excessive. Second, much of the embodied cognition literature centers around how humans learn to use their bodies and process external environmental stimuli. These questions diverge from those under consideration in my research, in that I deal with adults who already possess ingrained habits in religious settings. Moreover, I study institutionalized religious customs wherein there is explicated bodily conduct that is expected. Further, I am concerned (at present) with the *what* of bodily-sonic interaction, not the individual methods of processing these interactions and understanding them. As such, my below review will provide a brief idea of the interventions this discipline can offer for questions of religious movement, without an in-depth examination of the specific studies. I have also included more movement literature, which overlaps productively with embodied cognition viewpoints and trends.

V. Embodied Cognition and Movement Scholarship

Embodied cognition is first and foremost about how humans understand ideas, experiences, and the world through their bodies. As such, the bodily-ness of things are an important part of our knowing them. In his 2007 book, *Embodied Music Cognition and Mediation Technology*, Marc Leman describes embodied cognition as follows: “The main argument is that knowledge does not emerge from passive perception, but from the need to act in an environment. In that sense, ecology is not merely about the relationship between a subject and its environment, but also about the knowledge which is needed to act in that environment” (43). Already, there are direct connections implied between embodied cognition and Spatz’s embodied techniques, Bourdieu's habitus, and even the varying conceptualizations of body techniques described above.

But how do embodied concepts and ideas work? Lakoff and Johnson (1999) describe an embodied concept as "a neural structure that is actually part of, or makes use of, the sensorimotor system of our brains. Much of conceptual interference is, therefore, sensorimotor interference" (20). To examine such interference, researchers have experimented with different modes of movement research paradigms, trying to better understand how movement, abstract concepts, and music are intertwined. For instance, Petri Toiviainen, Geoff Luck, and Marc R. Thompson's 2010 study investigated "music induced movements" in "ordinary listeners" looking at how different metrical levels of pulse were coordinated with movements (different or similar). Researchers used kinetic analysis, body modeling, dimensionality reduction, and signal processing to deal with the motion capture data they gathered (60). They expected slower (higher-level/deeper-level) pulses to be coordinated with larger, gross motor movements, and faster pulses (shorter pulses/smaller metrical levels) to be associated with faster, smaller, fine motor movements. The musical stimulus used was an instrumental 12-bar Blues progression in 4/4, played at different, randomly selected tempi (61). The authors found that participants "embodied the musical stimulus on several metric levels" (67), and though it appeared possible to synchronize with multiple beat levels at once, the majority of participants would choose one beat level at a time. Their hypothesis about size of movement and speed of tactus was confirmed. As such, this study not only demonstrates the use of motion capture technology, but also supports other previous studies on body synchronization to metered music.

In similar work by Burger et al. (2013), researchers were interested in discovering if and how movement and musical characteristics are related, and if there are any specific body movements connected to specific musical aspects. Drawing from embodied cognition, the authors assumed that movement was reflective of musical characteristics, and in this vein they predicted that movements would "indicate the beat structure, in particular that a clear beat would be embodied by increased speed of movements" (3). The study design used stimuli of varying musical genres and tempi, all of which were in 4/4 time, instrumental, and only 30 seconds long. Movements were detected using an optical motion capture system. After categorizing the movement types they saw and analyzing "pulse clarity" and "spectral flux", the results of their data analysis showed that participants tended to use more movement types when the pulses were clearer, and that movement was more easily maintained in these instances. They also discovered that pitch height, timbre, and percussiveness seemed to be connected to the types of body movements made. The authors were surprised to find that tempo did not seem to affect the types of body movements made.

Rolf Inge Godøy provides an overview of embodied cognition in a 2010 essay, noting that one of the most important elements is "our inclination to spontaneously (and largely involuntarily) mentally imitate the movements that we see other people making, as well as the movements that we assume other people are making in cases where we cannot actually see their movements" (2010, 108). He continues by invoking mirror neurons, noting:

> Advances in neuroscience have demonstrated a neurophysiological basis for such imitative behavior in what has been called *mirror neurons* in the brain (Keysers et al. 2003). This hard-wired inclination for imitation can be considered advantageous from an evolutionary point of view because it enables us to predict behavior and therefore respond quickly (Wilson and Knoblich 2005), as well as to understand the intentions of others, hence facilitating social interaction (Gallese and Goldman 1998) (Godøy 2010, 108-9).

Hopefully these descriptions sound familiar to the reader. As mentioned above, scholarly interest in mirror neurons and mimicry is on the rise in cognitive research. Godøy's description is quite similar to Cox's discussion of mimicry and movement (as noted, Cox, too, is considerably influenced by research on mirror neurons). They differ in that Godøy assumes that most imitation occurs spontaneously, involuntarily, and covertly (i.e. mentally), while Cox is much more explicit about the range of possible ways an individual may engage in mimetic activity. Although Godøy doesn't use the term "empathy" and Cox uses it frequently, their comparable connection of musical empathy and mirror neurons supports underlying reasons for humans to engage in mimicry with music and with other humans.

Marc Leman also deals with imitation in his 2007 text on embodied cognition. He notes that "corporeal imitation", as he calls it, is body mirroring using multi-sensory information processing and kinesthesia (sensing of movement), manifesting in behavioral responses, physiology, and brain activity (110). Leman distinguishes between what he calls the three levels of corporeal imitation: synchronization, attuning, and empathy (112). Synchronization, in Leman's view, is lower-level activity (achieved without a great deal of attention) such as tapping to a beat (a la Repp 2005), while embodied attuning "implies corporeal movement in accord with music, such as drawing along with the moving sonic forms of music or, perhaps more typical, singing along with music" (115). Leman continues:

> Attuning brings the human body into accordance with a particular feature of music. It can be seen as navigation with or inside music. Attuning may be considered a form of synchronization in the sense that it aims at being as much as possible in harmony with features of the moving sonic forms of music, a kind of playing together with the music. Whereas synchronization is based on low-level sensorimotor activity, attuning aims at addressing higher-level features such as melody, harmony, rhythm, and timbre, or patterns related to expressiveness, affects, and feelings (2007, 115).

He identifies these three aspects of musical and corporeal interaction as points on a continuum reaching from involvement without emotional interaction (synchronization) to highly charged emotional interaction coupled with corporeal interaction (empathy) (127-8).

Leman's 2010 essay on music and embodied cognition also involves embodied cognition, and examines the body as a mediator between the mind and the environment. [28] He suggests,

> The narrative and empirical viewpoints may be integrated through a particular approach to the concept of embodiment. The human body is thereby understood as a mediator between the musical mind and the physical environment, and gestures can be conceived as a way in which this mediator deploys itself in space and time. What is important in this framework is the idea that music is performed and perceived through gestures whose deployment can be directly felt and understood through the body, without the need for verbal descriptions. Seen as such, the approach of embodied music cognition aims to offer a framework in which subjective experiences and physical/biological mechanisms are connected as tightly as possible (127).

There are several empirical studies examining how the body works to portray musical ideas. Motion capture technology has helped to make great strides in understanding how individuals' bodies interact with music and musical instruments. Examples of research using this technology include Luck et al.'s 2014 study on movement and emotion, Martens' 2016 study on movement in classical music performance, and Vahabzadeh et al.'s 2016 work on performer gestures and creativity in long-neck lute performance of Iran and Central Asia. Each of these studies shows a different way of collecting and analyzing data from the motion capture suits or trackers that are worn by participants. Due to the high level of detail researchers can obtain from the technology, new questions have arisen as to what actually counts as a body movement or a gesture. In addition, new discoveries about both individuality and universality amongst various types of body movements and gestures are being made using this research tool.

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[28] This essay is drawn from the same volume as Godøy's essay, discussed above. The edited collection itself will be discussed below.

Scholarship dealing with movement stems from a wide range of disciplines, dealing substantially with the categorization of gestures and postures, more general movement research, and issues of embodied techniques and practices. *Musical Gestures: Sound, Movement, Meaning* is a primary volume in this arena, edited by Rolf Inge Godøy and Marc Leman (2010). In their introduction to this text, Godøy and Leman note that when studying gesture there is both a primary focus — the *extension* of the physical movement with the body — and a secondary focus — the *intention* behind that gesture (5). Within this framework there are multiple types of body gestures (which are discussed throughout their edited collection) including biomechanics constraints, controlling gestures (like conductor movements), sound producing gestures and sound related movements (such as thinking about pitches going up or down, in other words, the metaphorical understanding of sound in space), and body posture and positioning (6). Godøy and Leman argue against using the terms "movement" and "gesture" synonymously, saying, "movement is an essential part of gesture, but that the notion of gesture is not identical to the notion of movement. Indeed, in the definition of 'gesture' we need a subjective and context-dependent component, something that forces us to understand gesture as movement with respect to the perception-action system of both the producer and the observer of the movement" (7-8).

Similarly, Godøy and Leman distinguish between body schemata (learned motor patterns requiring little to no mental effort to produce) and body image (the representation and/or awareness of our own bodies in the environment) (2010, 8). While almost all of the musical settings examined throughout the collection of essays are related to presentational performance (rather than communal music production settings like the worship settings I examine), this differentiation is nevertheless extremely helpful in understanding the motivations of body gestures and movements made by my informants. In discussing movements made during worship, my participants often seemed to move from a body schemata experience of worship movement involving movement descriptions such as “it feels natural”, or conflating the spoken/heard prayer with the movements associated with that prayer, to a more declarative way of talking about their movements, as evidenced in the frequently heard statements of “I never thought about movement and prayer this way” or, “I never really realized what I do until being asked to put it into words”. Of course, not all of my participants made these transitions, and body image was already present in the cases of choreographed gestures embedded into the service structure. Regardless, understanding the flexibility and fluidity possible between these categories proves beneficial as I begin to describe the movement analysis in my own research.

VI. The Beginning

Everyone has now been seated within the space of the dissertation. Present are selective reviews of literature on meter analysis (of varying repertoires), synchronization studies, ritual theory, and embodied cognition and movement studies. While none of the above reviews have been exhaustive, all have outlined the major trends within their respective disciplines, as well as noting themes that, it is my hope, will be recognizable to the reader throughout the remainder of the dissertation. By thinking about and organizing the foundational scholarship spatially, rather than temporally, I intend to promote cross-disciplinary discourse and an “present-ness” amongst scholars, methods, and ideas. Thus, it is my even greater hope that given the above review, the reader may now be joining with me as I ask my core questions (laid out in the introduction) about how weekly and daily ritual movement interacts metrically with ritual chant. It has been apparent in this chapter that no single body of scholarly knowledge addresses this question in full. Moreover, no single discipline seems to fully provide the groundwork for my own answering of these queries, giving rise to my interdisciplinary inquiry.

By presenting the bulk of my literature review all at once (in this chapter), I have, in essence, provided the reader with a lengthy preamble to my own study. Therefore, although the chapter is at a close, a second beginning has been reached: one wherein all the scholars, their methods, and ideas, are present and accounted for, and where the questions and issues surrounding my own research have been sufficiently laid out and problematized. In the following chapter, I describe my research methodologies in detail and provide the general shape of my research process. Beyond, in chapters three and four, I examine the outcomes of my case studies on Jewish and Greek Orthodox movement–musical interaction. It is time to begin.

Chapter 2

Methodologies

This chapter lays out the methodological design of my study, which grows from the scholarship and guiding questions outlined above. It is a hybrid design, integrating analysis and ethnography. While a precedent exists for this type of scholarship (notably Butler 2006 and 2014; Nettl 2005, chapter 8; and the Analytical Approaches to World Music edited collections [Tenzer 2006; Tenzer and Roeder 2011], online journal, and conferences), it still lacks the wide utilization of its individual components: conventional music analysis or ethnography as singular methods of inquiry. As Michael Tenzer notes, combining these two research modes challenges "the listener's individual prerogative and agency in music analysis" (2006, 6). Further, the method invites the expertise of the music practitioners being studied to be incorporated into the analytical endeavor. Such expertise is invaluable for my engagement with embodied worship. While *I* might be observing specific metrical aspects of physical and musical experiences, what *my participants* tell me about their own experience is always more robust, more situated in their personal background and culture, and is of course articulated in their own words. This final aspect is perhaps the most telling, as it encourages me, as a researcher, to carefully navigate the language I use, attempting not to tell them what they are experiencing but instead helping them to describe their experiences in a detailed fashion on their own.

My methodology has three main parts: the ethnography, followed by transcription, and finally my analytical process. While chapters three and four hold the full case study findings, I will include short examples from each worship community in this chapter in order to give the reader a sense of the final results of this three-part process.

I. An Ethnographic/Music-Analytic Study: The Step by Step

Location, Location, Location

I conducted fieldwork solely in Chicago, which proved to be an interesting environment given the varied levels of assimilation in both the Jewish and Greek Orthodox communities. While my work with participants was all in English, the services I attended were always a mix of either English and Hebrew in the Jewish setting, or English and Greek in the Greek Orthodox setting. Fluency and facility with these secondary languages varied across participants, ranging from those who were fluent speakers to those possessing no comprehension of semantic meaning despite extensive experience phonetically pronouncing the words.[29] As neither of these languages shares an alphabet with English, even being able to sound out the words of the prayer implies a certain level of language training (the kind typically taught in a K–8 or K–12 religious school setting, often termed “Hebrew School” or “Greek School”). Moreover, pronunciation varies person-to-person, resulting in a notable range of spoken accent.

Aside from language, the locality of Chicago means that participants are not only enculturated in the ancient worship music I examine here, but are also immersed in the twenty-first century soundscapes they encounter in their public lives. This includes the Muzak in the grocery store, and their expectations for what type of music is played during breaks at a soccer game or during a child's ballet class. Regardless of what they listen to in the car and the home, all of these individuals are fully modern members of American society. None of my participants live in secluded, religiously or ethnically singular neighborhoods. As such, the Chicago setting makes this study specifically about American Jewry and American Greek Orthodoxy as distinguished from practices elsewhere in the world. Further, it is not only American, but also Midwestern and urban. Especially for American Jews, there is a strong influence of local custom on worship practices.[30] Liturgical practice, movement, and music, will vary coast to coast and city to city, despite general structural similarities. Thus, while the findings herein certainly should not be extrapolated beyond North America, caution must be used even when extending conclusions beyond the Chicagoland area.

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[29] While Hebrew (in the Jewish community) and Greek (in the Greek Orthodox community) are considered secondary languages in comparison to English as the primary language in the Chicago area, within the respective worship liturgies they are arguably the primary languages, with English taking the place of a secondary, vernacular language.

Permissions and Recruitment

My ethnography has two components: an interview and an observation. However, prior to embarking on the ethnography proper, I attained site permissions from the places of worship in which I wished to work. I sent permission request emails (shown in Appendix I.1) to clergy, temple and church boards, and ritual committees, describing my study and asking for permission to recruit members and conduct observations at their site. While some of these requests were met with enthusiasm and interest, many were denied or simply ignored. Reasons for denial included instability in the community leadership or transition in the organization of the community, concerns around the possible disruption of congregants' prayer lives, and concerns around the possible perception that clergy encouraged participation in the study. Those communities that did give permission did so with varying conditions, including the following: no video-recording during services, no publicizing or recruiting through temple or church channels, anonymity in final write up, and the organization of an adult education program at the completion of the study to showcase my findings. [31] As I was able to meet these conditions, I received site permission for three Jewish communities (two Conservative-style worship, one Reform-style worship) [32] and two Greek Orthodox communities.

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[30] Given the standardization of Greek Orthodox worship and the hierarchical structure of the local, national, and global church administration, local customs vary much less parish to parish.

To recruit participants, I began with clergy, asking both for help in recruitment and for interviews if they, themselves, were amenable. Some communities allowed me to leave flyers in the office and put notices on prominent bulletin boards; others suggested specific individuals with whom I should work; and one allowed me to make an announcement during a service. I also recruited participants whom I already knew and then used snowball sampling. The participant requirements were that the adult be over eighteen, able to speak English fluently, and not be mentally handicapped. IRB protected classes of children, adults with mental handicaps, and inmates were not eligible, but protected classes of pregnant women and adults with physical handicaps were eligible. The recruitment flyer I used can be seen in Appendix I.2.

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[31] The anonymity condition was actually a component of the IRB confidentiality requirements, but some communities were more concerned about this than others.

[32] Although two Conservative communities gave me site permission, in my recruitment only one proved to have willing participants. Thus, I focus my remarks only on that one Conservative synagogue.

Interviews

Interviews were conducted at the place of worship, the home of the participant, or my office at Northwestern University. They ranged from fifty minutes to two hours long, and were both audio-recorded and video-recorded.[33] Working from a flexible interview framework (see Appendix I.3), I asked participants about their experiences moving in the synagogue or church, encouraging them to answer however they saw fit.[34] Although my questions were answered in varying degrees of specificity across my participants, I still got a general sense of how I expected to see my informants moving and interacting when I observed them in worship. Moreover, a wealth of issues dealing with worship communities arose, far beyond those of body movement and prayer at which my questions were directed.

One recurrent theme in the Jewish community was how social politics in the worship setting affected individual styles of observance. Many participants discussed what they felt was acceptable in their congregations in terms of movement, prayer, and singing. For some, these social pressures dictated where and with whom congregants sat, and how freely they moved, sang, and prayed aloud. In part, these pressures seemed to seep in from the middle-class worlds of their workplaces and lives outside the worship community. For instance, one participant in the Reform Jewish community noted the following:

> I'm always frustrated that our congregation doesn't physically get more involved. You know, you have the Rabbi going [*hits desk rhythmically*] and people will just sit there! You know, I like that [*claps*] or on my knee [*demonstrates*], I like that, that piece of that participation…. I would love to be able to stand up and dance, I've heard that, some congregations, you know people join hands and dance around the, actually in services you know, and, it's like "whoa" …. And then I get angry

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[33] Although video-recording was an optional parameter for the interview, almost every participant agreed to it. Both the video- and the audio-recordings of the interviews have remained confidential throughout the analysis process.
[34] I avoided leading questions as much as possible, allowing the participant to speak freely.

> sometimes at people who aren't participating because, I don't think it's legitimate to say you don't have a good voice…. but no, there should be no excuse for lack of participation. But, I respect someone who just has to sit and relax and have their moment because their moment might be very impactful for them even though it might not be [*clap clap*], you know.
>
> —Deborah, Interview, January 2016.

Deborah desires a higher degree of participation from her fellow congregants, both physically and musically. Yet at the same time she recognizes that not all want to participate in the way she does, resulting in a tension for her during communal service experiences. Indeed, in both worship communities, the conflation of the house of prayer as a place for personal and communal worship and its place as a community center for education, social action, and socializing with friends, seemed to result in tensions as to how to comport oneself during prayer. These were realized in the body through individual restrictions and choices made as to how much to move, how loudly to sing, and how much to show one's fervor during prayer.

However, the reverse was also expressed in the interviews. Some Jewish informants noted that going to a Friday evening Shabbat service following the workday could be physically, vocally, and spiritually freeing. They asserted that the comfort and security they felt in the congregation — a veritable home away from home — allowed them to move and sing as they liked, regardless of what those around them were doing.

Although my interviews were focused around a single participant, it would be absurd to divorce that participant from their communal context. Many talked about attending services with family members, sitting with friends, or the experiences of both isolation and freedom that can result from sitting alone in a service. Thus, while my observations were focused on one participant at a time, I also watched how that participant interacted with their environment. Further, in the interviews, some informants directly discussed their "real-time" interactions with others and others' bodies in the worship space. Clergy especially were focused on this, noting that they continually think about how to engage and respond to what the congregation and their fellow service leaders are doing. For example, one cantorial soloist in the Reform synagogue, Shira, said:

> Something I guess I don't really need to think about because it's so natural, but there are places because of ritual choreography where I will slow down and speed up my singing to help the congregation anticipate what's coming. So, for instance, when you're chanting the *Chatzi Kaddish*, if I were to chant it the way I learned it growing up, it would be exceedingly fast… because everyone in that congregation knows exactly when to come in for their appropriate responses. Because people come to our congregation and Reform Judaism in general from varying backgrounds… because people come from such varying backgrounds, you tend to, or I tend to slow down, or indicate with my body in a way that says, "now is your turn". So for instance in the *Chatzi Kaddish* which has some call and response, I specifically keep my eyes on the *siddur* [prayer book] until just before the congregation is to respond, then I look up specifically at them, and look around and that sort of non-verbally engages them to say "now is, or it's about to be your turn."
>
> —Shira, Interview, June 2015.

Shira's non-verbal cues are not ignored. Some of her congregants noted that they watched the clergy and other people around them, responding, copying, and reacting to their movements. These congregants tended to differ from those who were worried about or focused on what was appropriate, and what were the right and wrong ways to move. Instead, these individuals were learning from watching the prayer of others; using what they saw of the clergy or congregant bodies to enhance their own prayer experiences.

Before going further into discussion of the interviews, I must make an aside about my interview transcription practice. In transcribing the interviews, I have taken out most "filler" words such as "um" or "uh". As the interview was conversational in nature, most participants spoke with a wealth of these vocalized pauses as they thought aloud through their answers to my questions. Additionally, I have taken the liberty to punctuate the text as closely as possible to the actual cadence of the participants' sentences. Thus, commas and periods appear in locations that may seem odd when read silently, but reading aloud will approximate the sound and style of the speaker. Finally, I have changed all names throughout the study, including the names of the congregations as well as the names of the participants. This has been done to maintain confidentiality, and is aligned with common ethnographic practice.

In addition to the social experiences outlined above, the interviews also gave me a sense of a participant's typical worship experience. In discussing their worship, many became quite emotional, and seemed somewhat surprised by their deep connection to the subject matter. For instance, one participant, Judy, seemed to be reliving the physical experience and sense memory of worshipping in the synagogue during our interview. When asked about her actions and experiences during congregational prayer she teared up, saying:

> [*while crying*] Sometimes they [her experiences] become like this, and I do bring Kleenex with me because I've learned I need it, because something is triggered by the music or the words. There are times when the congregation is chanting a familiar traditional piece and I will hear them in the background and focus on the English translation and the poetry that is to the left side of the page because I feel that that enhances my attachment to the experience more so. There are times where the melodies are so beautiful that I just sing them, they go all the way back to my childhood and therefore they conjure up memories, or at least memories of a way of feeling good in a sense — not having troubles — and when I'm singing, I just can, often times can just block out everything other than the experience of what worship is. And for me it's, it's a joy, it's a calmness, when I get sentimental it's an attachment to those that I miss or those that caused me to miss out on things and, prior to choir I would sing even louder because it just, I just felt it's coming from me, and that's ok. But now that I'm part of choir I don't sing as loudly as I used to. The other thing that I think notice is, I, before I was having knee problems, when we would sing the *L'cha Dodi* at the end and we'd all be up singing, standing and singing, there were times when I was almost dancing around to get back to my position, but I'm tamer now because of a handicap. And I don't really think that, I think I do restrict my motions when I'm praying because feel that I'm in an environment where it's, not really approved. You can do things that are minor such as tap your feet and make your knee go up and down, maybe if no one can see make your hand move a little bit [*demonstrates*], a little bit of swaying, but I find that I

> control myself for that because I don’t see others participating in that way.
>
> —Judy, Interview, November 2015.

Here, Judy is not only momentarily inhabiting the emotional states she describes, but she is also recalling her physical discomfort of not feeling free to move as she’d like. This answer gave me an observation expectation that she would be continually checking herself throughout the service, regulating her movements and vocal production, and simultaneously giving in to any strong feelings she was experiencing. What did this look like in practice? For the most part Judy didn’t move very much — but that doesn’t mean that she wasn’t thinking about moving, or experiencing small movements as larger than they appeared, or imbuing the choreography of the rituals with her own deep emotions. Through her interview, I was able to learn about what experiences were underlying the fairly conservative, stoic movement patterns I observed in worship. In this way, Judy is good example of a participant whose complex and subtle movement tendencies were illuminated by the integration of ethnography with analysis.

Observations

All of my fieldwork involved observing each participant at least once for an entire worship service following their interview, though often I spent three or four services observing a single participant. In my initial observation, I got a sense for the types of movements made, and the way these were realized in the service, including any discernable interactions with the sonic environments and/or the other moving bodies in the room. I did this by sitting behind or to the side of the informant, as closely as possible, and by watching how and when they moved throughout the service. For example, one elderly participant from the Reform Jewish community, I’ll call her Vera, worked with me following a recent shoulder surgery. As such, her upper body was stiffer and stiller than she had implied it would be in her interview (which was based on her normal moving habits, not those following the medical procedure). However, as I sat to the side of her, I was able to observe how her feet became quite active throughout the service. Not only would Vera tap along with the metered Synagogue song, but her foot would intermittently articulate prosody during semi-metered chant. As her shoulder healed, I saw a shift from extensive movement in her right foot, to more free and relaxed movements in her shoulders and upper body. This example is an interesting one because it seems that Vera's foot was in some sense compensating for the lack of mobility in her upper body. Normally quite physically engaged in worship, she continued to participate despite her body's limitations, and as her body healed her movements reflected the shift in her own bodily experience. Further, this instance also demonstrates the distinctions to be made between participant-led expectations and my own "real-time" observations.

Based on the differences between the type of fieldwork allowed and the movement styles in Greek Orthodox and Jewish communities, there are differences in the development of my methodology. However, both settings involve two main categories of movement, ritual movements, encompassing ritual choreography and ritually-inflected movements, and socially-inflected movements (see figure 2.1 below).

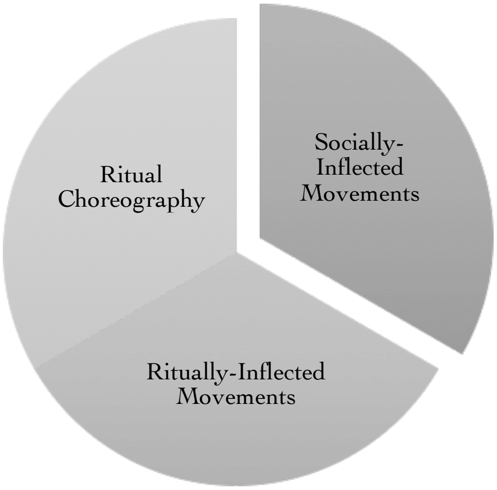

Figure 2.1. Types of movement in worship settings.

Ritual choreography is comprised of all planned movements that are requisite ritual components. This may include bows at specific points in the text (such as, "we bow before you [God]"), prostrations in the church, and rising on one's tiptoes in the synagogue. These movements have specific timing and liturgical grounding associated with them. In contrast, ritually-inflected movements are free; those movements that are connected to prayer but are not regulated amongst the group of worshippers or by temporal or textual location within the liturgy. These movements may be bows, sways, bends, or even making the sign of the cross (which is a "swing" movement, existing as both a choreographed and a ritually-inflected movement, depending on context). Moreover, ritually-inflected movements do not always have to include active moving; choosing stillness when standing, or to sit instead of stand at certain points during worship may also be considered ritually-inflected choices if they seem to be implicated into the prayer experience.

Separate from ritual movement is socially-inflected movement: those ordinary movements of an individual existing in space. Such movements might include finding a seat by friends or away from people whose voices one doesn't like; looking at others, at the prayer book, and at the clergy; awareness of what one is wearing, how one's body — the sore back, the bad hip, the fibromyalgia pain — feels on a given day; awareness of how visible one's movements are, how loud one's voice is, how pious or how strange one may appear.[35] While I do not analyze these socially-inflected movements as part of my music-movement interactions, there was a fluidity with which participants oscillated between socially-inflected and ritually-inflected movements. For instance, a clergy member might be in the midst of free ritual movements when a new congregant enters the sanctuary, causing the clergy to look up and smile in acknowledgement. Even just the need to sneeze or cough can disrupt ritually-inflected movement in favor of a socially-inflected movement. Obviously such oscillation should be expected, yet these interruptions affect not only my own observations but also the prayer experiences of the participants. As such, I will discuss these aspects of disruption further in their respective contexts in the case study chapters.

After getting a general visual sense of the participant's bodily habits, I tried to gain a kinesthetic sense. I began learning to move as my participants move, deliberately imitating my participants in order to empathize with their bodily experience. This mimicry follows simulation theories discussed above (e.g., Godøy and Leman 2010; Cox 2011, 2016) and although the method is neither empirical nor quantitative, it provides an ecologically valid way of recording participant movements with a fair degree of specificity.[36] Then, by combining my physical experiences during mimicry and observation with the movement expectations drawn from interviews, I created a movement profile for each participant. Devised to breakdown the movements I was seeing into component parts, the movement profile identifies three main aspects of motion and effort, allowing me to better delineate between movement styles that appear to be similar. These aspects are the *locus*, the *ictus*, and the *trajectory*.

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[35] Many of my female participants discussed how different outfits afford different levels of freedom in movement. Heels versus flats, or a skirt versus pants, can make all the difference in how they choose to move.

The *locus* is the term I assign for the point from which a movement originates (that may or may not be the part of the body articulating the movement). Examples of this can be seen in Figure 2.2 below.

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[36] An alternative, and perhaps future, direction for this type of research would be to use motion capture technology similar to that which is being used in research on performance gestures (e.g., Leman and Naveda 2010; Toivianen, Luck, and Thompson 2010; Burger et al. 2013; Luck et al. 2014; Martens 2016; Vahabzadeh et al. 2016). A downside to this type of research is the possible inhibitions the technology places on the "natural" and "free" movements that participants may make. As such, I consider my mimetic movement analysis to be as close as one might get to what is actually occurring in the body of the individual participant, without disrupting their worship experience and invading their space.

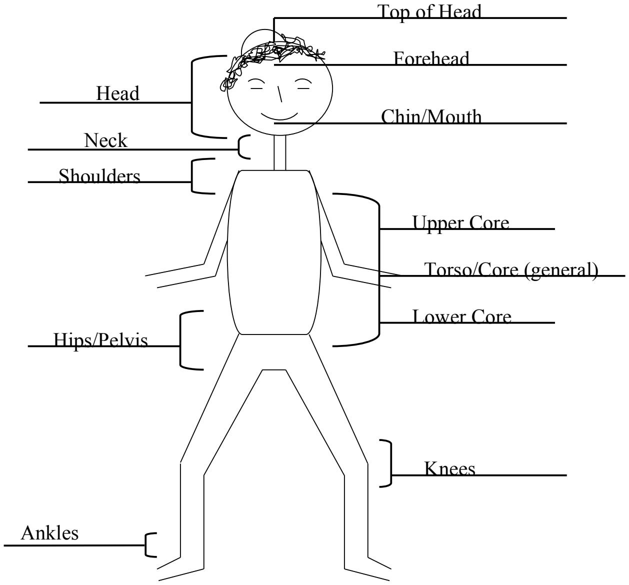
Top of Head
Forehead
Head
Chin/Mouth
Neck
Shoulders
Upper Core
Torso/Core (general)
Lower Core
Hips/Pelvis
Knees
Ankles

Figure 2.2. Locus points observed in participants in Jewish communities.

These may appear similar to Chakra centers, but they are based on descriptive observation rather than prescriptive assignment. Thus, each of the loci shown above was observed as a primary energy center in one or more participants.[37]

The *ictus* is where a participant's movement reaches its outermost point before reversing or ceasing, and may be more effortful — an up ictus — or less effortful — a down ictus. The ictus and locus determine the arc of the movement: the movement *trajectory*. Considering these points on a generalized, or flat, continuum (see figure 2.3), one end of the continuum often appears weaker than the other: a weaker ictus appears more variable, and a weaker locus propels less focused movement from a wider locus zone.

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[37] It is worth noting that some of these loci are more autonomous or isolatable than others. In this manner, movement stemming from one's forehead is qualitatively different from movement stemming from one's hips or pelvis.

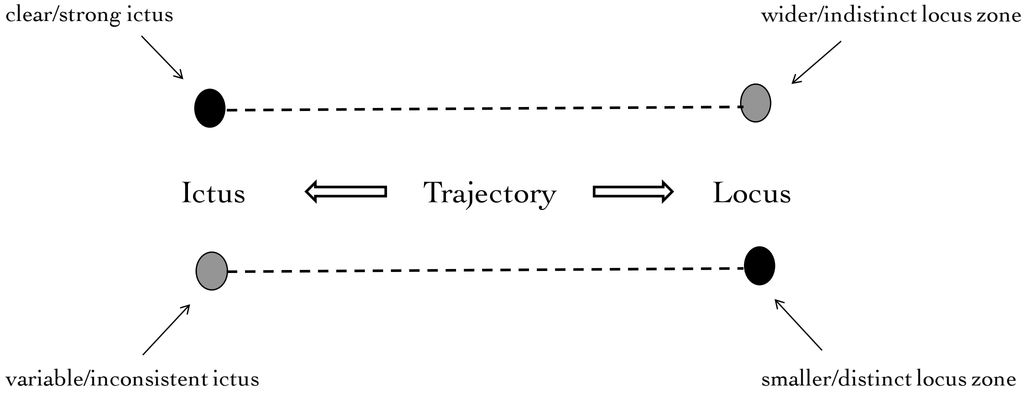
clear/strong ictus
wider/indistinct locus zone
Ictus
Trajectory
Locus
variable/inconsistent ictus
smaller/distinct locus zone

Figure 2.3. Movement Continuum.
Two versions of trajectories are shown, with darker ovals indicating the stronger aspect of the continuum.

In the Jewish communities, many of the movements seem to fall into general categories such as “sway”, “bow”, “rock”, or “bend”. However, while two worshippers may both be ostensibly ‘swaying’, one may be bent over slightly, swaying forward and back, and using their feet to propel them, while the other may sway side to side, propelled from their body’s core, with their head held high. Although at first glance these movements are of the same type, further observation shows that they may differ not only by degree, but by kind as well. The first “sway” is perhaps more of a “rock”, but since the worshipper’s head is bent, it may be better described as a bow. As I hope to have made clear, the language for such broad categories needs to be more specific in order to better distinguish between similar, yet different, movements. By identifying the ictus, locus, and resultant trajectory, I am afforded such distinctions.

I identified five common movement profiles seen in the Reform and Conservative Jewish communities where I conducted research. These are diagrammed in Figure 2.4 below. The starbursts represent ictuses and the lines movement trajectories, stemming from loci. The bent shaping of the arms is to denote how worshippers typically hold a prayer books during such movements. Please note that these are only a few of the many possible movement profiles.

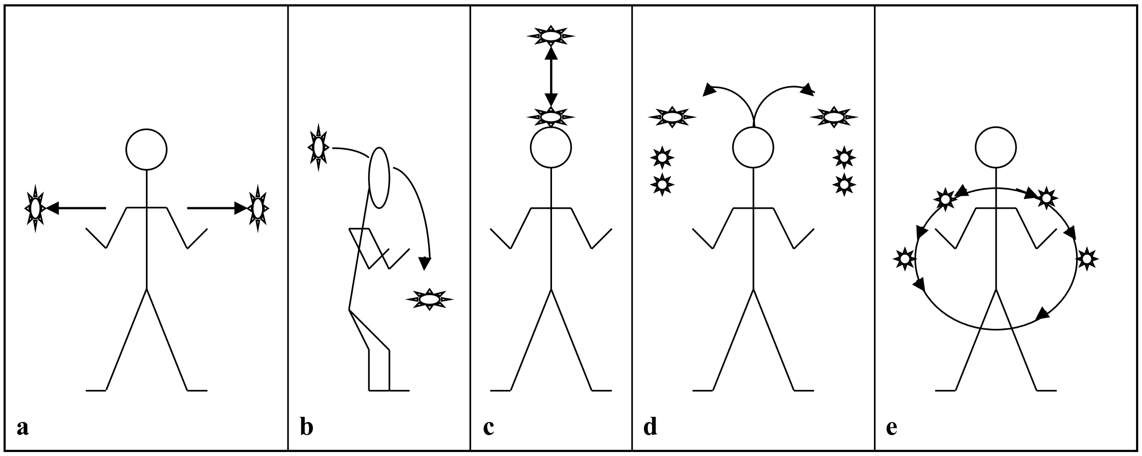

Figure 2.4. Examples of ictuses and trajectories.
Ictuses are shown as stars; lines and arrows denote movement between stars. All arrows show an outward direction of the locus–ictus trajectory, but should be assumed to incorporate the opposing direction for the "resetting" of the movement (ictus–locus). The larger starbursts shown in 2.4d indicate stronger, more consistent ictuses, while the smaller ones indicate weaker, less frequently articulated ictuses.

In contrast to the expansive use of ritually-inflected movement throughout Jewish worship, Greek Orthodox worship sets ritual choreography at the forefront, each movement holding a unique and purposeful connection to the liturgy. These choreographed movements include making the sign of the cross, great and small prostrations (types of bows and bends), the aerobic censing of the church with an ornate censer, and venerating (hugging, kissing) the icons, in addition to standing, sitting, and kneeling.[38] Each of these movements has specific ictus points that, while variable from participant to participant, are physical points in space that can be identified as the goal, and often the reversal point, of a given movement. Thus, while movement profiles are not needed to identify types of movements, the process of creating a movement profile — of breaking a movement down into its component parts (ictus, locus, and trajectory) — does prove useful in understanding the frequency, sonic alignment, and differences in how the movements are made, participant to participant. Further, all the senses figure prominently in Greek Orthodox worship and liturgy. Thus, not only is the ritual choreography important to consider, but it is also imperative to attend to the focal points of the different senses as they are directed throughout the service. Thus, I maintain my movement profile analytical system in this worship space, but adapt it to the ritual choreography through parsing of sensory focus.

The five senses — sight, hearing, smell, touch, and taste — are employed to differing degrees of intensity throughout worship.[39] For instance, taste is experienced only at the pinnacle of the worship service: during communion.[40] In contrast, sonic experience is continuous throughout the service. Mostly this is in the form of constant chanting of Byzantine chant performed by one or more chanters. These specially trained, non-clergy service leaders are mic-ed and often take turns chanting, or chant together in unison or harmony, for the duration of the two- to three-hour service. The sole breaks from this musical grounding are during readings of biblical texts, the sermon, and announcements. Yet even these moments involve sound, requiring of individuals in the worship space a continual and elevated level of sonic attentiveness. In light of this almost continuous musical stimulus, much of my analytical intervention is concerned with not only how the physical and sonic are interacting metrically, but how attention towards one or more senses guides these metrical interactions.

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[38] These movement types will be described at length in chapter 4.

[39] The issue of the counting of the senses — and whether there are more than five — has been dealt with extensively in scholarship concerning philosophies of the senses as well as theory and scientific research on perception. (I will give a more in-depth overview of this debate in chapter 4). But despite the arguably complete debunking of the five Aristotelian senses within current scholarship, my Greek Orthodox informants specifically discussed the senses within this more traditional five-numbered context. Although I do consider kinesthetic and proprioceptive senses to an extent within my analyses, they are not part of the language of the Church. Therefore, in my attempt to respect the expertise and cultural knowledge that my participants have shared with me, I will keep my general remarks about the service structure, and my method, restricted to the five senses listed here.

[40] While one who has been preparing to receive communion for twenty-four hours may find taste a significant factor throughout worship, given the dryness of the mouth and information from one’s stomach anticipating taste, the actual act of tasting something is reserved for the Eucharist.

Since all the senses are quite important in Greek Orthodox worship, much of my research focuses on the differences and similarities of the ways in which touch is implicated for an individual and how it is seen by others. For example, when the priest is censing the congregation — literally walking around the space and articulating the censer vigorously to allow the incense within to fill the church — the sound of the clanging censer parts is distinct from the simultaneous chant.[41] Moreover, while this task is being physically performed by the priest, his efforts are intended to be watched by the congregants, who in turn participate in the ritual by witnessing his progress and by making the sign of the cross when the censer is directed towards them. As such, it is not only the movement the priest is completing that is of interest, but also the ways in which the observations, and perhaps physical empathy, occur in the congregants.

I am afforded better distinctions in my analysis by breaking down the movement into its components in both the Greek Orthodox and Jewish communities. Further discussion of specific movement types will continue in the analytical examples below and the case study chapters. To identify a movement profile (like those in figure 2.4), I use mimicry. In trying to emulate another's movements, I must shift my own locus to theirs, which is what makes identifying this component so crucial in the movement analysis process. Using their energy center to move, I can inhabit their physical experience, if only in a "quasi-first person" manner (Cox 2012).[42]

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[41] I discuss the censing process in depth below and in chapter four.

Once I have a sense of how the worshipper I'm observing moves, I can begin to understand the metricity of their movement. Advancing my focus from *how* my participant is moving to *when* they are moving, I check if my participant is singing, speaking, or staying silent within the liturgy, and I do as they are (as permitted within the construct of the worship service). Then I begin to move with them, in time, and try to identify the metrical patterns driving their movements, in light of the sonic environment. To record this emic approach, I devised a method for documenting such frequencies: I mark areas of physical emphasis (ictuses) on photocopies of the prayers. This is done with a pencil or with stickers (the latter to accommodate the prohibition of writing on Shabbat). These "field-notes" are then combined with transcriptions of the melody, gained either from clergy performances during interviews or via audio-recordings of services at sites where permissible.

Transcription and Analysis

The midpoint of the methodological process, and arguably the most influential point, is the process of transcribing both the sonic and physical parameters. This occurred following the completion of my ethnographic work and before I began analyzing the results. In her 2002 doctoral dissertation, Jocelyn Neal notes that transcription lacks theoretical "neutrality", and casts transcription itself as a form of analysis. Neal's assertion is particularly apt for the transcription of field observations with multiple layers of data, as is the case here. The challenge of choosing what aspects of music to include, and how to represent them on paper, is only exacerbated by the addition of large physical movements. These issues are seen throughout current scholarship; literature dealing with analysis of oral traditions continually struggles to be expressive and decipherable with both language and methodology, and movement analysis deals with similar difficulties. Recent interest in choreo-musical analysis amongst music theorists has resulted in the development of transcriptions that show foot placement, symbols for specific dance moves, and line figurations to denote the ways in which the music and dance — the sonic and physical — are coupled.[43] Two examples of this type of work are shown below:

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[42] Arnie Cox suggests that through conscious and intentional physical mimicry of another, one adopts a "quasi-first person" viewpoint that approximates, as closely as possible, the experience of being that person through physical empathy. For a fuller discussion of this concept I direct the reader to Cox's 2012 article.

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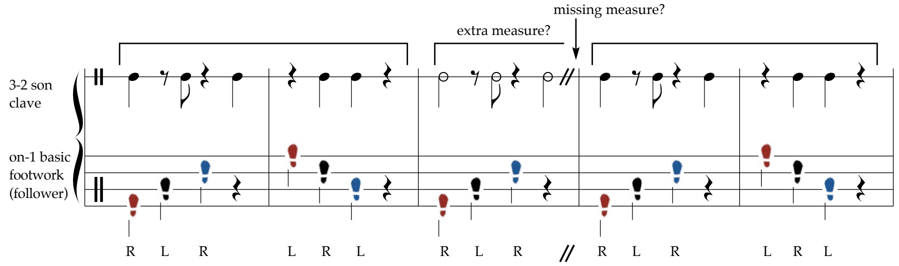
[43] I encourage the reader to consult Kara Yoo Leaman's recent dissertation (2017) for an excellent review of this literature and engagement with the issues therein.

Example 4. a) Navigating a Broken Clave.


missing measure?
extra measure?
3-2 son clave
on-1 basic footwork (follower)
R L R L R L R L R // R L R L R L

b) Navigating a Flipped Clave.

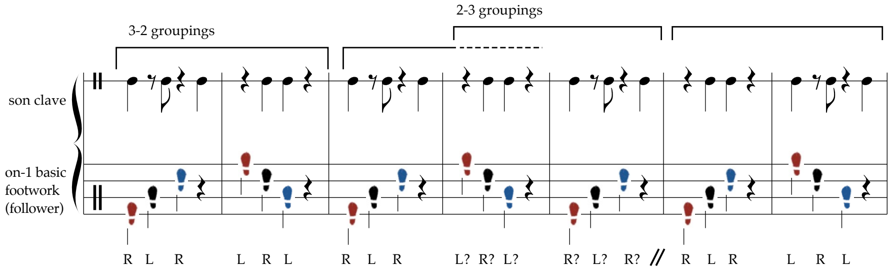

2-3 groupings
3-2 groupings
son clave
on-1 basic footwork (follower)
R L R L R L R L R L? R? L? R? L? R? // R L R L R L

Figure 2.5. An example of choreo-musical analysis, drawn from conference presentation handout, Rebecca Simpson-Litke, Society for Music Theory Annual Meeting, 2014. Reprinted with author's permission.

Figure 23: Transcription of arm and leg movements from *Tschaikovsky Pas de Deux,* Variation 2, mm. 1-6

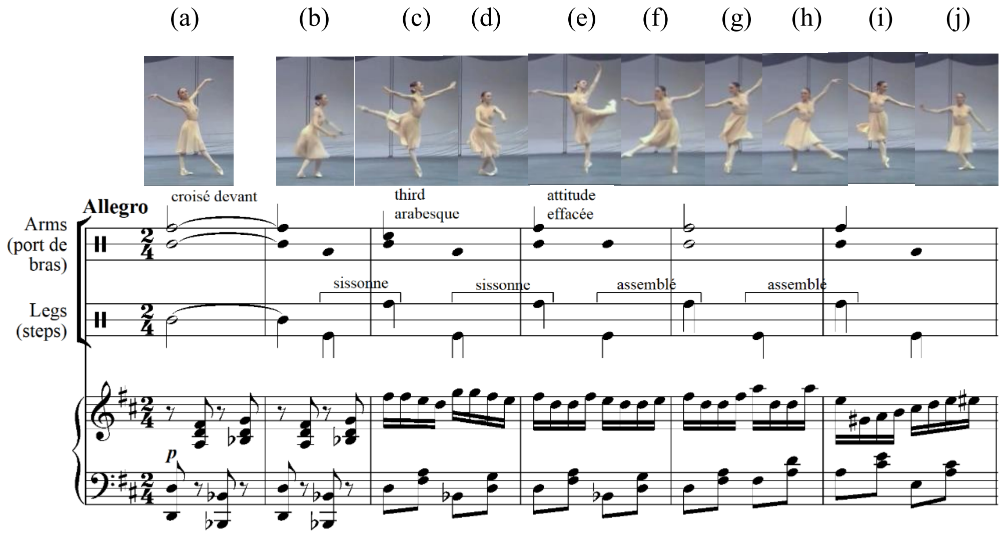

(a)
(b)
(c)
(d)
(e)
(f)
(g)
(h)
(i)
(j)
Allegro
croisé devant
third arabesque
attitude effacée
Arms (port de bras)
Legs (steps)
sissonne
sissonne
assemblé
assemblé
p

Figure 2.6. An example of choreo-musical analysis, Kara Yoo Leaman's figure 23 (2017 dissertation).

Each of these examples shows pictures of positions alongside traditional music notation. In the case of Simpson-Litke's salsa analysis (figure 2.5), she uses footprints to show the forward and backward steps of the dancer as aligned with the clave. Although this is a rather sparse transcription that omits much of the musical texture and does not indicate what the rest of the body looks like while moving, one of its advantages is that it is easy to read and even "perform" away from sound or video examples. However, the movements that salsa dance requires in the hips, arms, and head are lost in this method of analysis, and the clave is unlikely to be the only sound with which dancers might engage. Leaman's analysis (figure 2.6) does show the full picture of the body position, as well as the ballet terminology, inviting varying levels of expertise for both music analysts and ballet practitioners. However, the static dancer positions shown above her score lack trajectories; the arc of the movement's completion is missing, thus in a way "halting" time within the score. Still, the "flip-book-esque" pictures complement the rhythmic notation of the arms and legs, allowing for a composite understanding of duration and motion through and between dancer positions.

These choreo-musical analyses represent a departure from prescriptive choreography notation systems which indicate the steps a dancer should make. Such notation styles attend to musical structure to varying degrees, and most importantly are intended to come *prior* to the dance event (as a plan for the dance), rather than *after* it has occurred (in which case it is descriptive, and a kind of a record of the event). Examples of choreographic notation are wide-ranging across historically and stylistically specific forms of dance. Some such examples are shown in figure 2.7.

Figure 2.7. Examples of dance notation.
Reproduced from: Guest, Ann Hutchinson. 1998. *Choreo-Graphics: A Comparison of Dance Notation Systems from the Fifteenth Century to the Present*. Amsterdam: Gordon and Breach.
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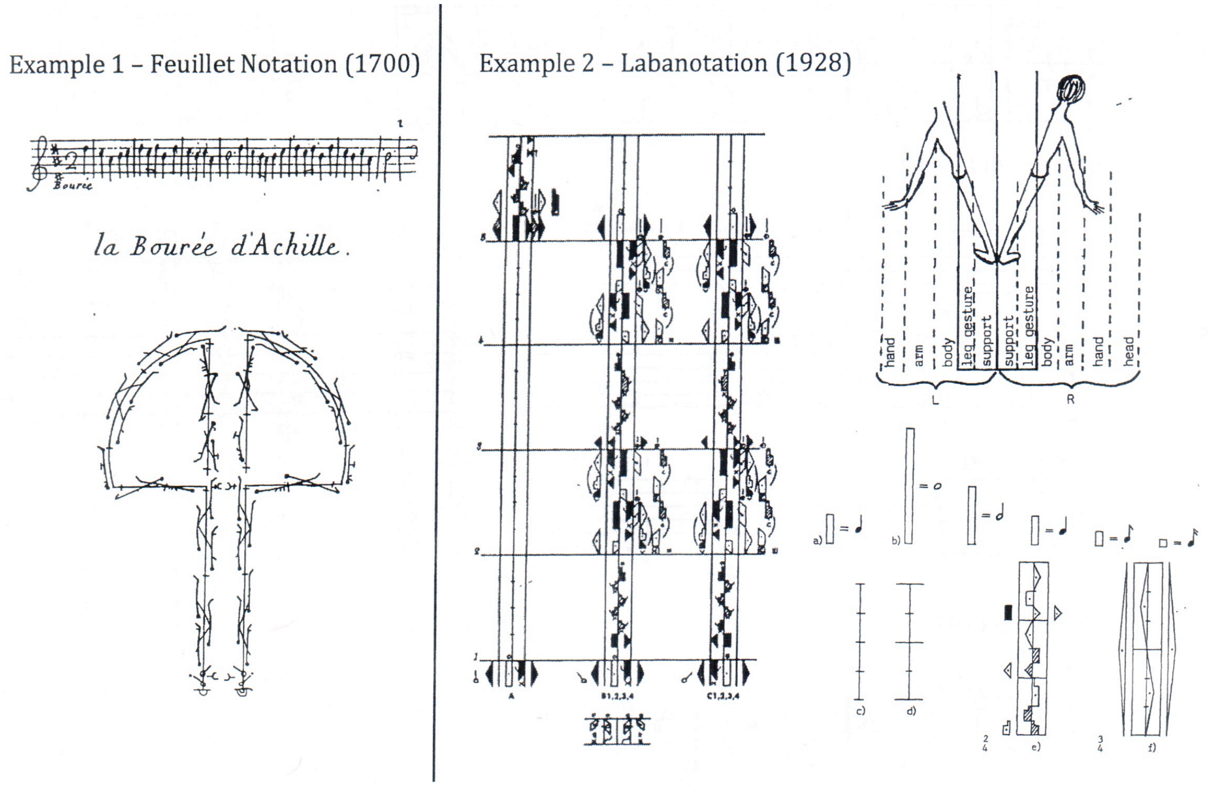


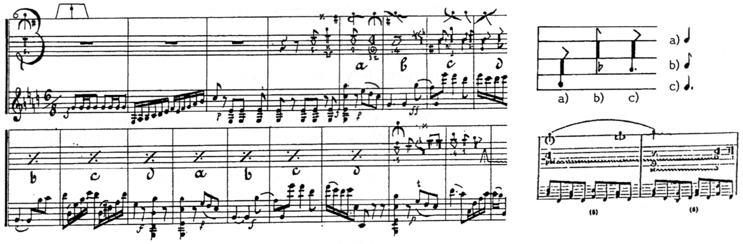
Example 1 – Feuillet Notation (1700)

Example 2 – Labanotation (1928)

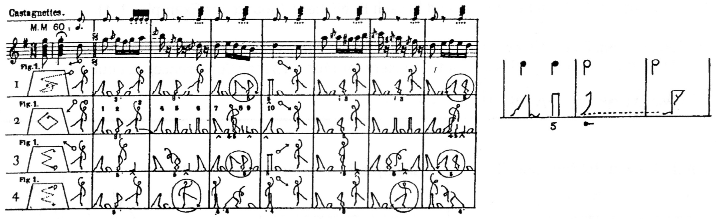
Bourée
la Bourée d'Achille.
A
B1,2,3,4
C1,2,3,4
hand
arm
body
leg gesture
support
support
leg gesture
body
arm
hand
head
L
R
a)
b)
c)
d)
e)
f)
2
4
3
4

Example 3 – Stick Figure Systems

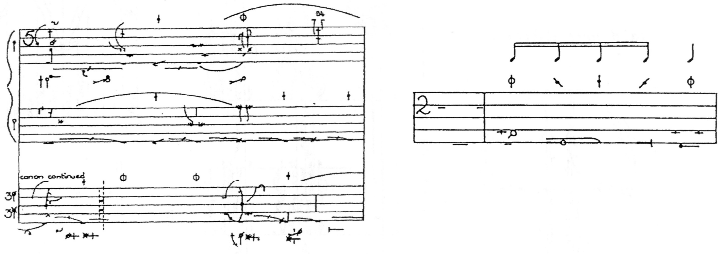
a) Saint-Léon (1852)



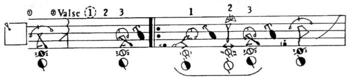
b) Zorn (1887)


Castagnettes.
M.M 60
Fig. 1.
1
2
3
4
5

c) Benesh (1956)

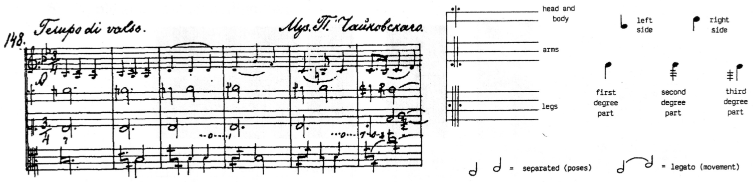

canon continued

d) Sutton (1973)

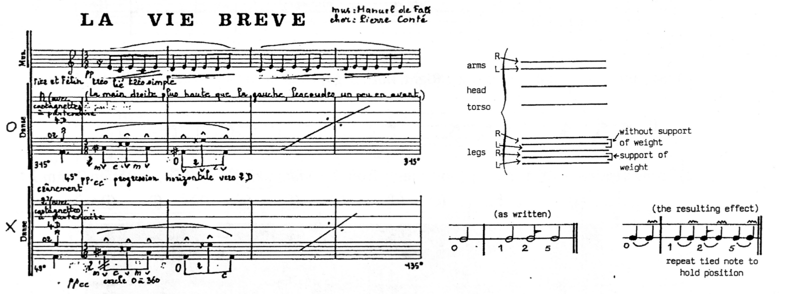


Example 4 – Music Note Systems

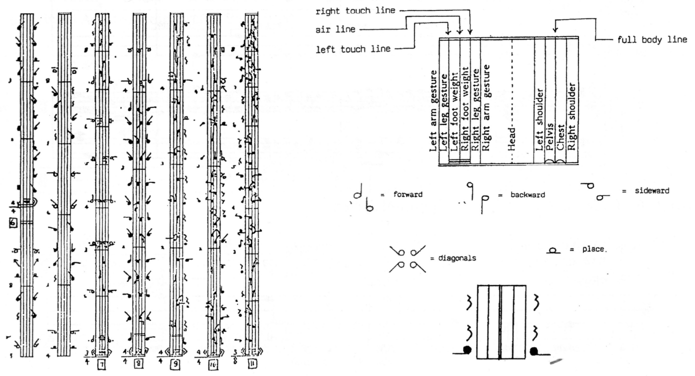
a) Stepanov (1892)


Tempo di valse.
Муз. П. Чайковскаго.
148.
head and body
arms
legs
left side
right side
first degree part
second degree part
third degree part
= separated (poses)
= legato (movement)

b) Conté (1931)

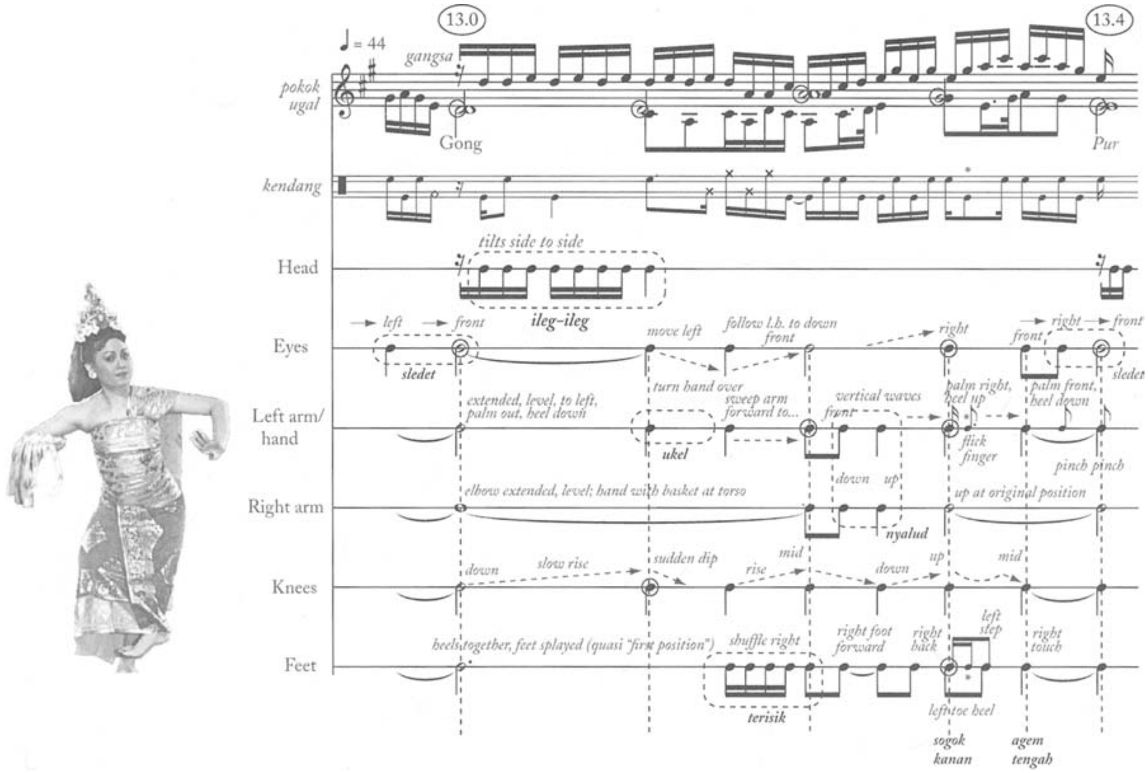

LA VIE BREVE
mus: Manuel de Falla
chor: Pierre Conté
arms
head
torso
legs
R
L
without support of weight
support of weight
(as written)
(the resulting effect)
repeat tied note to hold position
0
1
2
5

c) Nikolais (1939)


right touch line
air line
left touch line
full body line
Left arm gesture
Left leg gesture
Left foot weight
Right foot weight
Right leg gesture
Right arm gesture
Head
Left shoulder
Pelvis
Chest
Right shoulder
= forward
= backward
= sideward
= diagonals
= place.

As mentioned above, these notation systems are intended for re-creation. Although the range of perspectives — choreography/audience's, dancer's, viewing from in front of, or above the dancer — and the different manners of interacting with an idea of musical score and "grid" allow for a variety of representations, these choreographic notation systems are in essence prescriptive and intended for performance. Similarly, some choreo-musical analysis, while descriptive, can be reproduced from the score (e.g., Simpson-Litke's salsa work). My own analyses (discussed below) are not intended for re-creation by the reader. Rather, they are descriptive and largely mnemonic devices that indicate larger, more frequent movements with static diagrams. Further, it is important to specify the individual whose movements are represented in these transcriptions; this is not the case for both choreomusical analysis and choreographic notation. I am not representing what "someone" *might* do, but rather what a specific person with a name and background and cultural situatedness *does* do. Thus, I aim for a method that is on the one hand flexible, so it is able to adjust to differing participant situations, and on the other hand has some continuity of style and detail across all analyses.

The application of pictures to transcribed musical notation is a good way to navigate descriptive movement transcription. An exemplar of this technique can be seen in John Roeder and Michael Tenzer's 2012 article on Balinese Gamelan and dance. The authors show pictures of the dancers' positions next to specific excerpts of the score (see figure 2.8 below).


13.0
13.4
♩ = 44
gangsa
pokok
ugal
Gong
Pur
kendang
Head
tilts side to side
ileg-ileg
Eyes
left
front
sledet
move left
follow l.h. to down front
right
front
right
front
sledet
Left arm/ hand
extended, level, to left, palm out, heel down
turn hand over
ukel
sweep arm forward to...
vertical waves
front
down
up
palm right, heel up
flick finger
palm front, heel down
pinch pinch
Right arm
elbow extended, level; hand with basket at torso
nyalud
up at original position
Knees
down
slow rise
sudden dip
rise
mid
down
up
mid
Feet
heels together, feet splayed (quasi "first position")
shuffle right
terisik
right foot forward
right back
left step
left toe heel
right touch
sogok kanan
agem tengah

EXAMPLE 6. *Transcription of the dance during 13.0–13.4 (1:16–1:27) of the* pengawak

Figure 2.8. Transcription of music and dance from Balinese Gamelan performance. Reproduced from: Roeder, John, and Michael Tenzer. 2012. "Identity and Genre in Gamelan Gong Kebyar: An Analytical Study of Gabor." *Music Theory Spectrum* 34 (1): 78–122.

While the drawing beside the score gives a sense of the positioning of the dancer (as well as the attire) during the specific musical passage, there is a high level of descriptive text for each body part listed within the score that must be read through carefully in order to understand the trajectory and duration of the movements in sequence. Though obviously not designed for reproduction by a reader, this way of notating movement is precise, and it fits well within the metrical gong cycles of Balinese Gamelan. Even though both ritually-inflected and choreographed ritual movements are concurrent with semi-metered, rather than metered, music, I also place figures beside the musical score. However, where the coupling of the music and dance in presentational movements (i.e. meant to be looked at) is quite important to the success of the dance, such synchronization is less critical for the free movements in worship settings that I consider. Moreover, it is unclear if these ritual movements are really meant to be coordinated with the music. For example, in Jewish worship there are some momentary expectations for simultaneity between the ritual choreography and chant, but these instances are overwhelmingly outweighed by asynchronous movement/music interactions.

As discussed in chapter one, most research in both the music theoretical and the music cognition literature reveals that synchronization, or an attempt to synchronize, is a fundamental and common musical "activity". However, this does not appear to be the case in Jewish and Greek Orthodox worship settings.[44] Thus, I suggest refining the concept of synchronization for these worship settings, following performance studies scholar Heather Warren-Crow, who explains synchrony beside its counterparts: asynchrony and dyssynchrony (see figure 2). She notes, "Unlike asynchrony, which designates lack, dyssynchrony signifies our longings for and/or conversely resistances to synchronization" (2011, 124). As such, synchrony and dyssynchrony both involve attention.

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[44] This is likely the case for other types of worship as well, and as such, the discrepancy proves to be a fruitful area for further research.

Synchrony	Dyssynchrony	Asynchrony
Entrainment/alignment between body and sound, or across multiple bodies	Not synchronized, signifies longing for and/or conversely resistance to synchronization.	Lack of synchronization *or* dyssynchronization

Figure 2.9. Terminology drawn from Heather Warren-Crow (2011).

These distinctions are best understood through illustration. For example, someone who is in synchrony while listening to music would be trying to clap along with a beat and succeeding, while one who is in dyssynchrony would be attempting the same task without success. They long (intend) to entrain — to clap or move in time with the music — and cannot quite make their body move in the right way. Imagine a young child who loves to dance but is still developing gross motor skills. Dyssynchrony can also act conversely, wherein one (intentionally) resists entrainment. In this case, imagine a disgruntled eleven-year-old, determined to irritate others in a group by clapping just off the beat, just out of sync. Finally, in contrast to synchrony/dyssynchrony, one who is in an asynchronous relationship with their sonic environment is simply not paying attention to entraining or not entraining.

In this way, *attention* adheres to embodied technique that is conscious (though embodied technique may also be unconsciously carried out), supporting the “technique as knowledge” argument: that technique is based in human materiality and thus demonstrates a field of relative reliability (Spatz 2015). In light of these distinctions, I argue that ‘movement *to* music’ may be considered a flexible conception (similar to that of meter), embodying varying levels of attention; of synchrony, dyssynchrony, and asynchrony. Thus my transcriptions combining movement "synchrony" with semi-metered chant must also be flexible and take into account varying levels of bodily movement and sonic texture.

As discussed in chapter one, my definition of semi-meteredness is centered around embodiment, wherein degrees of perceived meteredness are dependent upon the listener's ability to engage physically with the music they are hearing. As reviewed in chapter one, numerous studies on tapping synchronization have shown that human entrainment with music necessarily involves the listener predicting the arrival of the next metrical beat or pulse (see Repp 2005 literature review). Findings in synchronization studies showed that subjects created an internal representation of the perceived beat, often focused on the perceived regularity of the stimulus. Then, once this representation — this internal model — has been established, subjects were able to predict when the next beat of the stimulus will occur. In this manner, subjects were able to synchronize to the stimulus. In the development of this prediction model for metered music, there is continual expectation fulfillment strengthening and perpetuating the initial prediction.[45] This grid-like model of metric attending is perhaps not the most suitable prototype for the chant being investigated here. However, it brings out a common set of definitions for rhythm and meter terminology, which seem to be arguably unproblematic for music psychologists, regardless of the extensive differentiation of terms that can be found in the music theoretical literature (as discussed in chapter one, above).[46]

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[45] Other important research in this arena is that of Mari Riess Jones (2000; 2005).

[46] For instance, In the opening of their 2013 study on synchronization and the brain, researchers Grahn and Watson clearly define "rhythm" as "the pattern of time intervals in a stimulus sequence", and "pulse" or "beat" as "a series of regularly recurring, equivalent *psychological* events that arise in response to a music rhythm" (2013, 25, italics in original). Drawing from Cooper and Meyer's (1960) definition of a beat, Grahn and Watson note that it is psychological and based as a response, not a component, of musical

Forefront in Repp's discussion of sensorimotor synchronization (SMS) is the issue of intention. While he notes that SMS is mostly overt, as it involves physical movement and the intention of moving physically, it can also be stopped, if happening accidentally, through attentiveness to movements. As an example, Repp cites audiences' stillness in concert settings. Further, without the intention *to* synchronize with a beat, prediction could never occur, as prediction implies a conscious and intentional *attentiveness* to the inter-onset-interval of the stimulus. (This assertion supports data showing humans entraining with near exactitude with or slightly before a given beat, rather than later.)

Repp's discussion triggers echoes of Warren-Crow's discussion of synchrony and dysynchrony (2011). Here, again, it is important that attention and intention adhere to the physical movements and sonic listening practices of the individual interacting with ritual chant. But Repp's remarks also notably align with my earlier discussion of synchronization and mimicry, drawing on Cox (2011; 2016), and Godøy and Leman (2010). The binary states of conscious vs. unconscious, as well as overt vs. covert and intentional vs. unintentional, can greatly affect synchronization and the ability of the individual to predict a metrical structure, or even to be searching for one. But these binaries leave little space for the "semi" of all of the above. Just as the literature on SMS focuses on the moment one connects to the beat (or doesn't), as opposed to the durational space *between* the beats, thinking about physical entrainment as flipping instantly from one to another of these above binaries disregards the process of moving from unconscious or unintentional movement to consciousness about one's movement, and then

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rhythm. "Meter" is defined here as the temporal organization of beats, where some are more salient than others (2013, 25).

the decision about whether to continue it as intentional and possibly to modify its covertness or overtness.

Enter the continuum of metricity. In strictly metered music, the evenness of beat placement and regularity of beat hierarchy make this prediction fairly simple. In non-metered music, the complete absence of predictable beats negates the need for entrainment (though of course a certain amount of dyssynchronous frustration or enjoyment on the part of the listener may occur). The relationship between prediction and meter also necessitates an interaction with periodicity. In order to predict when a metrical "moment" is going to occur, the listener must be able to group musical events together. This act, in turn, creates a sense of periodicity when an ending and a new beginning are reached (sometimes simultaneously). Thus, the confusion of non- or un-metered music comes from an expectation of meteredness.[47]

Semi-metered music encompasses a wide range of ease for the listener's engagement with musical periodicity. To call music 'semi-metered' implies that clear, immediately discernable metrical periodicity is not present in the musical stimulus. However, it does not imply that the music is devoid of understandable grouping structures. Similar to analysis of un-metered music, the musical parameters which create grouping in semi-metered music may change depending (of course) on the music, the context, and the listener. For instance, much of the semi-metered chant I work with here is grouped by text phrase, implying a valuation of text over musical meter. But grouping in this music is also created through sequencing and pitch height, ornamentation, and musical phrasing parameters. Often there are melodic indicators, such as cadential motion towards the tonic or reciting tone, or the outlining of a relatively stable or unstable harmony. Just because the chant does not have a strict meter does not mean it exists outside of tonal or modal pitch relationships.

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[47] For a robust exploration of un-metered music and perception of meteredness and time, I recommend Kristina Knowles's 2016 dissertation.

Following Murphy's flexible integration-based method of metrical analysis (laid out in chapter one), I will note that prosodic, text-stress based methods of analysis are implicit in my transcriptions. The scan of the Hebrew or Greek text is matched with chant that honors the prosody of the language and specific phrases. Unlike composed melodies for the synagogue or church wherein the accent stress patterns of the language are sometimes at odds with the musical stress,[48] ritual chant in both the Greek Orthodox and Jewish communities is understood in absolute terms; to chant a given text is the "appropriate" way to utter such a text, while reading or singing a composed version of the text would be seen as an alternative. Thus my transcriptions of the chant melodies, and corresponding rhythmic values, already imply a prosodic analysis.[49]

Drawing on Christopher Hasty's 1997 text *Meter as Rhythm* provides a productive analytical methodology, one well suited to semi-metered liturgical chant. I build projective analyses into each of my analytical examples, in order to show the physicality of meter as created in this semi-metered text. As Hasty argues, projective analysis is about durations and determinacy, the latter surrounding the surety of the listener as to their ability to compare one duration to another. In order for the listener to find the difference between two durations they must rely on subdivision. A listener will hear a duration and, according to Hasty, develop a prediction that the following duration will be the same length. If the projection is denied, the listener must retroactively adjust their projective understanding of the durations. As longer durations are less determinate, Hasty's theory begins at the event (note) level and grows through retroactive listening and analysis.[50]

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[48] There are numerous examples of this phenomenon and it is often considered by clergy to be a way to differentiate between "good" and "mediocre" compositions for worship.

[49] A comprehensive look at the stress patterns for the languages used in Jewish and Greek Orthodox prayer is beyond the scope of this project. However, ancient Greek (as is used in the Greek Orthodox liturgy) has tonal (or pitch) accents, rather than stress accents. Hebrew does have stress accents, typically on the last syllable or penultimate syllable of a word. However, many prayers in the Jewish liturgy are a mix of Hebrew and Aramaic, which may alter stress patterns.

In adapting Hasty's theory to my own work, I substitute the note-level unit of projective genesis for strong body movement emphases, or ictuses, as I discussed them above. Thus, my analysis is *not* of the meter of the chant alone, but of the metrical interaction of the body with the chant melody. In other words, I analyze the durations of physical movements and align them with the semi-meteredness of the vocal chant. One of the most beneficial aspects of this theory and its application to movement is that it sidesteps the binary of moving/not moving — or, as mentioned above, those of overt/covert and conscious/unconscious — instead inviting the process of movement to be implicated into the musical worship experience. Further, it gives analytical power to body cues that create structure within the musical text. These could be as large as the ritual choreography of turning, bowing, kneeling, crossing oneself, or other movements, or as small as a clergy member moving focus from the text to the congregants' faces, inviting them to respond. Regardless of size, the body movements in the worship settings studied here are as important as the sonic, and must be represented analytically as such.

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[50] It is important to note that Hasty's theory is focused on repertoire drawn from the Western Art Music Canon and thus does not necessarily map directly onto the semi-metered chant I analyze here.

II. Analytical Vignettes: The Methods in Action

To better understand the final results of this methodology, I will present two brief analytical examples from a Jewish and a Greek Orthodox setting, respectively. The purpose of these analyses is to demonstrate the kind of analytical interventions that may be understood through this methodological process. As such, I'll leave the more extensive analyses for chapters three and four.

Jewish Setting

I'll begin with an example from Shira, a cantorial soloist and music director in a Reform Ashkenazi Jewish Congregation.[51] This example is drawn from my observations of her chanting the *Chatzi Kaddish*, a prayer typically chanted by the leader during daily, Shabbat, and festival worship. Example 2.1, below, shows the result of this transcription process.

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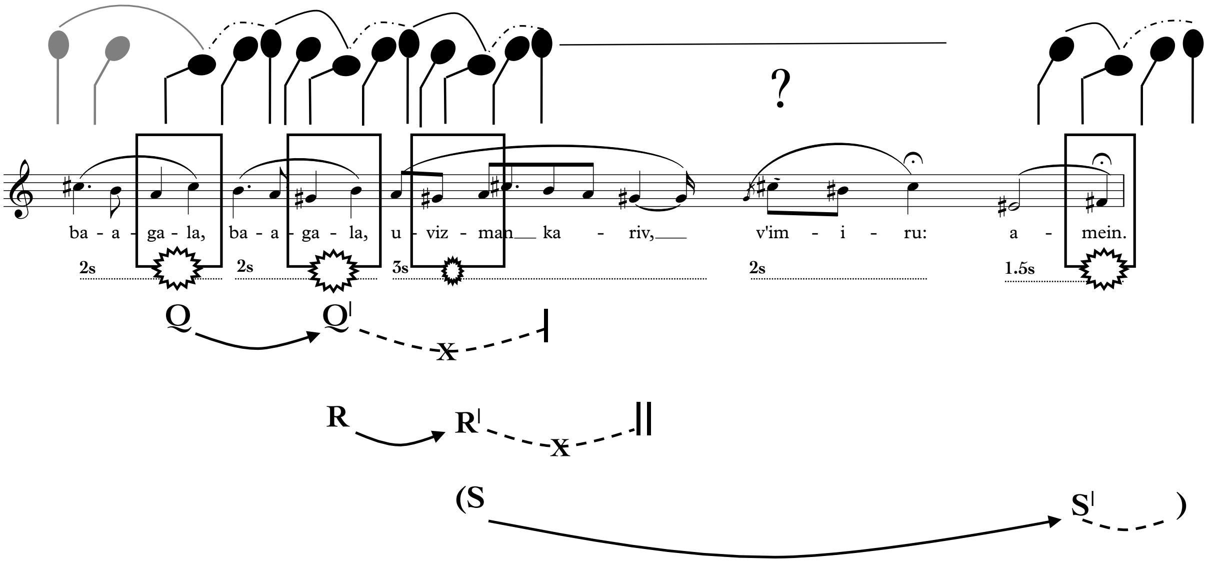
[51] As a reminder, all names have been changed.



Example 2.1. Jewish worship analysis excerpt. Shows Shira’s movement (profile B) during excerpt of *Chatzi Kaddish* (recording from interview).

Movement meter is shown in and above the staff. At the top of the diagram there is a stick-figure series, showing Shira’s movement profile in action (B, see figure 2.4), similar to a flip-book. The arcs and line above the stick figures show a trajectory of the physical movement, while within the staff, boxes and starbursts indicate moments where Shira reaches her outer ictus. Here, the size of the starbursts and arcs correspond to the relative size of the movement, illustrating, for instance, that the bow on “uvizman” is smaller than the preceding motions. This movement meter is reiterated in the projective analysis below the staff. This analysis shows a projected two-second duration, Q-Q$^{|}$, that is denied, resulting in a one-second duration, R-R$^{|}$. This pattern is also discontinued, and indicating a possible a third duration of S-S$^{|}$.

Despite its brevity, a lot of information can be gleaned from this example. For instance, Shira thwarts a regular two-second movement meter by not bending at the end of "kariv", nor at the beginning of "v'imru". The regularity of the sequenced vocal motive of "baagala" is broken as the phrase closes, and her movement reflects this shift. Although this prosodic shift in itself is not an earth-shattering observation — it simply mirrors the vocal shift from a sequential scheme to a cadential one — the required bodily adjustment *is* surprising. Movement emphases (ictuses) occur at the ends of the "baagala" phrases, but at the beginning of the third phrase, requiring a quick and distinct modification of bodily meter. In both mimicking Shira during services, as well as in attempting to physically reproduce these movements away from the Synagogue, I constantly found this shift difficult. Yet, Shira's "performance" of the movements appears natural and comfortable during worship. How can one understand this intersection of vocal and bodily meter?

By comparing this diagram to several other moments for this participant, and for other participants in the same community, the complexity of the vocal and movement metrical interactions occurring in real-time is brought to the fore.

Greek Orthodox Setting

From the Greek Orthodox communities, I'll offer an example drawn from the censing of the altar and church.[52] Two main types of censers were used at my sites:

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[52] A more in depth discussion of the censing process, several more censing examples, and diagrams of how the censing is situated within the space of church space will continue in chapter four.

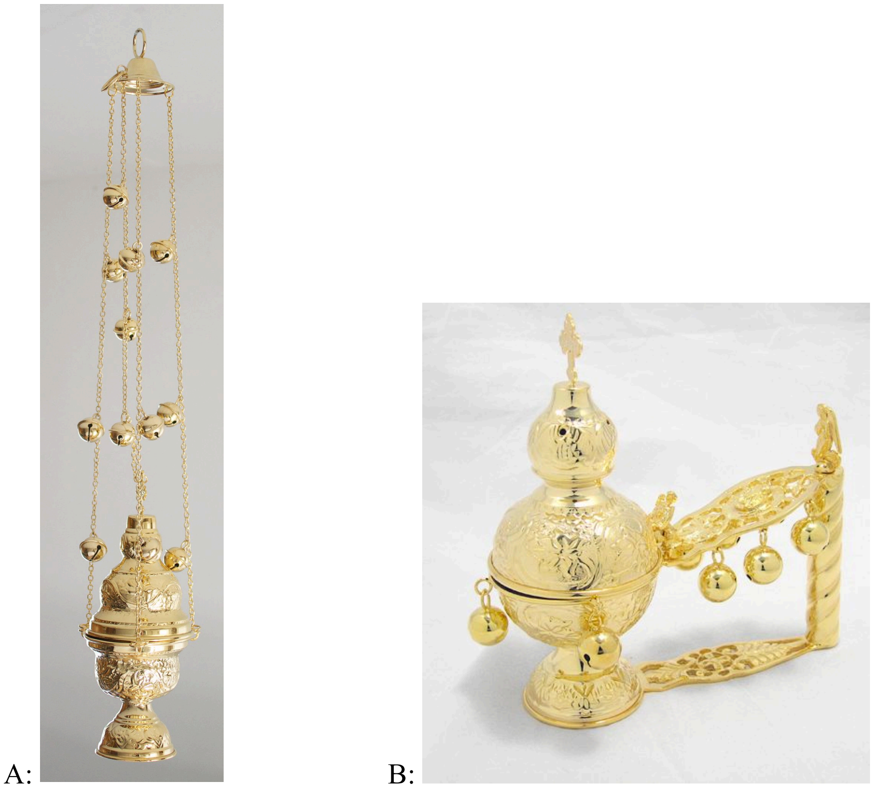

Figure 2.10. Styles of censer.[53]

Figure 2.10a shows a censer that hangs from three chains, while censer 2.10b shows a hand-held censer. A priest at one of my parish sites, participant Father Nikolaos, demonstrated how to work a chain censer (2.10a) using a five-and-a-half-part movement: 1) movement initiation by the shoulder, 2) follow through with the elbow, 3) an upwards pull on the censer chain creating a contraction of the metal top and bottom, 4) a sharp flick down of the wrist that slams the two parts of the censer together, making a sharp "clang" and pushing out the incense inside, 5) the opposition of this movement, the rebound of the limb, and finally, 5 ½) the rising plume of smoke that blooms into the air, visually reaching congregants sometimes prior to the scent. This movement is highly rhythmicized, meaning that its pattern recurs at regular time intervals. Since it is meant to be watched by congregants, the five-and-a-half parts of the movement are still articulated, despite its fluid appearance as one motion when at a normal speed. While I do not identify a locus for Fr. Nikolaos's movement, the clear ictus is on step four, when the wrist flicks downward with strength and purpose, creating the clang of the censer. This ictus becomes a focal point for each censer strike, as the eyes and bodily orientation of the congregants and priest continually turn towards the object or location being censed throughout the entire censing circulation.

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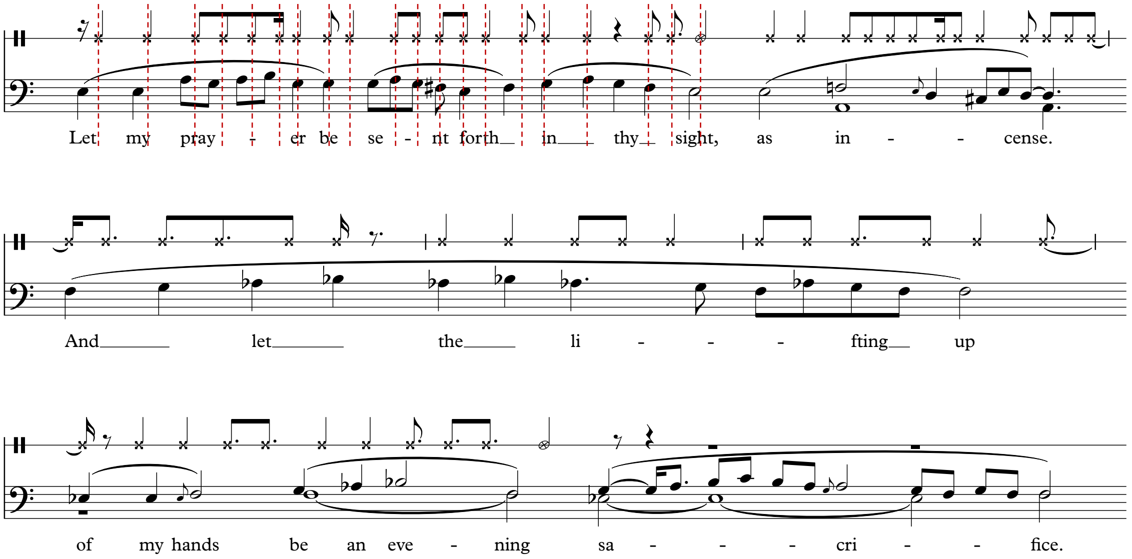
[53] These pictures are drawn from the Eastern Christian Supply Website (https://www.easternchristiansupply.biz/-#home, accessed April 29, 2017).

In the diagram below, I notate the rhythm of the censer meter at part four of the movement, where the simultaneous physical ictus and sonic clang occur. The chant above has a fairly regular half-note periodicity, and would likely be considered strictly metered without the addition of the censer sounds. The use of red dotted lines drawn between the two staves (in the first system only) provides information about simultaneities, and aids in reading the alignment. Thus, it becomes clearer where the censer strikes occur on strong or weak beats as implied by the chant melody, and where they fall between musical attacks. Some censer strikes seem synchronized with the voice, falling along the rhythmic durations of the chant melody, while other censer strikes are grouped more closely together, causing the feeling of entrainment to falter. Unlike example 2.1, above, this notation only shows the sonic, and yet the issues of physical entrainment already become apparent.


Let my pray - er be se - nt forth in thy sight, as in - - cense.
And let the li - - - fting up
of my hands be an eve - ning sa - - - cri - - fice.

Example 2.2. Greek Orthodox worship analysis excerpt. Shows censer strikes (ictuses) in presanctified liturgy during Lent, April 2016. Accidentals do not carry through.

As my mimetic analyses was mostly similar between the Jewish and Greek Orthodox worship communities, the manner of construction of movement profiles in the Church setting does not require further explanation here. However, there are some shortcomings to this methodology, and some distinct differences in my situatedness as a researcher in these two communities. Such parameters of research will be discussed in the following section.

III. The Big Picture: Musings on Methodological Benefits and Shortcomings

Of course, all methods have their shortcomings. First, as one might imagine, it is a substantial cognitive load to be simultaneously mimicking another's movements — *being in* the embodied experience — and recording those movements — observing *from outside*. This method requires me to oscillate between ethnographer as participant and ethnographer as observer. The main solution to this shortcoming is simply practice; the more adept I become as a researcher moving in and out of these ethnographic spaces, the better my data and subsequent analyses.

Second, because I am learning to mimic my participants' movements over multiple observation sessions, I am not always recording "what actually happened on x day" but often only their generalizable patterns of movement and body meter.[54] This is especially true of the Jewish settings, where the prohibition of video-recording required that my observations be stretched out across several individual services. Because of this, prayers that appear in the same way across different services are the focal point of my observations in both case study communities. As such, while I certainly look at movements happening within a particular service, and reference day-to-day differences noted in my observations, my final data also often speaks of more general movement patterns. Through this process I can create an aggregate for each participant, generalizing their movement tendencies, since I am unable to scientifically examine all of their movements on each observation. As my interviews illustrate, participants tend to alter their movements based on several factors including clothing, weather, body condition, other people around them, mood, and general knowledge. Therefore, it would be impossible to develop a rubric that would accommodate all possible scenarios for every participant.

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[54] Despite framing this as a shortcoming, there are arguments for how this could simultaneously be seen as an advantage, given the larger generalized patterns and data gained.

Further, while I have produced analyses of two participants moving simultaneously, they are always somewhat anachronistic. In combining data for the same prayer from multiple participants, I'm able to gauge some ways in which their synchronization (or lack thereof) is implicated within the chant melody and within one another's movements. But I am typically not literally tracking two participants at the same moment in time.[55]

Even when I do have video-recordings on which to base my analyses, as is the case in the Greek Orthodox churches, I am unable to get close-ups, or even to have visual access to some of the church spaces. For instance, the altar space is off-limits to any non-clergy members, and the Royal Gates and Deacon's Doors (set along the iconostasis that divides the altar from the congregational space) are often closed, restricting sight-lines to inside the altar.[56] Yet my clergy participants, as one might expect, spoke at length about their physical experiences occurring in the altar space. Neither mimicry nor video-recordings were able to provide record of the full worship experience.

Finally, researcher positionality, traditionally a formative component in ethnography more so than music analysis (though the latter also greatly benefits from exploration of individual viewpoint), affected my work in both positive and negative lights. I developed my mimicry method of movement analysis first in the Jewish communities. As a Jew myself and one extremely familiar with the liturgy, music, and movements I was studying, my status as an insider in the community allowed me to participate fully, continually opening for me new ways of being in a well-known service space. Completing ethnography in this manner required me to approach a worship style and structure that had previously felt rote in a new way, and asked for fresh eyes as I learned others' experiences.

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[55] One notable exception to this caveat is discussed in chapter three, wherein I was able to observe Vera (a congregant) and Shira (a cantorial soloist) moving simultaneously, given fortuitous sight lines on that particular observation. But in general, observing two participants at once was difficult and often logistically impossible at this stage. An interesting direction for future work in this area would be to track to participants at the same time through the use of motion capture technology, similar to some of the gesture and performance studies cited in chapter one. However, this technique brings up a whole host of other issues of environmental validity as noted above.

[56] Further discussion of the space of the church (including a diagram showing all of these aforementioned locations) can be found in chapter four.

Along these lines, my "outsider" status in the Greek Orthodox community created a roadblock as a mimetic researcher. Not being a member of the Orthodox faith, I was unable to participate fully in the service, in the ways that the congregants and clergy I was observing were able to participate. Aside from being unable to take communion, I decided not to make the sign of the cross while mimicking my participants. Thus, while I could mostly move in the same manners — sitting, standing, kneeling, and bending in prostrations with the worshippers — I did not go into a great prostration (though I did mimic the small prostration), and I did not cross myself. In acknowledging the sign of the cross as an integral movement within the service, and an especially important one for most congregants, I found a middle ground: I chose to mimic my participants doing this choreographed "move" by moving my hand in front of my body in a three-part cross. I never completed the full movement, but I also was able to mimic the speed and physical location of the crossing motion.

Moreover, my positionality greatly affected my ease in participant recruitment. While generally I found similar levels of interest in overall congregational support and site permissions for the study, when it came to finding individual informants my insider/outsider status seemed to matter a lot. In the Greek Orthodox communities, even when people seemed interested after speaking one-on-one with me and taking my information, they did not end up deciding to interview. While parishioners were welcoming to me as a non-Christian, they did not seem compelled to try out the study. For my part, I did not push it upon them, finding myself feeling shy and concerned about disrupting their worship and communal church experience. These factors combined to leave me with few participants, despite my wealth of observation evidence.

In contrast, the Jewish communities I worked in welcomed me as an insider, seeming to view me as a "nice young Jewish person doing interesting research". In the spirit of helping the fellow Jew, and of life-long learning (a central tenant of Jewish culture), I was inundated by participants from these sites, eventually calling a stop to my data collection because I had too much data to process. Informants recruited each other for me, encouraging their spouses, friends, and fellow congregants to participate in the study. Both of synagogues I worked in asked for a "report" of my findings at the completion of my study, and throughout my observations at services I felt more and more like a member of the congregation; making it easy to collect data, and at the same time making it difficult for me to draw boundaries between my research and my own religious experience.

For better or worse, the differences in my researcher's positionality in relation to my field environment are embedded, as in all ethnography, into the fabric of my methods and my findings. It is perhaps clear from the brief examples given above that the mimicry method is better suited to the kinds of movements made in Jewish worship. Those bodily experiences defy the pinning down of rigidly choreographed and planned movements in conjunction with semi-metered chant. Further, aside from the personal theological constraints of my religious identity as distinct from my participants', the way movement, and the senses in general, figure in Greek Orthodox worship lends itself less productively to mimetic analysis. Since so many of the movements are choreographed there is not as much of an ideology of being "moved to move" as there is in the Jewish context. Moreover, much of the ritual “work” is conducted by the clergy (priests and deacons), the choir, and chanters, leaving the congregants to fill a more passive participatory role. While not entirely still nor silent, those sitting in the pews have fewer physical liturgical responsibilities than Jewish congregants have in Jewish liturgy. This changes the musical and physical interactions, as well as the level of idiosyncrasy amongst individual worshippers. However, the mimicry method is not entirely ineffectual in the Greek Orthodox setting, especially given the presence of immense embodied knowledge in the participants, but it would perhaps benefit from further development as suits the specificity of the worship setting. In the case of ritual practice, as in so many other realms, one size does not fit all. In my forthcoming discussions of the case studies in chapters three and four, I will do my best to highlight when my positionality significantly affects or intersects with my ethnography and data collection.

All in all, my method takes an embodied approach to movement, music, and meter analysis, and this embodiment is then translated into my transcriptions and analyses. By mimicking participants during worship, I am able to examine the experience of worship within the site of the body, as opposed to examining the body itself (as Crossley suggests [2007]). Thus, not only does this method demonstrate another step towards integrating music analysis with embodied research, but it also incorporates aspects of experience and performance as research (Spatz 2015) that expand and enhance music analytical understanding. Using ethnographic methods imbued with the background of embodied cognition, mimicry as a form of movement analysis invites the gifts of interdisciplinary methodology and inquiry to aid in gaining a deeper understanding of movement and music interactions during worship settings.

With the groundwork laid for these multi-faceted analyses of musical and bodily meter in worship, I shall proceed in the following two chapters (three and four) to delve deeply into my findings from the Jewish communities and Greek Orthodox communities, respectively. I will include preliminary conclusions specific to the community and worship style in each chapter, and then follow with general conclusions and implications for future research in the closing section of the dissertation.

Chapter 3:

Synchronization in the Synagogue, or, Shuckeling vs. Davening

I. Introduction: Welcome to the Synagogue

Three important themes thread through this first of two case studies: issues of flow and "now-ness", focus and attention, and the physical enactment of religious concepts (the latter two of these are, in fact, themes throughout both Jewish and Greek Orthodox worship). I will explore each of these themes as they arise within my participant interviews and observations. Given the wide range of "acceptable" and "expected" movements found in during synagogue worship, many of the theoretical concepts investigated in this chapter were illustrated differently during observations, and even described in different ways amongst my informants. Yet clear connections develop, especially around the broad questions of how worshippers may best use their bodies for prayer, and how they know and feel comfortable as a part of a prayer community.

Before delving into the interviews and observations, however, I will briefly describe the two temples in which I conducted research, and provide some background on the service structure, and on movement and music in the synagogue. I will then address the participants individually, beginning with those in the Conservative community, followed by those in the Reform community. Finally, I will offer some conclusions about the above themes, and how they are implicated within my ethnographic findings.

While several temples were able to give me permission to work within their institutions, the bulk of my participants came from two different communities in a northern suburb of

Chicago. The first was a mid-sized Reform temple of about 400 families, affiliated with the Union for Reform Judaism. For the purposes of confidentiality, I'll call this site, "Temple Rodef Shalom". The congregation's demographic is fairly typical for a suburban shul: it is a mix of families with young children who fill a vibrant religious school program, and elderly congregants who have belonged to the temple for many generations. Worship at Rodef Shalom is characterized by a more traditional liturgy than often found in U.S. Reform temples: practices such as sitting for the recitation of *Shema*, inviting only mourners to stand during the *Mourner's Kaddish*, and an extensive *Shacharit* (morning) service, show the leaning of the temple towards Conservative style liturgy.[57] Despite this slant, other aspects of Rodef Shalom's practice root it strongly in the Reform style: the use of instruments on Shabbat, evening Torah services on Friday night, and the congregants themselves, many of whom neither wear *taillitot* (prayer shawls) on Saturday mornings nor speak Hebrew fluently. Further, the proliferation of the composed melodies for the synagogue (i.e. not traditional chant or *nusach*) mark Rodef Shalom as connected to the Reform youth camp movement, and the modern synagogue song that has developed out of that folk/popular music lineage.[58] Temple Rodef Shalom has a male Rabbi and a female Cantorial Soloist/Music Director, the latter of whom I was able to interview for this study and will discuss at length below. Additionally, I interviewed five congregants: four females and one male, all between the approximate ages of fifty- to eighty-years-old. The Cantorial soloist is in her mid-thirties.

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[57] Given the temples where I was working for my fieldwork, the bulk of the services I observed were during Shabbat, and comprised either the traditional morning service, *Shacharit*, or the evening service, *Maariv*. In addition, there were sometimes Torah services (inserted into the daily service), and sometimes a *Kabbalat Shabbat* service (for welcoming the Sabbath) prior to *Shabbat Maariv*.

[58] There is a wealth of synagogue music that has been composed for and around the National Federation for Temple Youth's summer camps for young Jews (as well as other similar organizations). Early in the life of these Jewish summer camps, a camper named Debbie Friedman began composing new liturgical settings with music that echoed the folk and popular song of the time. She and her contemporaries have inspired continued compositions and as such, "pop/folk Jewish music" is now an expansive repertoire that enriches services, religious school curricula, and Jewish summer camps. For further discussion of the influence of this music on liturgy, I encourage the reader to begin with the following texts: Cohen 2008, Kligman 2001, Schleifer 1995.

The Conservative temple, which I'll call "Temple Kol Torah", is a very small community, with only fifteen to thirty congregants at most services. They are largely lay-led, meaning that members tend to be both knowledgeable and very active. It is an older, "baby-boomers" population, with no religious school and few members under the age of forty. The group represents an "off-shoot" — somewhat like a *havurah* — that moved away from a larger Conservative temple in order to be self-governed.[59] They employ a part-time *Hazzan* (cantor) who leads services with the lay-leaders twice a month. She is in her late thirties, and brings her young children to services with her (where they are typically the only children present). I was able to interview her, as well as eight other congregants, four men and four women, whose approximate ages ranged from fifty- to seventy-years-old. As a congregation, Kol Torah practices a traditional Conservative morning liturgy and does a Torah service every Saturday morning. They have holiday observances, but not regular Friday evening services. As an attendee at services I was often invited to participate, typically through the honor of an *Aliyah* (saying/chanting the blessing for reading the Torah, of which there are usually seven). This allowed and encouraged me to participate fully in the community, getting to know congregants over casual *kiddush* luncheon after the service, and greeting and being greeted by congregants when arriving to “daven” (pray).

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[59] The *Encyclopedia of Judaism* (Karesh and Hurvitz 2005) defines a havurah as a "small group that meets for prayers and religious activities. It is less organized than a synagogue in that prayers are usually run by members of the havurah rather than by a Rabbi or Cantor…. Originating in the 1960s, in an era of antiestablishment sentiments, havurahs sought to provide a larger role to the participant seeking spirituality by emphasizing the participation of its members in the absence of clergy" (85).

While it is imperative to distinguish between the communities of Rodef Shalom and Kol Torah by their Jewish stream affiliations and practices, it is also important to note some terminology differences between Reform and Conservative Judaism. This is especially true for the usage of two movement/prayer specific Yiddish terms: *shuckeling* and *davening*.[60] “Shuckeling” translates as “shaking” or “flickering”, like a candle flame flickers. This imagery depicts the dominant, free, ritually-inflected movement during Jewish prayer: a slight bowing or rocking forward and back, prevalent in Orthodox (traditional) Judaism as well as most Conservative synagogues. While seen less often in Reform synagogues, I did witness several congregants completing such a motion during my observations at Rodef Shalom. However, in the Reform context this same exact shuckeling movement is most often referred to as “davening”, which translates from Yiddish as “praying” or “reciting” in reference to liturgical prayers. Conservative Jews tend to use the term davening to actually mean praying. For instance, one congregant asked me on my first visit to Kol Torah, “what brings you here, besides davening of course?” In contrast, Reform Jews tend to think of davening to mean only the physical movements made during prayer. For example, one informant from Rodef Shalom described her learning to move as follows: “I grew up watching a specific kind of prayer which is called davening, or *leyning* sometimes. And it’s this, conscious yet unconscious movement.” (Shira, Interview, June 2015). The third Yiddish term used here, “leyning”, is much less frequently associated with movement during prayer (by both my informants and in general cultural experience). Leyning typically means the act of reading or chanting from the Torah, which also often incorporates some type of movement, but is not relevant to the prayer liturgy being discussed in this chapter. Given these differences in terminology, I will use the term that the specific participant uses to refer to bodily movements during prayer, thus staying true to the participant experience despite the similarity in the movements these terms describe.

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[60] It is important to note that these Yiddish terms stem from Ashkenazi culture, rather than Sephardic, and thus imply a connection of Ashkenazi Jews in the U.S. to “old world” Eastern European Judaism.

In discussing my findings, I focus on prayers from the *erev* (eve of) Shabbat and Shabbat morning services, which occur weekly on Friday evening and Saturday morning, respectively. It is important that the reader have an understanding of the service outlines and structural differences between the Reform and Conservative temples I investigated. Table 3.1, below, shows a comparison of the typical service outlines for Shabbat morning services at my sites, Kol Torah and Rodef Shalom, respectively. Table 3.2 shows the erev Shabbat service outline, as seen at Rodef Shalom.[61]

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[61] I observed during both evening and morning services at Rodef Shalom. Since Kol Torah's erev Shabbat services are so infrequent, I did not conduct any observations there on Friday evenings, thus only conducting fieldwork at Kol Torah on Saturday mornings.

Temple Kol Torah (Conservative)	Temple Rodef Shalom (Reform)
1. *Psukei D'zimra*: recitation of psalms that act as a "warm up" for the service. (**in full**)	1. *Psukei D'zimra*: recitation of psalms that act as a "warm up" for the service. (**abridged**)
2. *Shacharit*: the core of the morning prayer service, includes two main sets of prayers. (**in full**) a. *Sh'ma* and its Blessings b. The *Amidah*: the central set of prayers in the service, done standing. Traditionally requires a *minyan* (10 Jewish adults) for recitation, a rule to which Kol Torah adheres. (**2x, once silently**, once aloud)	2. *Shacharit*: the core of the morning prayer service, includes two main sets of prayers. (**abridged**) a. *Sh'ma* and its Blessings b. The *Amidah*: the central set of prayers in the service, done standing. Traditionally requires a *minyan* (10 Jewish adults) for recitation, a rule to which Rodef Shalom **does not** adhere. (**once aloud**)
3. Torah Service: the "learning" component of the service, traditionally requires a minyan. a. Torah Reading (**7** *Aliyot* [sections designated by blessings before and after]) b. Haftorah Reading (readings from the Prophets) c. D'var Torah (speech/sermon)	3. Torah Service: the "learning" component of the service, traditionally requires a minyan. c. Torah Reading (**rarely 7** *Aliyot* [sections designated by blessings before and after]) d. Haftorah Reading (readings from the Prophets) e. D'var Torah (speech/sermon)
4. ***Musaf Amidah*****:** a repetition of the Amidah.	4. Concluding Prayers: various "wrap-up" prayers
5. Concluding Prayers: various "wrap-up" prayers.	5. *Kiddush*: blessings over bread and wine, said before eating (intended as preparation for lunch following the service).
6. *Kiddush*: blessings over bread and wine, said before eating (intended as preparation for lunch following the service).	

Table 3.1. Shabbat Morning Service Comparison.

Temple Rodef Shalom (Reform)
1. *Kabbalat Shabbat*: recitation of psalms that act as a “warm up” for the service
2. *Maariv*: the core evening prayer service, includes two main sets of prayers.
a. *Sh’ma* and its Blessings
b. The *Amidah*: the central set of prayers in the service, done standing. Traditionally requires a *minyan* (10 Jewish adults) for recitation, a rule to which Rodef Shalom **does not** adhere.
3. Concluding Prayers: various “wrap-up” prayers.

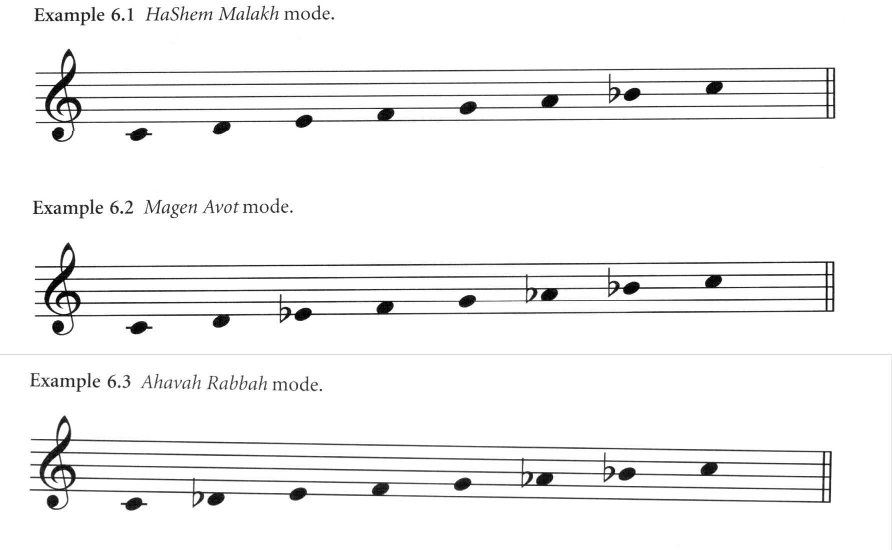
Table 3.2. Erev Shabbat Service, Rodef Shalom.

In the morning service, the main differences between Reform and Conservative liturgies can be seen in the length of the service — the Reform temple abridges some sections of the service, doesn’t tend to hold as long of a Torah reading, and omits the Musaf Amidah entirely. While these services both include the same core liturgical components, the central set of prayers, the Amidah, is recited a total of three times in the Conservative temple (once silently, once aloud, and once for Musaf), and only one time in the Reform temple. Since these prayers are both central to every service, recited in *nusach* (defined below) and while standing, and are located in the middle of the service when most congregants have arrived and are “warmed up” in their prayer, most of my prayer focal points for observation are drawn from this section of the service.

Moreover, as the Amidah is recited a total of three times in the Conservative service, I was able to maximize my observations of participant movement during these prayers.

As discussed in chapter two, there are three main types of movement, which fall into two general categories. the first category is comprised of free, ritually-inflected movements and ritual choreography, including bows, bends, sways, raising up on one's tiptoes during the morning *Kedushah* (prayer of holiness), small steps backwards and forwards to prepare for the *Tifilah* or Amidah. In contrast, the second category includes all socially-inflected movements, or rather, things people do because they are humans in space: coughing and sneezing, moving around, taking off coats, chatting with friends, and so on. These classifications of movement intertwine and enmesh in worship, with congregants and clergy alike attending to both aspects in varying degrees. As such, movement in the synagogue is often in flux, appearing in many forms and the congregation's worship tied together by participatory chant.

Liturgical chant, which is based in the Jewish prayer modes and termed *nusach* in Hebrew, marks liturgical time. The melodies change for holidays, festivals, the Sabbath, regular weekday services, life cycle events, and so on; nusach tells time of year, as well as time of day. *Nusach hat'fillah*, prayer-specific modes, are like other melodic modes around the world— identifiable by both scalar make up and stock melodic patterns (Kligman 2015). Nusach hat'fillah are described by cantorial textbook author Cantor Andrew Bernard as "the core of musical symbolism…. Through *nusach*, we perceive the structure of sacred time" (2005, ix). Of course, this structure can only be perceived by one who understands of the prayer modes and their temporal situatedness. Such knowledge that exists as common ground, largely explicitly for clergy and largely implicitly for congregants, within and across Jewish communities.[62] I acknowledge the prayer modes here because they are used in the prayers which I will discuss below. These modes are shown in Figure 3.1 below (reproduced from Kligman 2015).



Example 6.1 *HaShem Malakh* mode.

Example 6.2 *Magen Avot* mode.

Example 6.3 *Ahavah Rabbah* mode.

Figure 3.1. The three Jewish prayer modes, as outlined by Mark Kligman (2015).

These prayer modes stem from a music theoretical system distinct from that of Western modes and scales (despite possible overlaps one might notice between these modes and those found in Western art music).[63] For instance, in example 3.1a below (drawn from the beginning of the Amidah, the central section of prayers in a Shabbat service), there is a clear emphasis on the D "tonic" and outlining of the D-major triad, shown with yellow highlights. However, in this context, the scale used can be understood as the HaShem Malakh mode (also known as Adonai Malakh), the first of the three shown in Kligman's illustration (figure 3.1), instead of EAWAM's "major" or "ionian" mode.

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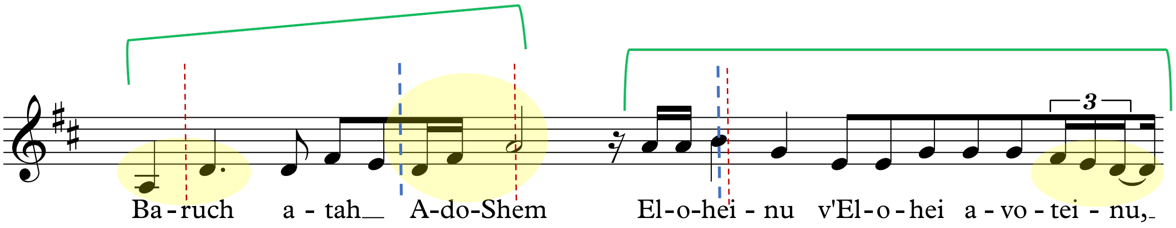
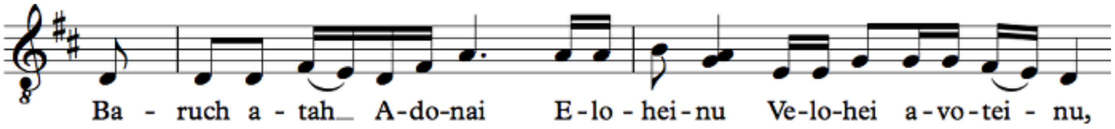
[62] There is much more that could be said about how prayer modes, and chant in general, functions within different types of Jewish worship. However, as I am dealing specifically with the metrical aspects of nusach, such a discussion is beyond the scope of this project.

[63] For a more in-depth look at nusach, I suggest the reader consult Mark Kligman's essay "Jewish Liturgical Music" in *The Cambridge Companion to Jewish Music* (2015).


3
Ba - ruch a - tah A-do-Shem
El-o-hei - nu v'El-o - hei a - vo - tei - nu,

Example 3.1a. Avot opening, showing HaShem Malakh mode and semi-meteredness. Transcription drawn from recording of Hannah singing, August 2016.

Beyond mode, the issue of meter in nusach is also shown in this example. The dotted lines suggest two different ways of barring the music in 4/4 (the red indicates a quarter-note pickup, while the blue implies that the music begins on beat one). Not only would there be ties across barlines in both versions, but the musical and text emphasis, based mainly on the stress-patterns of the Hebrew, do not align well with the 4/4 meter. For the sake of comparison, note example 3.1b, below:


Ba - ruch a - tah A-do-nai E-lo - hei-nu Ve-lo-hei a-vo-tei - nu,

Example 3.1b. Avot opening, showing HaShem Malakh mode and meteredness. Score drawn from Braunstein database, "NusachDB", accessed May 2017.

Here, the "score" of the prayer, drawn from an online nusach database intended for pedagogical purposes, while in the same mode (and "key", in this case), has simplified rhythms that fit into a

4/4 meter. To the author’s credit, the downbeat emphasis on “-ruch” and “-hei” do align with the Hebrew pronunciation. However, in comparison to my transcription of Hannah’s performance in Example 3.1a, the strictly metered feel of the music is more stilted and less proclamatory in this barred example. Therefore, instead of squeezing the example into a meter, perhaps it is easier to think about the excerpt as grouped by phrase (as shown by the green brackets in Example 3.1a). This allows for the nusach to be understood as semi-metered, falling somewhere between the metered music of synagogue song (composed melodies for the temple following classical, popular, and folk musical traditions), and unmetered music. As I suggested in chapter two, understanding of meteredness in this music is based upon individual facility and familiarity with the repertoire. In other words, those who are enculturated to nusach will more likely be able to make metrical “sense” of it as “more-metered”, while first time listeners of nusach will likely understand it as “less-metered”. As such, I assert that the metrical impetus in nusach comes from semi-metered variations, especially as the oral tradition music is created anew at each iteration. So, while nusach is certainly not meter-less, the metricity is subtler than other types of liturgical music such as Christian hymns.

With this background, and the grounding of the previous two chapters focused on recent literature and research methods respectively, it is time to delve into these Jewish communities and discover what can be learned therein about the metrical interactions between body and voice. In what follows, I will focus on several separate participants “up close”, summarize results from those participants whose movements are not addressed in depth, and then draw some conclusions about trends and issues concerning meter, movement, and chant in these Jewish liturgical settings. As a reminder, all participant names have been changed for confidentiality. In addition, to aid the reader, full English translations for the prayers discussed can be found in Appendix III.

II. Temple Kol Torah: Meet the Mensches[64]

As I enter Temple Kol Torah, or rather, the synagogue from which they rent space, I go into the social hall where, behind a set of partitions which block the view from the lobby, a semi-circle of chairs is set up facing east, towards the grated windows, portable Ark, and podiums (see diagram 3.2). Upon entering the "sanctuary" space, I'm greeted by an usher who hands me a *siddur* (prayer book), a *chumash* (Torah book with commentary), and a service bulletin. If arriving at the start of the service, there are typically only a few members present.[65] Since the service is usually two-and-a-half to three hours long, congregants trickle in throughout the morning, some arriving as late as the closing prayers and staying for the kiddush luncheon that follows every Kol Torah Saturday morning service. As people enter the sanctuary they visit with each other: greeting friends and fellow worshippers (including me) as they find their seats, not joining with the prayer service until they've put on their tallit and organized their books.

There is a lot a motion throughout the service: people coming in and out of the space, moving to the back and sides to visit, individuals leaning over, or sometimes walking over, to make a brief comment, service coordinators moving around to hand out honors (tasks) for the Torah service, and those devout members moving to the corners of the room in order to daven more intensely. As the part-time Hazzan, Hannah, noted to me, the issue with the full length

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[64] Yiddish term for a person of integrity and honor (cognate for German "Mensch" meaning human being). To be labeled a "mensch" in a Jewish community is a great compliment!

[65] Once I arrived about twenty minutes in and found there had been so few members at the start that they had to wait until more came to continue into the parts of the service that required a minyan (ten Jewish adults). Luckily I happened to arrive at the same time as three others, so the service could continue right away.

Conservative service is that it often requires too much of one's attention span, causing people to decide to arrive late, or "take breaks" during worship. This constant motion creates a continually changing soundscape that both follows the arc of the service and is being peppered by whispered conversation, quiet laughter, and the shuffling of feet. There is a distinct dynamism to this Conservative worship community; the communal worship does not feel as unified nor as predictable as the Reform worship setting (to be discussed below). It is within this atmosphere that I conducted my observations of congregants and service leaders.

Hannah

Hannah is the part-time Hazzan at Temple Kol Torah. In our interview she was knowledgeable and forthcoming, and seemed quite invested in our conversation. Her remarks frequently focused around movement differences based on gender and leadership, and on her own struggles against what she termed the "American Sensibility" within Jewish worship. For Hannah, this includes parameters such as attending services on time (as happens in the Reform movement), not wanting to be at services for so long (as happens in the Conservative movement), and wanting to be "American" and not "old world" (like the Orthodox movement). In discussing gender at length, Hannah explained how she feels unable to move and sing — activities which all fall under the umbrella term "davening", meaning "praying" for her — as strongly and loudly as she likes due to both the Reform movement's time and liturgical restrictions, and the Orthodox movement's gender restrictions (the avoidance of "kol isha", the women's voice, and, in Hannah's understanding, their requirements that women be away, be quiet, and be unobtrusive).[66] She noted that even as a leader in the Conservative movement, she did not always feel accepted or comfortable in davening as loudly as she liked, given congregational concerns of "disturbing" others who are praying. In this vein, she talked about the physicality of putting her tallit (prayer-shawl) over her head for the end of the Amidah at "*T'filah HaLev*" (the prayers of the heart). She loves doing this because, as she descibed, it envelops you in holiness, similar to the feeling of being in the *mikvah* (ritual bath). She said:

> I know we talk about Shabbat as a sanctuary in time not in space, but holy space is really important too. And it just, to feel like you have that holiness around you it just, it makes the whole davening feel much more meaningful.
>
> — Hannah, Interview, August 2016.

This physical practice not only creates "holy space", but also reinforces the idea that prayer is sacred — separated from the profane and banal weekday activities. Unfortunately for Hannah, the congregants at Kol Torah became uncomfortable with this practice, and thus Hannah no longer worships in this manner at Kol Torah, instead using only her prayer-book to cover her face. (Still, when praying at home or in congregations where she is not in a leadership role, she asserted that she does use her tallit in this way).

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[66] To flesh out this picture: for a number of historical and practical reasons, the Reform movement has shortened the typical worship service, focusing on the central prayers rather than the full complement. What is left doesn't feel rigorous enough for Hannah's worship needs, nor is she able to worship daily, or even multiple times a day as she would like, based on the lack of weekly services at many Reform temples. In contrast, the Orthodox tradition requires separation of men and women during worship. In some temples this results in the use of a *mechitza* (partition) that divides the sanctuary equally, allowing equal visual access to the Ark and *Bima* (regardless of the fact that women are not typically allowed to participate in the service). However, other sanctuaries — those that are more traditional — will have a balcony or separate area for women to pray, still bordered by a mechitza (often more of a grate than the curtain that usually is seen in egalitarian Modern Orthodox synagogues). Since traditional Jewish law requires greater prayer obligations of men than women (while women have greater home obligations), the women's section in Orthodox synagogues is often disproportionally smaller than the men's section, and can be visually and aurally restrictive in terms of access to the service. This is the tension that Hannah discussed struggling against.

Hannah’s discussion of how her movement was affected as a clergy member continued as follows:

> The hard thing about being a professional Jew, because you can’t just be your own spiritual self all the time you have to do what’s best for other people. And sometimes what’s best for other people is making sure that you’re someone that they can feel comfortable with so that then they can feel like their davening can be led and lifted up by you. I think, the point of the shuckeling is that, if people feel like you’re too different from them then they don’t, they can’t — you know people say, “I like to be by the Hazzan so I can feel like I’m becoming part of the prayers — if people feel like there’s a barrier between you and them they don’t feel like they can do that.
>
> — Hannah, Interview, August 2016.

I noted similar tensions in other clergy, as they discussed monitoring their own prayers for the sake of their congregants (e.g., see discussion of Shira, the Reform cantorial soloist, below). However, many congregants also discussed making physical adjustments and alterations based upon perceived opinions of those around them, indicating the immense role of the social in affecting body movement and physicality during synagogue worship.

When I asked Hannah what sorts of movements she did make during prayer, she asserted that she didn’t move very much during prayers such as the *Avot* (the beginning of the Amidah). Hannah noted that for some prayers she would purposely stay quite still (notably the *Kol Nidre* prayer, said during Yom Kippur), but that generally she thought she made only small ritually-inflected movements throughout weekly or daily prayer, mostly remaining stationary. As I was unable to video-record her movements in an actual service setting, I asked her to “perform” a few of the prayers for me during our interview. As she began to sing through the prayer, it immediately became apparent that she does actually move a lot during the Amidah. Hannah herself was rather surprised at this occurrence, noting that the continual, emphatic back and forth bowing movements must be what she had previously thought of as “no movement”. Hannah’s assumption that she doesn’t move while praying, when in reality she doesn’t *pay attention* to moving while praying, is the first of many instances where what my participants thought they did, and what they actually did do, were quite disparate. Such lack of self-awareness during prayer, especially when the social constraints of the community seem so affective for Hannah, indicates that movement figures implicitly into her prayer experiences. But how does it figure metrically with the chant?

In looking towards musical examples, a bit more must be known about *how* Hannah moves during prayer. In my observations, she mainly employed movement profile B, with very distinct backward and forward ictuses.

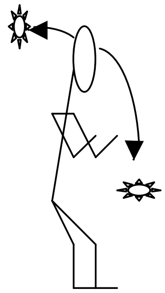
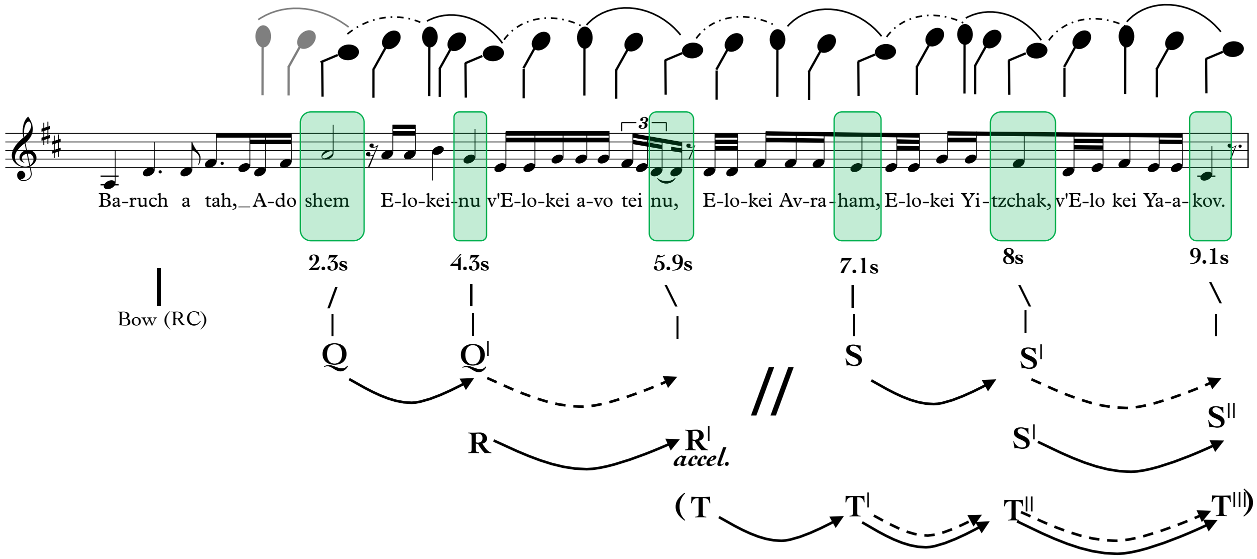


Figure 3.2. Movement Profile B.

These ictuses also appeared to be coordinated with text to some extent. For instance, as shown in examples 3.2 and 3.3, below, there is a clear distinction between the green ictuses (denoting movement meter for September 2016) and the purple (denoting movement meter for October 2016). The green emphases appear on word endings, and is similar to movement meter observed during the same prayer for participants in the Reform congregation (discussed below). Hannah’s physical “reading” of the passage seems to align with different textual emphases and meanings.

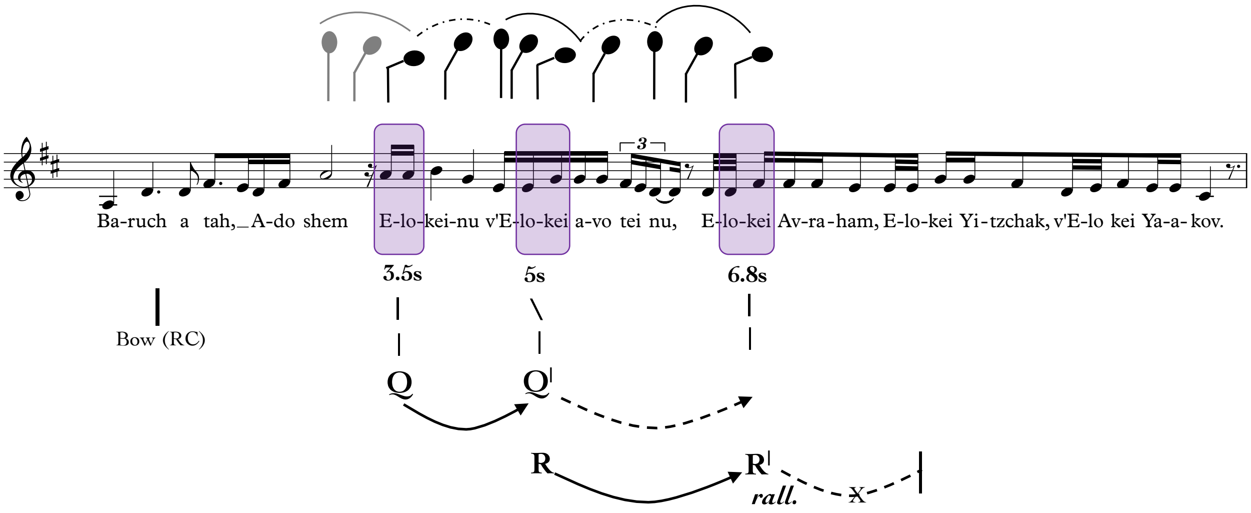
In October, the purple ictus emphases demonstrate meter aligned with the term “Elohei” (“Elokei” in this instance), meaning “God of”.[67] With approximately one-and-a-half seconds between ictus points, the continuity of textual alignment implies a shift in physical meaning-making of the passage on Hannah’s part. Instead of emphasizing the names of God and of the individual patriarchs (God [Adonai/Adoshem in this instance], Abraham, Isaac, and Jacob), her movements imply an assertion of the continuity of these humans as all tied to the same God and religion. So while her shift of movement meter may have been unintentional, it suggests two distinctly different readings of the opening of the prayer. Similarly, this shift shows close alignment of the movement meter with the Hebrew text.


Ba-ruch a tah, A-do shem E-lo-kei-nu v'E-lo-kei a-vo tei nu, E-lo-kei Av-ra-ham, E-lo-kei Yi-tzchak, v'E-lo kei Ya-a-kov.
3
2.3s
4.3s
5.9s
7.1s
8s
9.1s
Bow (RC)
Q
Q|
R
R|
accel.
//
S
S|
S|
S||
(T
T|
T||
T|||)

Example 3.2. Hannah, movement in *Avot*, September 2016.

---

[67] It is customary in more observant streams of Judaism to modify the references to God when reciting prayers outside of worship settings. Thus, I’ve transcribed Hannah’s term alteration as performed in the interview recording, changing “Adonai” (another name for God) to “Adoshem”, “Eloheinu” (meaning “our God”) to “Elokeinu”, and so on. However, the movement observations are drawn worship settings where she would be singing the actual word, thus accounting for any perceived discrepancies between the text in my transcription and references throughout my discussion.

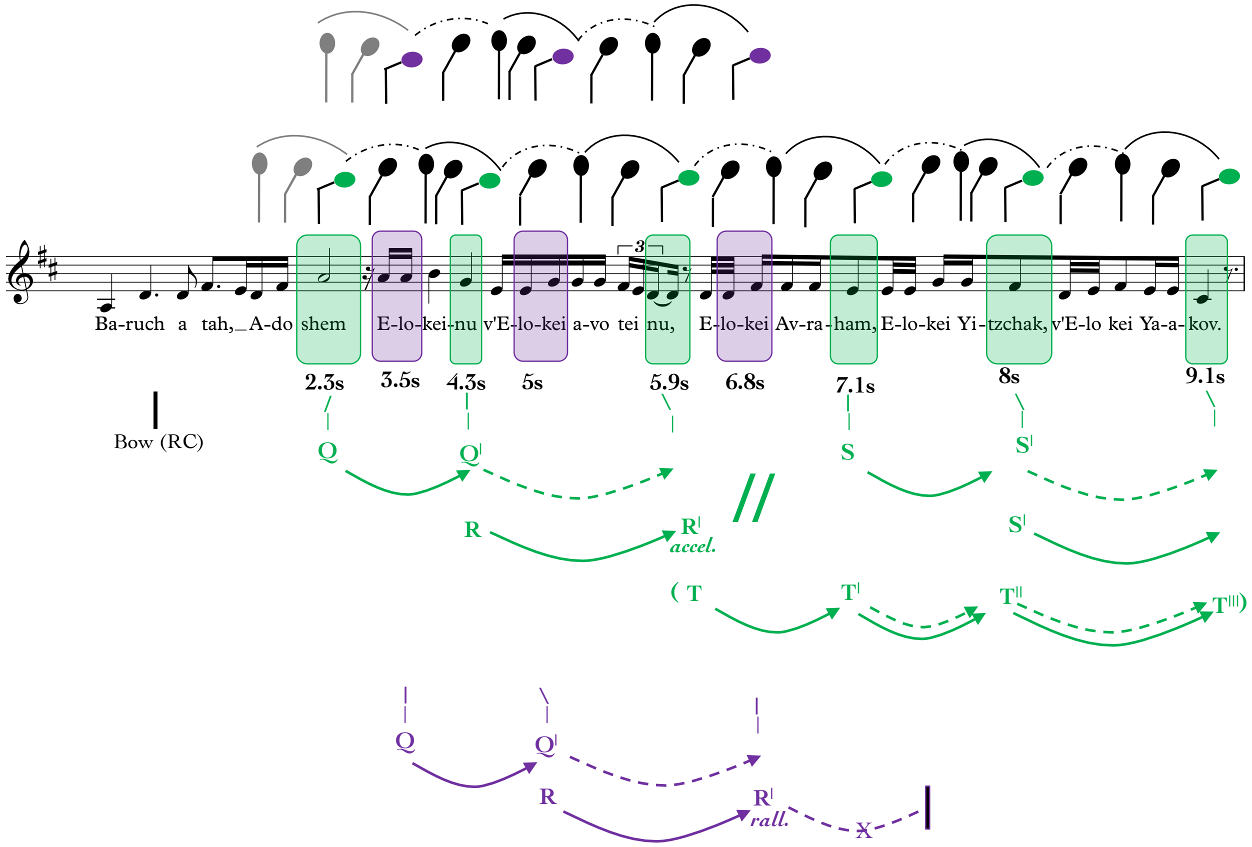

Ba-ruch a tah,_A-do shem E-lo-kei-nu v'E-lo-kei a-vo tei nu, E-lo-kei Av-ra-ham, E-lo-kei Yi-tzchak, v'E-lo kei Ya-a-kov.
3
3.5s
5s
6.8s
Bow (RC)
Q
Q
R
R
rall.
X

Example 3.3. Hannah, movement in *Avot*, October 2016.

Using Christopher Hasty's (1997) projective analytical technique reveals a more complex understanding of these examples. In the September observation, Hannah appears to use the ritual choreography (RC) bow as a beginning [|]. While I will return to this concept below, it is notable that the start of the movement in the prayer is ritual choreography. Beginning in this manner requires some level of attentiveness on the part of the worshipper to both the musical and physical aspects of the prayer. However, since the ritual choreography doesn't continue, any physical obligations are lifted beyond this first phrase of the Avot.

Considering the RC bow as a beginning allows Hannah's first free movement on the end of "Adonai" ("Adoshem") to be an anacrusis [/] which leads towards the beginning [|] on '-nu' of "Eloheinu". The resulting projection and realized duration are experienced as equivalent, despite the acceleration through the ornamentation on "avoteinu". This is followed by a hiatus [//], indicated by the rest, and then the beginning of the new, sequential phrase. The S-level projections show a fairly predictable metrical entrainment happening, with ictus emphases occurring about one second apart. However, the regularity of this movement pattern was actually begun *before* the beginning of the new phrase, thus suggesting a T-level interpretation. Adding the T-level highlights the physical anticipation of the sequential phrasing ahead, even during the vocal rest, regardless of the strong new beginning [|] occurring on the end of the word "Avraham".

In the October example (3.3), not only is there less bodily engagement, but the new beginning after the vocal rest (and just before the sequential patriarchs text begins) is not maintained. As such, there are straightforward duration projections and realizations in the first phrase, after the RC bow, followed by an abrupt end to Hannah's movement altogether. This physical full stop makes the earlier movements (with the exception of the bow) seem somewhat random and untethered, and not at all congruent with the earlier, September observation. By combining these two analyses in the same diagram (example 3.4, below), the comparison is even starker. The green September ictus attacks are consistant throughout the phrase, despite multiple interpretative levels of synchronization with vocal meter and phrasing. The purple October analysis not only emphasizes a different textual connotation, but also shows less physical interaction overall.


3
Ba-ruch a tah,_A-do shem E-lo-kei-nu v'E-lo-kei a-vo tei nu, E-lo-kei Av-ra-ham, E-lo-kei Yi-tzchak, v'E-lo kei Ya-a-kov.
2.3s
3.5s
4.3s
5s
5.9s
6.8s
7.1s
8s
9.1s
Bow (RC)
Q
Q'
R
R' accel.
//
S
S'
S'
(T
T'
T''
T''')
Q
Q'
R
R' rall.
X

Example 3.4. Hannah, movement in *Avot*, Sept./Oct. 2016 comparison.

In her interview, Hannah described how she uses shuckeling to become engaged in the prayer text and meaning. She noted:

> I don't really shuckle in the same spots. I don't do it for the entire service. I actually would find that physically tiring — it would get repetitive, just like anything. But, generally when I reach a prayer that that day is particularly meaningful to me, it just helps me to get, to sort of intensify the words, particularly if I'm praying silently actually, because, if I'm not louder with my voice than I can be, if I'm louder with my body it's giving me some intensity, and, sometimes, yeah I hadn't thought about this before, I do it more during silent prayer.
>
> R: But you do it as well during spoken prayer?

> H: I do it sometimes during spoken prayer. I've never broken it down like that — interesting.
>
> R: Specific spoken prayers?
>
> H: No, it really can be, it can be pretty much anywhere. You know, whatever prayers that day really, are speaking to me the most, or the least and that I'm having trouble getting into, you know. Whatever prayer that I'm needing something extra on, whether it's speaking to me or that I'm really mad and this is a good one to express that. Because there are times when I get very mad at G-d. Or something where I'm just, "I'm not, what it is here I just don't get it, help me out here!"
>
> R: Does it help?
>
> H: Yeah it does. It doesn't help me understand the words but it helps me feel the connection. You know to the words, if that makes any sense.

Hannah's utilization of movement to help her when she needs a deeper connection to the prayers, and to God, may be evident in the above combined analyses. Though mere conjecture, it is possible that she needed less physical aid in her prayer during the October observation than she did in the September observation. It is also possible that Hannah's role as a prayer leader, a *sheliach tzibur* (meaning "emissary of the congregation" in Hebrew) affects her use of physical movement in prayer chanted aloud, as in the case of the *Avot*. Of course, Hannah would have first said this prayer silently to herself, during the silent Amidah. My observation notes as shown here are taken from the iteration that is said aloud directly following the silent version of the entire set of Amidah prayers. Thus, there is also a possibility that Hannah's silent prayer experience has affected her need for specific physical engagement in the reiteration of the Avot (as seen here).

Overall, Hannah's connection with the text, and the variance she shows in her way of physically emphasizing and embodying the text, demonstrates a complex and variable use of embodied technique. She seems to be quite clear about how she might use physical movements to aid her in achieving the prayer state she wants, but was apparently not as aware of how much or little movement she actually made during “typical” prayer. Further, the two distinctly different observations of the same prayer indicate that there is no one “right” way to physically use one’s body during chant (with the obviously exception of the requisite ritual choreography). If this is so, it suggests that ritually-inflected movements during prayer serve a specific, and different purpose. Perhaps it is the one that Hannah described above, but given her inconsistency in knowing how much she was actually moving, I posit that the movements not only aid her in focusing, and engaging with the ideas of the prayer, but also help her to enter a flow state (Czíkszentmihályi, 1975b), wherein she has reached an optimal level of difficulty and ease. I will explore this possibility further in the subsequent analytical examples below.

Phil

Phil is one of the several participants from Kol Torah who self-identified as a Jewish Atheist. He stated multiple times that he didn’t believe in a god, and that he wasn’t praying to a higher power during services. Phil was not alone — I encountered this attitude several times throughout my work with the Conservative community, appearing in stark contrast to the Reform congregation participants. Just as I, by way of my participants, argue that asynchronous body movements and vocal meter are not problematic for the shuckeling, davening individual, so too was the weekly devotional text being sung or read aloud a nonissue for these self-identified Jewish atheists. Phil, an active cellist, discussed at length the pleasure he finds in harmonizing and interacting musically with the nusach and composed song throughout the service. As a lay-leader participant, Phil prefers chanting Haftorah, explaining that to him the Haftorah cantillation system feels similar to reading music notation.[68] Further, Phil noted that he appreciated how the text was in many ways considered historical, and thus not praising or glorifying a deity in which he did not believe. In other words, Haftorah recitation is not prayer.

Phil's movement patterns were similar throughout several observations. His locus was in the knees, sometimes extending up into the hips — the main body part travelling through the trajectory. Throughout observation, Phil's hips were consistently reaching his ictuses in two-second frequencies, creating a modified version of movement profile A, which I'll call A2.[69]

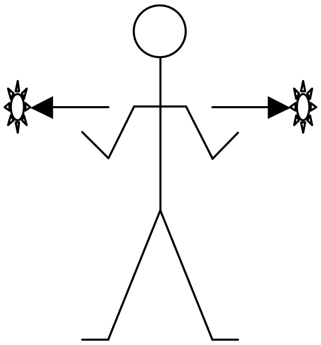


Figure 3.3. Movement Profile A.

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[68] The Haftorah readings are drawn from the prophets, and are coordinated with the weekly Torah portions (readings from the first five books of the Hebrew bible). Torah and Haftorah "reading" each have specific cantillation systems associated with them, indicated with notated symbols above and below the text. These symbols specify a melodic and rhythmic "unit" to which the given word should be chanted.

[69] 'Consistent' meaning consistent week to week. Phil was not moving in isochronous movement patterns.

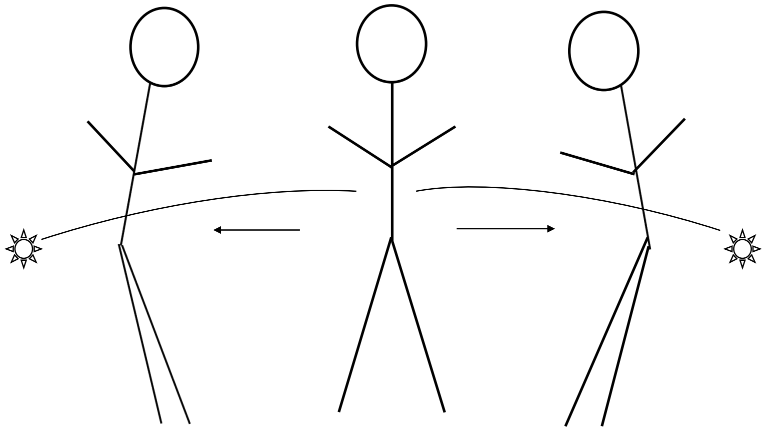


Figure 3.4. Phil's Movement Profile, A2.

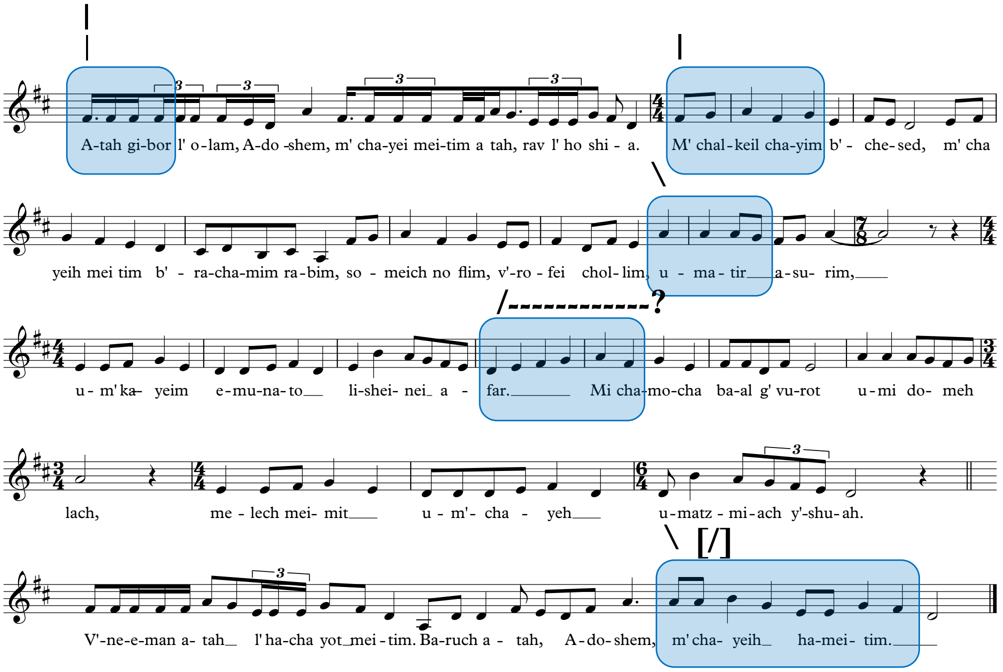
In A2, Phil's side to side "sway" involves a "locking-in" of the hip to each ictus. As such, each trajectory duration was interrupted with a slight pause at each locked-in ictus, due to a complete weight shift from one leg (and hip) to the other. In this way, there are two distinct goals in the arc of the movement — the left and right hips — and an approximate two second, arced movement span which occurs between these goal points. Although it sometimes seemed like Phil's movement was more of an automatic and unconscious shifting of weight, closer observation revealed that he tended to do this particular movement much *more* during nusach than any other time. Vocally, Phil did indeed harmonize freely throughout the services, though mostly in places where the semi-metered nusach gave way to traditional folk tunes (likely substituted in for nusach as a way of connecting to "insider" cultural music).

Example 3.5 below shows the *G'vurot*, the second prayer in the Amidah. This prayer has an unusual metered middle section, with traditional semi-metered nusach in the outer sections.[70] Phil's two-second body movement span aligns with many of the longer syllables in the melody, and thus with moments of vocal (and aural) emphasis. Although moments of alignment with other worshipping bodies appeared in cross referential examination, Phil did not ever perfectly sync with anyone else in the synagogue. Example 3.5 shows Phil's ictus layout during from an observation in September 2016. Note that there is no projective analysis shown, as there are not projections that can be sustained from Phil's movements.

---

[70] While the outer sections of this prayer are chanted in traditional nusach, this metered section is actually a setting by Cantor Max Wohlberg (published in 1947) that has been incorporated into Shabbat liturgy in many Reform and Conservative congregations. The melody is so ubiquitous that many Jews consider it to be "traditional", and may or may not be aware that it is not nusach. For the purposes of this study, the shift from semi-metered nusach to metered song provides an excellent opportunity to examine what happens with movement in these instances.

G'vurot, Phil, September 2016

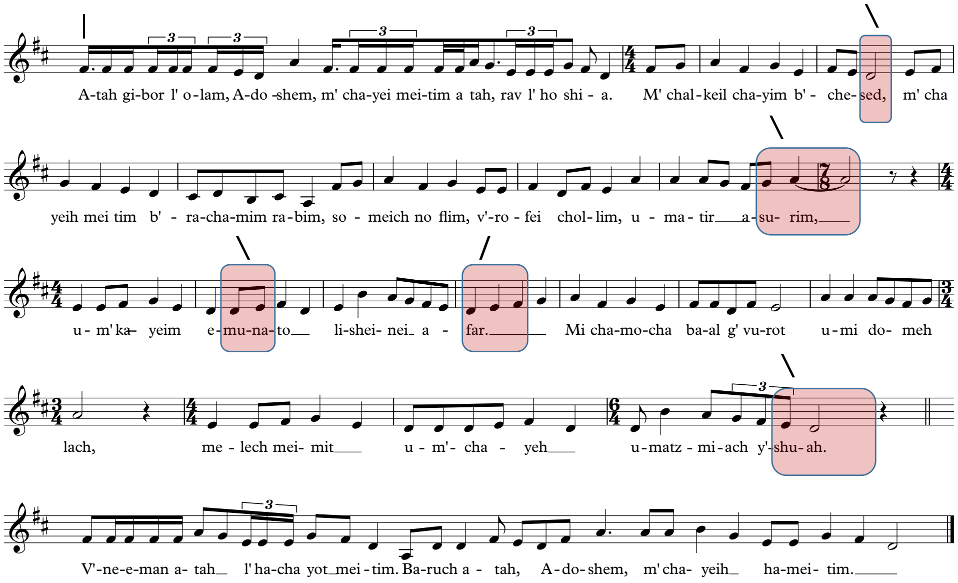

|
|
\
/------------?
\ [/]
A-tah gi-bor l' o-lam, A-do -shem, m' cha-yei mei-tim a tah, rav l' ho shi - a. M' chal-keil cha-yim b' - che-sed, m' cha
yeih mei tim b' - ra-cha-mim ra-bim, so - meich no flim, v'-ro - fei chol-lim, u - ma-tir a-su- rim,
u - m' ka- yeim e-mu-na-to li-shei- nei a - far. Mi cha-mo-cha ba-al g' vu-rot u-mi do- meh
lach, me - lech mei- mit u - m'- cha - yeh u-matz - mi-ach y'-shu-ah.
V'-ne-e-man a- tah l' ha-cha yot mei-tim. Ba-ruch a - tah, A-do-shem, m' cha- yeih ha-mei- tim.

Example 3.5.

Phil switches his ictus at beginnings and endings of phrases, highlighting the structure of the prayer. This is clear from his initial shift of weight from one ictus to the other at the opening (remember, the G'vurot is sung immediately following the Avot, the opening prayer of the Amidah), denoted as a strong beginning emphasis [|]. Within the body of the prayer, Phil shifts again at the beginning of the metered section and at two phrase endings within the metered section, the first acting as a continuation [\] while the second initially seems like an anacrusis [/], matching the anacrustic quality of the vocal chant. But no movement (no beginning) directly follows this anacrusis. Still, throughout the prayer, Phil only "misses" physical emphasis on two phrase endings: "domeh lach" and "umatzmiach y'shuah". At the close of the prayer, there is a slowing of Phil’s movements, mirroring the natural deacceleration of the music with his body. This final move could be interpreted as a continuation [\] or an anacrusis [/], given that another prayer follows it immediately, thus creating the simultaneous sense of a structural ending and preparation for the move into the next prayer. While not strictly entrained within the quarter note pulse of the 4/4 section, Phil’s movements physically structure the entire prayer as a whole, his body emphasizing melodically strong, structural moments in the nusach.

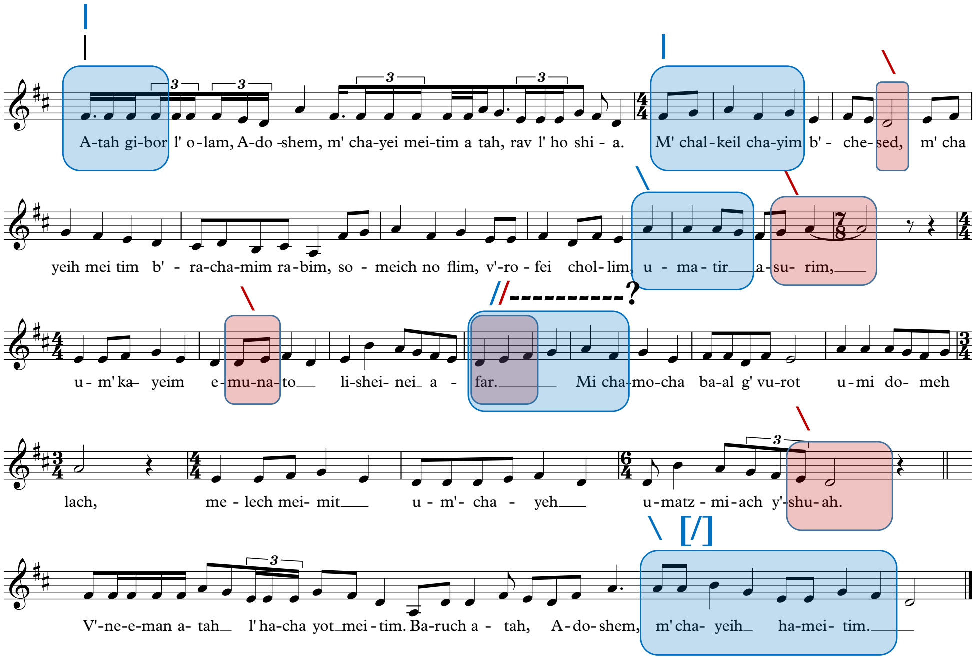
Comparing Phil’s movements in this example to his movement in the same prayer during an observation in November (example 3.6 below) is particularly interesting: Phil still highlights phrase endings such as “asurim”, “afar”, and “y’shuah” (the last of which he missed in September), but the ictus at “chesed”, while on a stronger part of the melody due to the longer rhythmic value and descent to tonic pitch, is short lived. Further, this ictus appears as a continuation, rather than as a strong beginning, based on the placement of this ictus in the musical phrase. Similarly, the ictus on “emunato” is seemingly random, a continuation coming in the midst of a sequential motive and the larger phrase. In fact, no strong ictuses fall in beginning locations throughout the entire prayer. In the overlaying of these two analyses (example 3.7 below), the size of the highlights suggests that Phil locks into his weight shift more quickly in the November example, while taking longer to do so in the September example.

G'vurot, Phil, November 2016


A-tah gi-bor l' o-lam, A-do -shem, m' cha-yei mei-tim a tah, rav l' ho shi - a. M' chal-keil cha-yim b' - che-sed, m' cha
yeih mei tim b' - ra-cha-mim ra-bim, so - meich no flim, v'-ro - fei chol-lim, u - ma- tir a-su- rim,
u- m' ka- yeim e-mu-na-to li-shei- nei a - far. Mi cha-mo-cha ba-al g' vu-rot u-mi do- meh
lach, me - lech mei- mit u - m'- cha - yeh u-matz - mi-ach y'-shu-ah.
V'-ne-e-man a- tah l' ha-cha yot mei - tim. Ba-ruch a - tah, A-do-shem, m' cha- yeih ha-mei- tim.

Example 3.6.

G'vurot, Phil, September (blue)/November (red) 2016 comparison


A-tah gi-bor l' o-lam, A-do -shem, m' cha-yei mei-tim a tah, rav l' ho shi - a. M' chal-keil cha-yim b' - che-sed, m' cha
yeih mei tim b' - ra-cha-mim ra-bim, so - meich no flim, v'-ro - fei chol-lim, u - ma- tir a-su- rim,
?
u- m' ka- yeim e-mu-na-to li-shei- nei a - far. Mi cha-mo-cha ba-al g' vu-rot u-mi do- meh
lach, me - lech mei- mit u - m'- cha - yeh u-matz - mi-ach y'-shu-ah.
[/]
V'-ne-e-man a- tah l' ha-cha yot mei - tim. Ba-ruch a - tah, A-do-shem, m' cha- yeih ha-mei- tim.

Example 3.7.

The comparison of these examples may seem to leave more questions than answers. Yet Phil's movement idiosyncrasies and the changes over time in observation demonstrate the unintentional, or perhaps unconscious, aspects of his movement. While Phil seemed to have a heightened awareness of the musical aspects of the nusach he is chanting, he had very little to say about movement in his interview, even when pressed. This indicates that not only does he not think about moving during nusach very much, but he is also possibly unaware that he is moving at all. Unlike Hannah who moved with purpose and in connection to text, I hypothesize that Phil is not attending to moving at all. This lack of attentiveness makes every ictus attack, and the intermediary trajectories, nothing more than asynchronous physical engagement.

Adam

Adam's movements were similar to Phil's unconscious movement style. Adam approached me with great interest when I first announced the study at Kol Torah. During our interview, he had (almost) as many questions for me as I had for him, and he continued to come up to me with small questions each time I attended services. He was curious about the process, about his own movements, and about my qualitative research. As a physician, and quite scientifically minded, he always seemed to want to know more about how I was processing my data, and how my seat choice, arrival time, or even which days I attended services figured into my research. In his interview, Adam was forthcoming about his relationship with Judaism, and it was evident that he had thought deeply about his Jewishness for many years. For instance, when I asked about his experiences during congregational prayer, Adam explained:

> So when I talk of prayer, whether I'm up there chanting and being the *baal t'filiah* or just being one of the congregants, I've become I guess in my orientation more of say a Reconstructionist Jew. So even though I was raised as a Conservative Jew and [Kol Torah] is a Conservative congregation, I'd probably say my orientation toward God and prayer is more Reconstructionist. If I were to have another life maybe I would lead it as a Reconstructionist Jew, but this what I'm used to. So you know I can't say in terms of my perspective of deity that you know I think of myself praying to the Zeus in the sky with the thunderbolts so I think in terms of Reconstructionist philosophy — it's Judaism as a civilization, it's a focus more on ritual as a part of Jewish culture, whatever it represented two or three hundred years ago. So that's me. I think many of the rituals and maybe motions that I'm doing I consider part of Jewish culture, Jewish tradition, and that is important to me. I'm moved by the music, which I, I like the music, it moves me in kind of more of a mystical way not an intellectual way, and I think, it gives me solace. Could the music be something else? Could it be Led Zeppelin or the Beatles? I would say not because in that setting it's Jewish music that moves me, so, I feel moved by the music. Sometimes the words in the prayer book are, if they fit with my philosophy they move me. Sometimes not, I just have to ignore the English translation.
>
> — Adam, Interview, October 2016.

When asked more specifically about the movements he makes that are not ritual choreography (seen to him as an integral part of Jewish culture), Adam noted:

> I think when I'm up there singing and I'm getting into the music in this mystical way I may pound my hand [*demonstrates*], but that's not Jewish, that's, a good tune makes me feel good and so, lively, so, you know.
>
> — Adam, Interview, October 2016.

From a researcher's perspective, this quote says it all. When observing Adam moving, he exhibited very little large-scale bodily movement, with only an occasional sway (side to side, and not as hip centric as Phil's was) or back-and-forth bend of the upper body. Despite telling me in his interview that he did not shuckel (bend back-and-forth), he appeared to favor this motion for the few larger body movements he did make.[71] Still "favor" is perhaps too strong a term for

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[71] From Adam's interview, October 2016:
R: How do you feel about shuckeling?
A: Oh, shucking back and forth? Um, I don't do that.

Adam's physical movement patterns. Mostly, he stood with his head slightly bent and back slightly curved towards the prayer-book, head bobbing in emphasis with the phrases of the text. When leading, as he mentioned in the above quote, Adam would "get into it" and pound his fist on the lectern. I saw him do this on one out of my three observations of him. During the G'vurot, Adam highlighted the opening of the metered portion by hitting the lectern on each quarter note (see example 3.8 below). However, he skipped the quarter note pickup on "b'" of "b'chesed". Then, in the second full bar of the metered section, Adam emphasized each quarter note of the held half note in the middle of the bar, and then stopped altogether.

This physical emphasis in the opening of the metered section invites two possible levels of ictus analysis. In the first, the initial hand-clap on "m'" of "m'chalkeil" is understood in terms of the metrical placement of the metered section that is about to start — as an anacrusis — with the follow clap on "-keil" understood as a beginning, a downbeat. However, remember that this metered section comes out of a semi-metered section with a high level of timing variation from iteration to iteration. Thus, the opening clap that begins the metered section acts more strongly as a beginning, with the "downbeat" on "-keil" appearing as a continuation, supplanting the previous reading. Indeed, this seems to be the purpose of the hand percussion at this point in the

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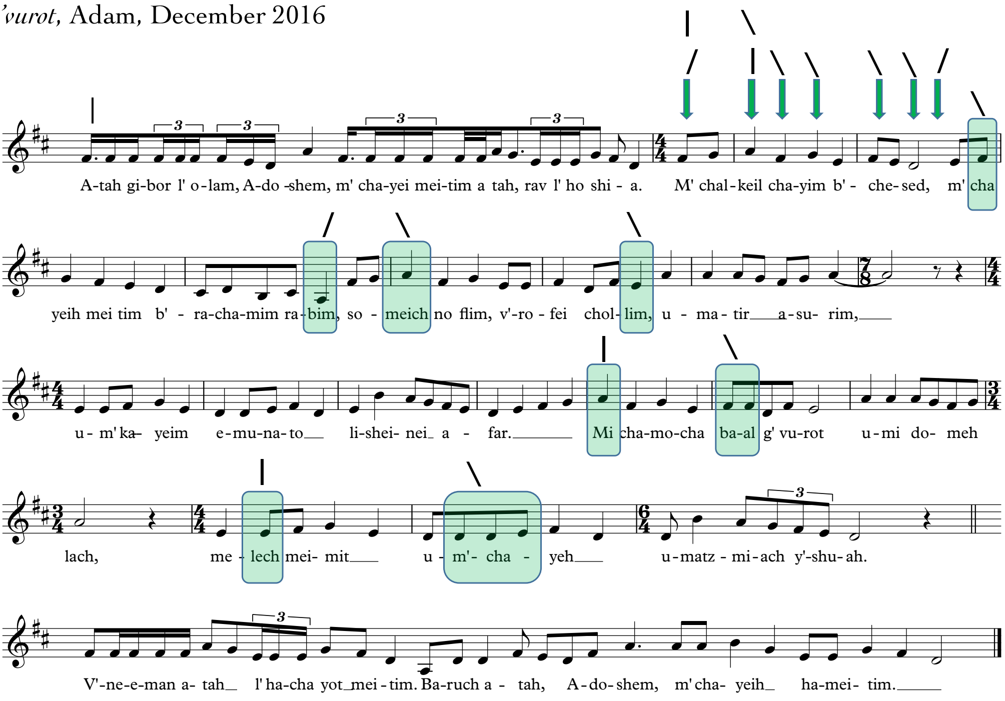
R: Is there a reason?
A: Never got into it.
R: Never got into it? Ok, because of…?
A: I've observed people doing it, I don't know, seen it. I think it's more associated with the Orthodox doing it, um, I have my own problems with the Orthodox perspective, and maybe it's a protest against that by choosing not to do that, ok? Because I'm this secret Reconstructionist guy, or Humanistic guy, Humanistic Judaism, that too, but I think they've gotten too far away from ritual so…. [I'm] a Reconstructionist Jew in Conservative clothing.

prayer for Adam: it sets a pace for entrainment, vocally and physically (although there really wasn't any physical entrainment shown on Adam's part beyond these two measures).

G'vurot, Adam, December 2016


A-tah gi-bor l' o-lam, A-do -shem, m' cha-yei mei-tim a tah, rav l' ho shi - a. M' chal-keil cha-yim b' - che-sed, m' cha
yeih mei tim b' - ra-cha-mim ra-bim, so - meich no flim, v'-ro - fei chol-lim, u - ma- tir a-su- rim,
u- m' ka- yeim e-mu-na-to li-shei- nei a - far. Mi cha-mo-cha ba-al g' vu-rot u-mi do- meh
lach, me - lech mei- mit u - m'- cha - yeh u-matz - mi-ach y'-shu- ah.
V'-ne-e-man a- tah l' ha-cha yot mei - tim. Ba-ruch a - tah, A-do-shem, m' cha- yeih ha-mei- tim.

Example 3.8.

In the prayer immediately following, the morning *Kedushah* (shown in example 3.9, below), Adam again used his hand for emphasis, this time at congregational responses in the second and third paragraphs. In examining the placement of his hand hits, a very specific type of musical entrainment, I see more than his "getting into the music in this mystical way". Adam uses this percussive entrainment to move the congregation along, and to bring them together following passages that are metrically free and recitative-like. By starting the percussion at the pickup in the G'vurot as opposed to the downbeat, Adam assists congregants in catching his downbeat together, embracing the meteredness of the middle section. However, once he has gotten everyone “together” this method of entrainment is no longer needed — the congregation is already predicting the familiar downbeats of the prayer. Similarly, the only times Adam used hand percussion in the Kedushah were at the congregational response lines after the second and third stanza (shown in green boxes in example 3.9) and not at the moments of ritual choreography (shown in purple boxes), indicating a continual use of physical engagement with every moment of congregational response.[72]

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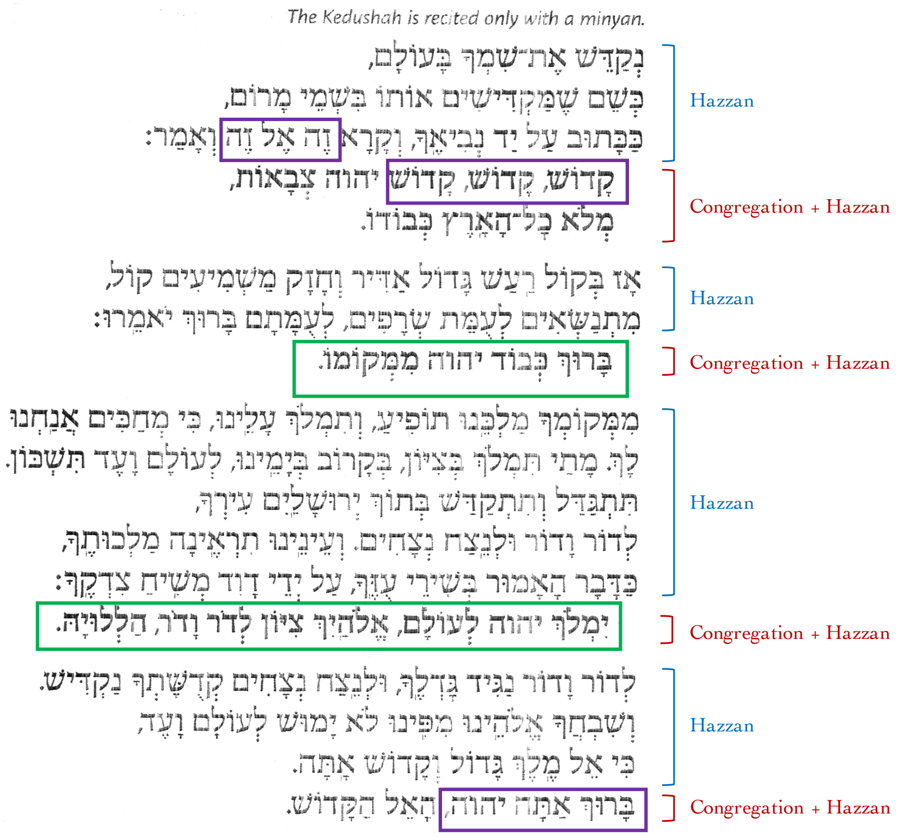
[72] In a closer examination of the prayer structure itself, and the accompanying ritual choreography, the first stanza of the Kedushah requires several ritually obligatory moves: a slight bow at the opening, then keeping one’s feet together, bending and turning to each side at “zeh el zeh”, and standing tall and straight, raising up on tiptoes on each word of “kadosh, kadosh, kadosh” (so, three times). This final set of moves comes at the beginning of the congregational response to the first stanza. Thus, not only would it be difficult to hit the lectern while raising up on tiptoes (and holding the siddur), but the presence of the ritual choreography at this instance also implies that the congregation is already all moving together. In contrast, the second and third stanzas have little or no ritual choreography associated with them. Therefore Adam’s use of hand percussion at the openings (though not even maintained through the completion of the response in either case), brings the congregational voice into focus through entrainment.



The Kedushah is recited only with a minyan.

נְקַדֵּשׁ אֶת־שִׁמְךָ בָּעוֹלָם,
כְּשֵׁם שֶׁמַּקְדִּישִׁים אוֹתוֹ בִּשְׁמֵי מָרוֹם,
כַּכָּתוּב עַל יַד נְבִיאֶךָ, וְקָרָא זֶה אֶל זֶה וְאָמַר:
קָדוֹשׁ, קָדוֹשׁ, קָדוֹשׁ יהוה צְבָאוֹת,
מְלֹא כָל־הָאָרֶץ כְּבוֹדוֹ.
אָז בְּקוֹל רַעַשׁ גָּדוֹל אַדִּיר וְחָזָק מַשְׁמִיעִים קוֹל,
מִתְנַשְּׂאִים לְעֻמַּת שְׂרָפִים, לְעֻמָּתָם בָּרוּךְ יֹאמֵרוּ:
בָּרוּךְ כְּבוֹד יהוה מִמְּקוֹמוֹ.
מִמְּקוֹמְךָ מַלְכֵּנוּ תוֹפִיעַ, וְתִמְלֹךְ עָלֵינוּ, כִּי מְחַכִּים אֲנַחְנוּ
לָךְ. מָתַי תִּמְלֹךְ בְּצִיּוֹן, בְּקָרוֹב בְּיָמֵינוּ, לְעוֹלָם וָעֶד תִּשְׁכּוֹן.
תִּתְגַּדַּל וְתִתְקַדַּשׁ בְּתוֹךְ יְרוּשָׁלַיִם עִירְךָ,
לְדוֹר וָדוֹר וּלְנֵצַח נְצָחִים. וְעֵינֵינוּ תִרְאֶינָה מַלְכוּתֶךָ,
כַּדָּבָר הָאָמוּר בְּשִׁירֵי עֻזֶּךָ, עַל יְדֵי דָוִד מְשִׁיחַ צִדְקֶךָ:
יִמְלֹךְ יהוה לְעוֹלָם, אֱלֹהַיִךְ צִיּוֹן לְדֹר וָדֹר, הַלְלוּיָהּ.
לְדוֹר וָדוֹר נַגִּיד גָּדְלֶךָ, וּלְנֵצַח נְצָחִים קְדֻשָּׁתְךָ נַקְדִּישׁ.
וְשִׁבְחֲךָ אֱלֹהֵינוּ מִפִּינוּ לֹא יָמוּשׁ לְעוֹלָם וָעֶד,
כִּי אֵל מֶלֶךְ גָּדוֹל וְקָדוֹשׁ אָתָּה.
בָּרוּךְ אַתָּה יהוה, הָאֵל הַקָּדוֹשׁ.

Example 3.9. *Kedushah* Diagram.

To better understand Adam's relationship with this type of movement, I must return to Adam's statement about "Jewish movement" from above:

> I think when I'm up there singing and I'm getting into the music in this mystical way I may pound my hand (demonstrates), **but that's not Jewish**, that's, a good tune makes me feel good and so, lively, so, you know.
>
> —Adam, Interview, October 2016.

It is vitally important to highlight this seemingly throw-away comment, as it points to a complex musical identity that many of my participants expressed. As sacred and secular musical styles are mixed—both explicitly in composed synagogue song, and in the modern lives lived by my participants in Chicagoland, where they are exposed to both sacred religious music and many other secular musics in their daily lives — participants develop identities for "Jewish" and "non-Jewish" activities, foods, attire, and even sounds. When Adam first made this statement, I assumed he was implying that he would only "pound his hand" with composed synagogue songs, folk melodies, and the secular melodies sometimes substituted as tunes for some synagogue hymns.[73] However, as I've discussed above, Adam used hand percussion throughout the Amidah, a nusach based set of prayers that is the same in almost every service.[74] In this way, he is using his hand percussion during the most "Jewish" of the Jewish music, hearkening back to the "mystical" way Adam is moved by the synagogue music.

Following his use of the term "mystical", I asked: "What does it mean to be moved by the music (in a mystical way)? What does that feel like or what reaction does that give you?" Adam answered:

> Well it's a positive reaction. I mean, sometimes a melody is very old and ancient, and like the *Kol Nidre* prayer, that's a very ancient melody, and it's moving to hear it, it's moving to think that people have chanted that melody for hundreds of years. But there are some that are recent melodies like the one "*Oseh Shalom Bimromav*", that's a recent melody, that was composed in 1969 by an Israeli composer, that also, you know I like that melody. It just, um, [*rubs chest over heart*] I don't know if I can put it, make it more concrete, it's just relaxing, "*Oseh Shalom*" I do know literally what it means, so the words there do have meaning for me coupled with a pleasant melody to hear that is a Jewish melody. That one, a modern melody.
>
> — Adam, Interview, October 2016.

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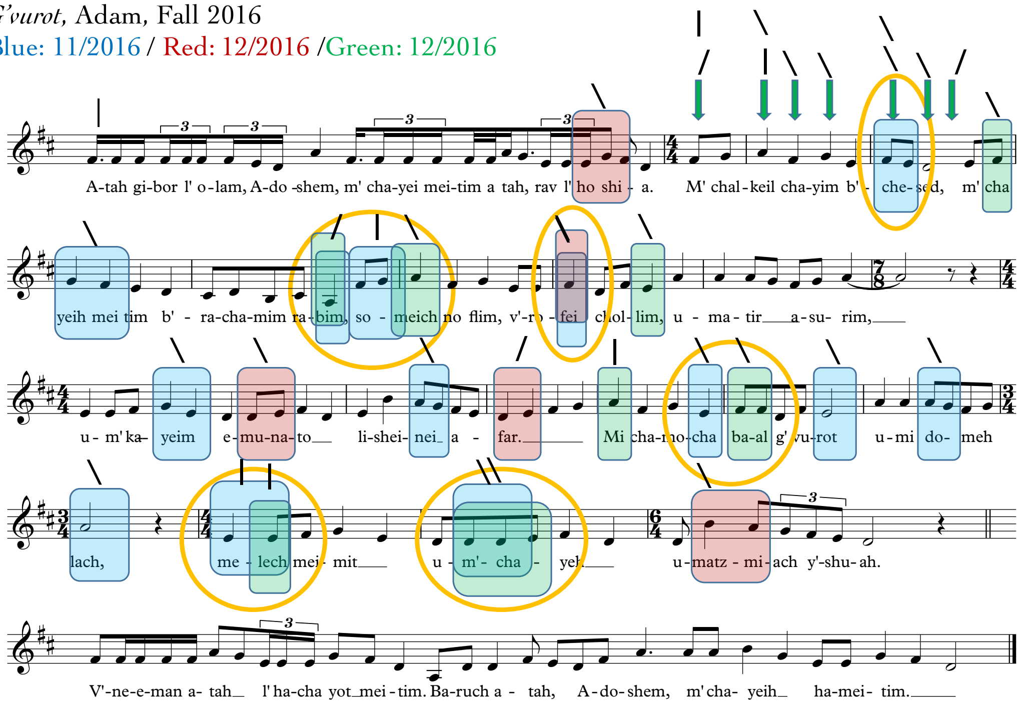
[73] A running joke in the North American Jewish community is that the popular hymn *Adon Olam* fits into any melody. Teen- and college-aged worshippers have been known to sing the Hebrew text to melodies such as Backstreet Boys' "I Want It That Way" or Leonard Cohen's "Hallelujah". Often a holiday melody or a pop song will be substituted for the more traditional hymn settings. For instance, following the Chicago Cubs' World Series win (2016), I attended a service at Kol Torah, where the ending song was *Adon Olam*, led by Adam. Dedicating the singing to his late father, who loved the Cubs, Adam led the congregation in *Adom Olam* sung to the tune of "Go Cubs Go", the Chicago Cubs' theme song (composed in 1984 by Steve Goodman, a Jew from Chicago).

[74] Changes in nusach and text may occur for certain major holidays.

Here Adam admits that both modern music and ancient music can get him into the music in this “mystical” way, running contrary to his statement about hand percussion not being Jewish but rather related to a “good tune”. I focus on this aspect of his statement because Adam seems to clearly connect ritual choreography, and some “traditional” movements like shuckeling, to Jewish identity, Jewish ritual, and, it may follow, Jewish prayer. However, he uses movements he considers secular inside of Jewish melodies and Jewish text, at the height of the prayer service, at moments full of ritual and thus connection to what Adam himself identifies as the heritage of Jewish civilization. Whether or not Adam thinks about this is a Jewish movement, he is embodying it Jewishly — in a Jewish way, for the means of drawing the congregation together in prayer.

When combining Adam’s movements during the same prayer from three different observations, there are only six moments of consistent ictus alignment, shown with yellow circles in example 3.10. (Each highlighted area indicates a physical ictus).



G'vurot, Adam, Fall 2016

Blue: 11/2016 / Red: 12/2016 /Green: 12/2016

A-tah gi-bor l' o-lam, A-do -shem, m' cha-yei mei-tim a tah, rav l' ho shi - a. M' chal-keil cha-yim b' - che- sed, m' cha
yeih mei tim b' - ra-cha-mim ra- bim, so - meich no flim, v'-ro - fei chol- lim, u - ma - tir a-su- rim,
u - m' ka- yeim e- mu-na- to li-shei- nei a - far. Mi cha-mo-cha ba-al g' vu-rot u-mi do- meh
lach, me - lech mei - mit u - m'- cha - yeh u-matz - mi- ach y'-shu- ah.
V'-ne-e-man a- tah l' ha-cha yot mei-tim. Ba-ruch a - tah, A-do-shem, m' cha- yeih ha-mei- tim.

Example 3.10.

Almost all of these moments of ictus alignment come in the middle of words or across the ending/beginning of text. Note also that almost all of these circled sections are at continuation [\] points, rather than beginnings or endings. Only “melech meimit” shows an ictus emphasis at a structural beginning point. Adam is not moving in line with the structure of the prayer, as we saw with Phil, nor does he seem to be emphasizing text, as we saw with Hannah. Moreover, as we can see from the number of discrete ictus points, Adam clearly changes his movement pattern at each iteration of the prayer, likely unconciously. Whether or not he is being moved in a “mystical” way, Adam is certainly physically engaged with his vocal prayer, and uses different bodily movements each time. It is unique (thus far) however, that we see Adam’s ictus attacks occuring almost always at continuation points, as opposed to beginnings or anacruses. Not only does this obscure the embodiment of larger structural points in the chant, but it also changes the understanding of body movements, in this case ictus attacks, as gestures that connote beginnings and anacruses. Adam seems to use his body to help him move *through* the text. In this way, it encourages an experience of the "now", rather than a higher level, synoptic experience of the structure of the well known prayer. Therefore, while his movements are quite different from Hannah's, they seem to be aiding in a similar task of "now-ness". I shall return to a discussion of movement in the "now" in the chapter conclusion.

Rebecca

Rebecca exhibited little to no movement throughout my service observations. An active member of the Kol Torah community, Rebecca serves as temple president, often hosts events at her home, and frequently delivers the *D'var Torah* (sermon) during Shabbat services. In approaching me about the interview initially, Rebecca noted that she didn't move much due to back pain. She described her movement during the service as follows:

> At this point in my life not that much because I sit. My back is not great and I can't stand for long periods of time. So I sit when most people stand. [*R asks about her perceived difference between sitting and standing*]. At this point the only thing that it feels like is 'no pain'. Because if I were standing for any length of time my back would hurt me. It's easier to sit. I mean you know, when you're standing you're maybe moving from foot to foot, or you're not necessarily — when you're sitting you're kind of, you're just sitting. I don't know how other people do it at this point but I know that I would never stand. I'm not good at 'still'. I'm not good at standing still, I'm not good at necessarily being still, and so, I probably would be at least moving from foot to foot or something like that, when I'm sitting I'm just sitting. So it's kind of, more calm, in a sense…. [*R: When do you stand?*] I will always stand when they're walking around with the Torah. [*R: Why?*] I don't know, it just seems appropriate at that time. And you're doing something, I mean when they're walking around with the Torah you're going to take a tallit and do some kissing kind of thing so, so that I wouldn't do sitting.
>
> — Rebecca, Interview, August 2016.

Indeed, this is precisely what I saw happening during my observations of Rebecca. She typically arrived part way through the service, at the beginning of the Torah service (roughly forty-five minutes into the two-and-a-half-hour service), which she told me was because she didn't like doing the Amidah twice.[75] She then sat during most of the service, even when others were standing, and tended to be quite attentive to both her prayer-book and to those leading the services (in other words, she wasn't talking or visiting with those around her very much).

Rebecca is married to Phil, and shared his tension about praying without believing in a deity. She explained:

> I don't think about them [the prayers] as they're about God. I think about them as sort of, you're saying the same thing week after week, in the way you would do a meditation, which would give you the same sound week after week, or time after time that you do it. So, I don't think about it as a prayer to a deity, I think about it as a meditation device…. I like sitting there hearing the same — I don't like changing melodies, I don't like doing any of that stuff, nothing new! Because the new just kind of takes me away from that. I'm assuming that I feel calmer. I keep going back, there must be a reason I keep going back, other than, we're so small that if you don't keep going back people know. And I'm president of this thing so I should show up. But, I like it quiet during prayers. I don't like being around people that are talking. I like to listen …. I really get, I get annoyed with people around me who are talking because I like to, my version of participation is active listening. So I will actively, that's my participation, I will actively pay attention to the person and what they're doing.… I like to give all my attention to what's happening. And I guess, giving all my attention to something is a meditation. Because in my, I like to give it all, that's, that's the meditation, is giving something all of my attention. And so I don't want to be, I don't want sound, other than the sound of what's happening around me, and it's, the best way of, I said it, it's active listening.

Later in the interview, Rebecca noted:

---

[75] As noted in the service structure outline above (table 3.1), in a more traditional liturgy like that of Conservative Temple Kol Torah, the central prayer section of the service, the Amidah, is done both silently and aloud during the first part of the morning (Shacharit) service, and then once partially aloud and partially silent during the Musaf service, following the Torah service.

> I'm very happy that I came across the term active listener because I think that really describes it, and as long as, as long as it's ok, not ok but, as long as the God stuff is taken out of it I'm ok with it. I mean because it's, sort of not the reason I do what I do. And so, you're not asking about that so that's ok.
>
> — Rebecca, Interview, August 2016.

Rebecca is right; I wasn't asking about how she thinks about God, or how her actions in services help her connect to God. Herein is the tension between the *how* of synagogue movements and the *why* of synagogue movements. While I may in future research examine the latter of these questions, the former is enough for the current project. As it happens, by only investigating the *how*, I am able to incorporate the variety of viewpoints that include those like Hazzan Hannah — deeply connected and searching for further connection to God — and Rebecca, who isn't praying to God, but also understands how her actions may appear to the contradict her assertions about her beliefs.

As an anthropologist, Rebecca discussed her professional positionality and how it figures in to her understanding of being in worship spaces without worshipping:

> And then as an anthropologist, I find myself watching what I'm doing. And I'm doing stuff as if I were a believer. And I understand I'm doing stuff as if I were a believer although I'm not a believer so I can, kind of watching me do this, and it's, sets up a little, but then I've given that up so that I can just be, you know, just think of it as a meditation, and shifting to thinking about it as a meditation has helped a lot. Because you can't really do this stuff, all the time, if you have no belief. [*R: there's too much dissonance—?*] There's too much dissonance if you don't believe. But, I may not be the only person — I'm sure I'm not the only person in the room who doesn't believe. So, but my way of dealing with that dissonance is as a meditation. So, viewing, thinking of it as a meditation.
>
> — Rebecca, Interview, August 2016.

These lengthy quotes describe much more than just how Rebecca navigates prayer and belief. Overtly self-reflexive, Rebecca's words hover around the respect and energy that comes with what she terms as "active listening", an output from her, which "induces" meditation. Rebecca's words navigate the affective experience of meditation as both an input and an output — a stimulus and a resultant experience.

It is helpful then to cast this experience in terms of embodied technique (Spatz 2015), wherein Rebecca's active listening *is* a meditation and *is* how she knows prayer experience. She doesn't arrive at services thinking, "now I will pray, and in order to do that I must listen attentively and focus as if I'm meditating". No, as she noted herself: "giving all my attention to something is a meditation," and "doing the same thing week after week is a meditation." The embodied technique, therefore is a state of listening and attentiveness that is perhaps aided, or even induced, by stillness, highlighting the importance of *not moving* in Rebecca's case.[76]

Finally, she casts prayer not as a conversation (one-sided or otherwise) to a deity, but rather as a device that a) requires focus and b) is (relatively) the same week after week. Thus, according to Rebecca, prayer = active listening + repetition= meditation. Understanding this formula with the communicative principle allows for the following rotations of the above expression:

---

[76] Perhaps this type of embodied technique is in some manner related to Western Art Music concert etiquette, where not moving is central for audience members. This connection, helpfully highlighted for me by Mark Butler, is an area for further theorization.

Prayer = active listening + repetition = meditation
Prayer = meditation = active listening + repetition
Meditation = active listening + repetition = prayer
Meditation = prayer = active listening + repetition
Active listening + repetition = meditation = prayer
Active listening + repetition = prayer = meditation

Table 3.3.

Such an exercise may seem frivolous, but it is, in fact, exactly how prayer as embodied technique works. There is no particular order of cause and effect here — just a set of co-occurring experiences that do not only co-occur but also co-create each other and the overall enmeshed experience. Although Rebecca moves very little, negating the need for ictus diagrams or movement profiles, her apt and articulate explanation of her experiences during Shabbat services provides a second layer of embodied technique in Jewish worship experiences. Rebecca's discussion of meditation, prayer, and active listening also ties together with other participants' uses of the term meditation, to which I will return below.[77]

Aaron

Aaron was my last participant in the study, and asked to be interviewed based on his wife's positive experience with the interview process (Aviva, discussed below). While he came to the study late in the game, causing me to be unsure as to whether or not I would be able to observe him (thus making him an "interview only" participant), his interview brought out a few important and intriguing aspects of movement and prayer which ultimately enhanced the study. Further, in the few weeks following our interview, I was able to observe him, discovering a very particular movement profile: Aaron moved in a front to back trajectory with a strong locus in his feet. I'll call his movement profile B2, due to its relationship to movement profile B (figure 3.2 above).

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[77] Especially articulate in Reform participant Shira's explanations, discussed below.

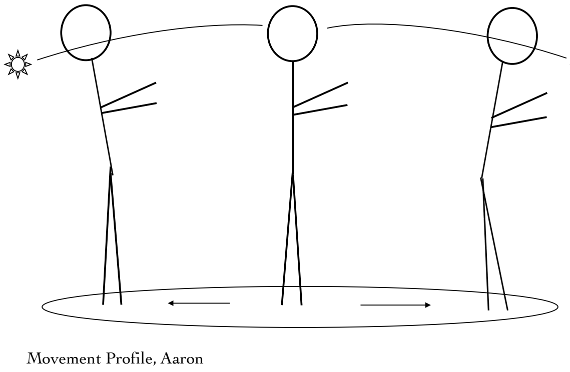


Figure 3.5. Movement Profile B2.

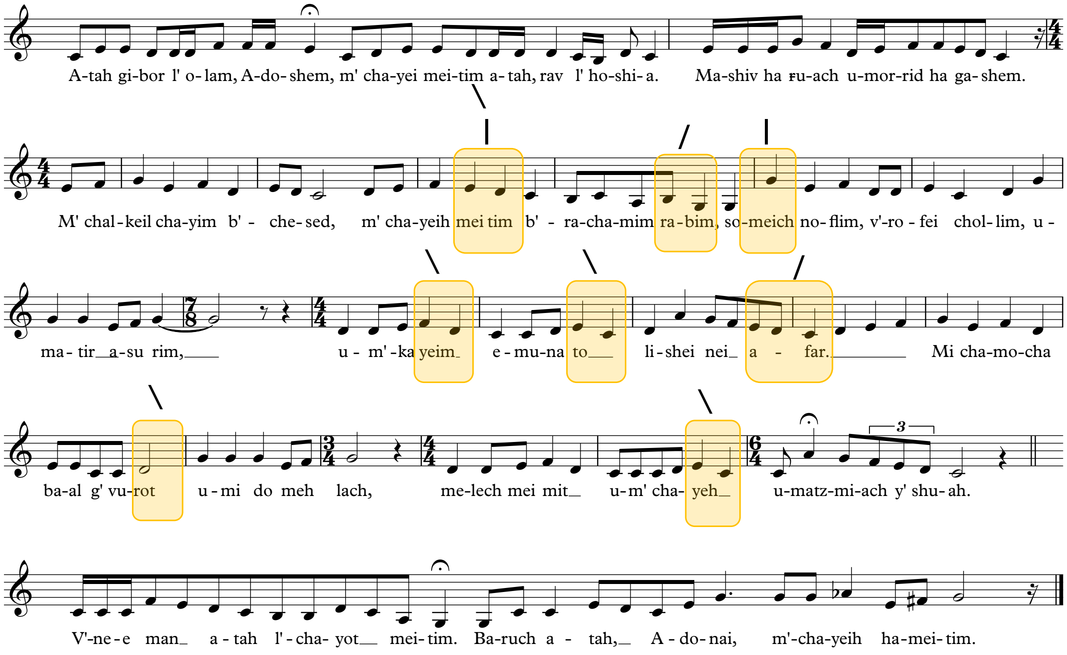
Aaron is literally grounded, his feet acting as an axis point from which a very tall and nearly straight line extends from his ankles to his *kippah* (the small skullcap traditionally worn by Jewish men in synagogues) . While he occasionally bent slightly, these minimal movements were nothing like the shuckeling of other worshippers. When I asked Aaron about the movements he made, he noted, "I don't believe that I just stand there straight, I think that there is a certain amount of rocking going on, and that's something that I've done since I was a kid." Even though I pushed him on this later in the interview, he wasn't able to be much clearer:

> R: So when you say, “there’s some rocking that happens”, what do you mean by that — rocking how?
>
> A: You’re either going back and forth or side to side, not typically side to side, back and forth is what I would think.
>
> R: Do you have a sense — are you conscious of yourself doing that at all?
>
> A: On occasion, but typically it’s just so ingrained it just happens.
>
> R: And when you notice that it’s happening, do you change anything about it?
>
> A: No.
>
> R: You just notice it?
>
> A: Yeah.
>
> — Aaron, Interview, December 2016.

Finally, Aaron used a term the term “Gestalt” saying, “and the more tired you are I think the more you rock. It keeps you focused, it keeps you awake. It’s part of the Gestalt.” Although I pushed him on the concept — his concept — of the Gestalt of the prayer space, I wasn’t able to get much more information about his understanding of the idea. When Aaron mentioned the term I immediately thought of embodied technique, the feeling of visceral, full sensory experience required to complete a feeling of prayer or prayer-fullness.

Turning to Aaron’s movement patterns, some regularity can be seen:

G'vurot, Aaron, December 2016


A-tah gi-bor l' o-lam, A-do-shem, m' cha-yei mei-tim a-tah, rav l' ho-shi-a. Ma-shiv ha ru-ach u-mor-rid ha ga-shem.
M' chal-keil cha-yim b' - che-sed, m' cha-yeih mei tim b' - ra-cha-mim ra-bim, so-meich no-flim, v'-ro - fei chol-lim, u -
ma- tir a-su rim, u - m' -ka yeim e-mu-na to li-shei nei a - far. Mi cha-mo-cha
ba-al g' vu-rot u-mi do meh lach, me-lech mei mit u-m' cha- yeh u-matz-mi-ach y' shu-ah.
V'-ne-e man a-tah l'-cha- yot mei-tim. Ba-ruch a - tah, A - do-nai, m'-cha-yeih ha-mei-tim.

Example 3.11.[78]

In the third system, Aaron hits a strong forward ictus on the second half of each bar. This occurs during a sequential melodic text, (a good opportunity for semi-entrainment), as well as at the return to the regular 4/4 meter, after the elongated bar prior. However, the third iteration of this phrase ending ictus is "late", highlighting an alignment with text (endings) rather than with the metrical placement. This is understandable, as although the G'vurot has a clearly metered section, the focus and emphasis of Aaron as a worshipper remains on the text rather than the rhythmic chant. It is also interesting that Aaron's movements do not conincide with musical or metrical beginnings. Even his initial movement at "meitim" is coupled with what musically would be considered a continuation, rather a beginning. In fact, only on "someich" is a beginning articulated with a physical movement by Aaron, indicating a second possible reading of the preceding movements as both anacrustic, rather than continuation movements. The latter, in a way, only fits as an analytical reading in the manner that the chant meter (and other musical parameters) indicates continuation. Movement-wise, the initial two movements must be read as anacrustic or as beginnings (at least the first), since they are the first movements after a relatively long time of not moving during the opening of the prayer.

---

[78] Note that the chant transcription has not, in fact, been transposed (as it may appear), but that Aaron is moving to lay-leader Joseph's version of this prayer. As I never observed Aaron during Hazzan Hannah's leadership, I do not use her version of the chant transcription (like I did above, with the previously discussed participants.

As example 3.11 demonstrates, Aaron's movements, as observed, seem especially end-oriented, yet not coordinated with the structural points of the chant, and not themselves regulated throughout. This presentation of movement and chant represents another facet of the myriad ways movement and nusach interact and embodied technique is created in synagogue settings.

Joseph

Joseph is the Ritual Vice President of Kol Torah and a strong presence in the congregation. He attends almost every service, often taking leadership roles, filling in for those who are absent, and moving about the space to assure that honors are handed out, ushers are at their places, and everything is running smoothly. Even when Hannah, the part-time Hazzan is at services, Joseph is often "in charge", directing the pacing of the service and doing the legwork to create a worship space in the converted social-hall sanctuary. With multiple degrees in Jewish studies, and a past career in Jewish education, it is no surprise that Joseph fills these roles. He has also taught many of the lay-leaders how to lead parts of the service, read Torah or Haftorah, and fill specific roles such as the Torah Service *gabbai*.[79]

As a frequent prayer leader and a teacher of other lay-leaders in the temple, I asked Joseph for a recording of the Amidah, the main prayers I am examining in this text. I then compared my transcriptions of Joseph's performance of the opening prayers to Hannah's performance, since these two performances serve as the main source texts upon which my physical data is mapped. Table 3.4 shows a comparison of their Avot performances.

The main changes are in the middle section of the prayer, after the sequenced lists of names but before the closing line of the prayer, (also known as the *hatimah*). An immediately noticeable difference in the key or 'tonic' of the prayer — Hannah's performance was in D Major, Joseph's in C Major — is likely due to the fact that both of these performances were recorded out of context, and are obviously a capella. However, both performances are in a similar, mid-range tessitura, that would be easy for most congregants to sing along with.

The main differences in the middle section are in the rhythmic values used, seen especially with Joseph's performance of a series of triplets where Hannah uses a mix of eighth and sixteenth notes at "haEl hagadol hagibor…". And while the same arppegios are being outlined at the start of the third system in both performances (respective to key of course), the ways in which these outlines occur have different micro-contours, despite similiarities between the larger pitch contour of the phrase. Overall, Hannah's performance seems more variable, while Joseph seems to rely on consistent rhythmic patterns throughout.

---

[79] During the Torah service there are typically two people serving the position of gabbai. These individuals follow along with the Torah reader and correct them if they make a mistake. The head gabbai also calls up those who are blessing the Torah readings, keeps track of the *aliyot*, and leads "Mi Shebeirach", the prayer for healing typically read in the middle of the Torah service.

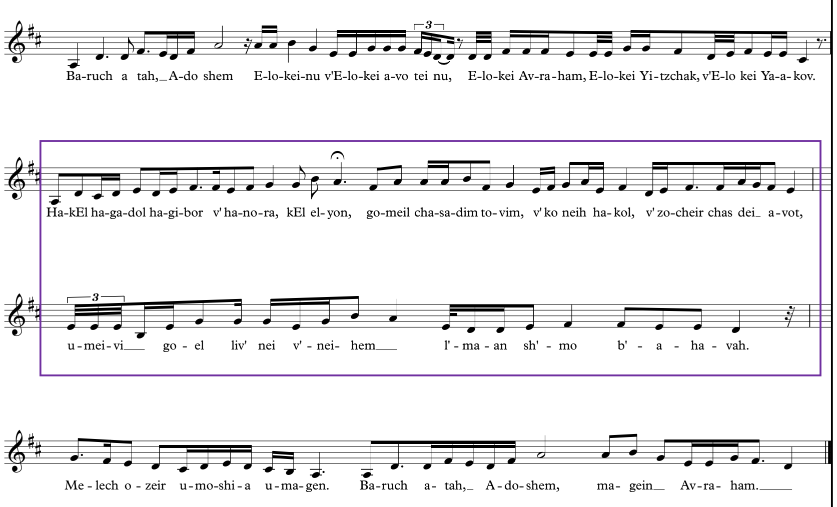
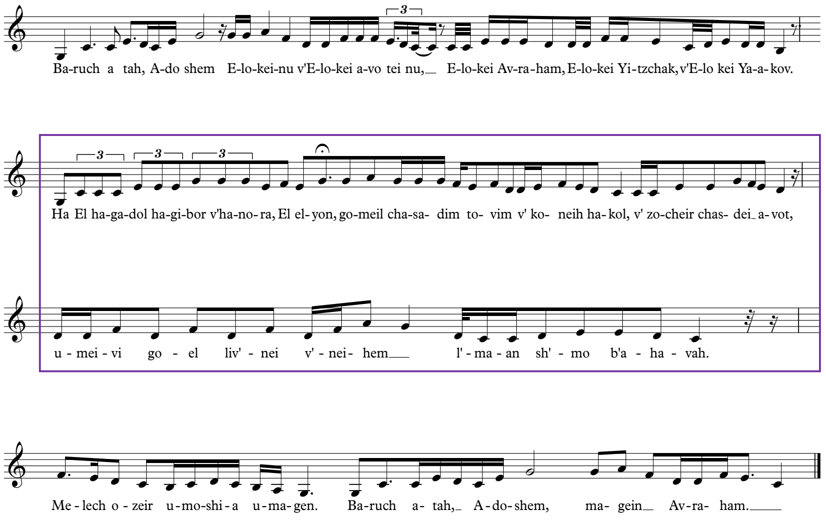
 Ba-ruch a tah,_A-do shem E-lo-kei-nu v'E-lo-kei a-vo tei nu, E-lo-kei Av-ra-ham, E-lo-kei Yi-tzchak, v'E-lo kei Ya-a-kov. Ha-kEl ha-ga-dol ha-gi-bor v' ha-no-ra, kEl el-yon, go-meil cha-sa-dim to-vim, v' ko neih ha-kol, v' zo-cheir chas dei_ a-vot, u-mei-vi___ go-el liv' nei v'-nei- hem___ l'-ma-an sh'-mo b'- a- ha- vah. Me-lech o-zeir u-mo-shi-a u-ma-gen. Ba-ruch a-tah,_ A-do-shem, ma- gein__ Av-ra- ham.____	 Ba-ruch a tah, A-do shem E-lo-kei-nu v'E-lo-kei a-vo tei nu,__ E-lo-kei Av-ra-ham, E-lo-kei Yi-tzchak, v'E-lo kei Ya-a-kov. Ha El ha-ga-dol ha-gi-bor v'ha-no-ra, El el-yon, go-meil cha-sa- dim to- vim v' ko- neih ha-kol, v' zo-cheir chas- dei_a-vot, u-mei-vi go-el liv'-nei v'-nei- hem___ l'-ma-an sh'-mo b'a- ha- vah. Me-lech o-zeir u-mo-shi-a u-ma-gen. Ba-ruch a-tah,_ A-do-shem, ma- gein__ Av-ra- ham.____
Avot, Hannah's performance, 2016	*Avot,* Joseph's performance, 2016

Table 3.4. Performance Comparison, *Avot*.

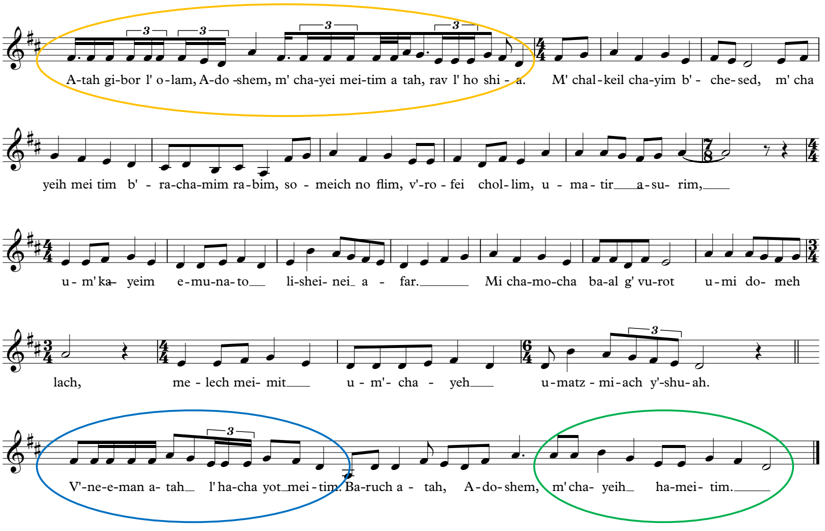
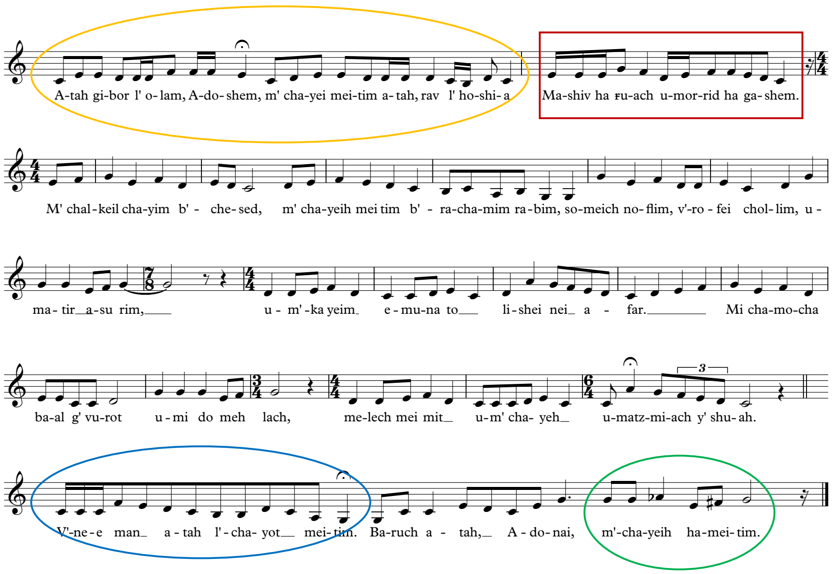
 A-tah gi-bor l' o-lam, A-do -shem, m' cha-yei mei-tim a tah, rav l' ho shi - a. M' chal-keil cha-yim b' - che-sed, m' cha yeih mei tim b' - ra-cha-mim ra-bim, so - meich no flim, v'-ro - fei chol-lim, u - ma- tir a-su- rim, u- m' ka- yeim e-mu-na-to li-shei- nei a - far. Mi cha-mo-cha ba-al g' vu-rot u-mi do- meh lach, me - lech mei- mit u - m'- cha - yeh u-matz - mi-ach y'-shu- ah. V'-ne-e-man a- tah l'ha-cha yot mei - tim. Ba-ruch a - tah, A-do-shem, m' cha- yeih ha-mei- tim.	 A-tah gi-bor l' o-lam, A-do-shem, m' cha-yei mei-tim a-tah, rav l' ho-shi-a Ma-shiv ha ru-ach u-mor-rid ha ga-shem. M' chal-keil cha-yim b' - che-sed, m' cha-yeih mei tim b' - ra-cha-mim ra-bim, so-meich no-flim, v'-ro - fei chol-lim, u - ma- tir a-su rim, u - m' -ka yeim e - mu-na to li-shei nei a - far. Mi cha-mo-cha ba-al g' vu-rot u-mi do meh lach, me-lech mei mit u-m' cha- yeh u-matz-mi-ach y' shu- ah. V'-ne-e man a - tah l' - cha- yot mei- tim. Ba-ruch a - tah, A - do-nai, m'-cha-yeih ha-mei- tim.
G'vurot, Hannah's performance, 2016	*G'vurot,* Joseph's performance, 2016

Table 3.5. Performance Comparison, *G'vurot.*

In the prayer directly following the Avot, the G'vurot, fewer differences can be seen between the performances (shown in table 3.5, above), likely due to the metered middle section of the prayer, making it feel more "fixed" performance to performance. Indeed, the discrepancies between Joseph's and Hannah's performances come in the beginning, semi-metered part of the prayer, and in the last line of the prayer, as before. Further, Joseph adds in the seasonal line of the blessing (boxed in red above), which Hannah omits, likely because of she is giving a "performance" for the recording, rather than actually praying the prayer in context.[80]

Performance discrepancies aside, Joseph has a particular movement pattern, especially when leading at the podium. He is a heavyset man who often sways wherever he is standing, but especially does so when leading the service. Joseph's movement profile, G, is shown below.

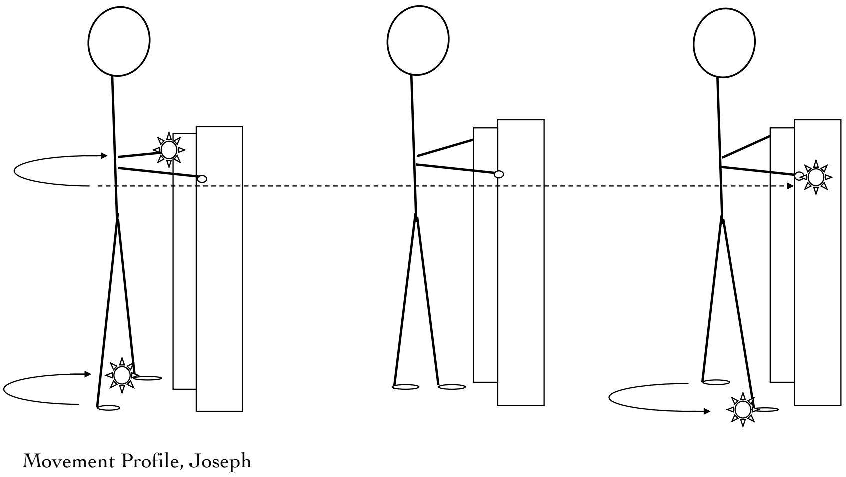


Figure 3.6. Movement Profile G.

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[80] This seasonal line of text changes depending on time of year; there is one line for Rosh Hashanah through Pesach, and another for Pesach through Rosh Hashanah. These texts correspond to the agricultural season in Israel.

Joseph also does a full weight shift, like Phil, which he initiates from an unusual locus in his wrists and arms, gripping the podium where his prayer-book is resting. The arced trajectory appears as a semi-circle to the back, arriving at an ictus both in the full weight shift onto the opposing foot as well as the corresponding hand and wrist gripping the podium. (A sped up version of this movement would make him look like he was operating an exercise machine.) This movement profile affords Joseph regularity in reaching his ictuses. Depsite stopping and starting within the prayer texts, Joseph appeared as one of the worshippers with the most regular physical movements.

Although I observed these regular movements especially when he was leading the Amidah, in our interview Joseph said that he thought he didn't move at this point in the prayer service:

> J: I mean, **mostly during the Amidah, I tend to stay stationary at that point and sort of concentrate on my praying at that point.**
>
> R: So, being still helps you concentrate?
>
> J: Yeah.
>
> R: And at that moment will you be looking at the book, even if you know it by heart?
>
> J: Yeah.
>
> R: Is that true of when you're a leader and a congregant?
>
> J: Yeah.
>
> — Joseph, Interview, October 2016.

The idea of stillness aiding concentration echoes Rebecca's concept of active listening, and goes against almost every other participants' assertions that semi-concious movement actually helped them stay more focused or in rhythm with the prayers. Like Hannah, Joseph's own movements throughout the Amidah contradict his self-perception, adding a layer of un-self-conciousness to his movement patterns.

However, at other points of the interview Joseph revealed that he is aware of some of his physical choices within the service. When I asked Joseph about what types of movements he makes, he noted specifically that he does not shuckel, saying:

> I tend to move side to side. Many years ago, when I was younger, I used to do sort of the traditional shuckeling back and forth, but then at some point I read or learned that that's not really appropriate so I, I modified it to side to side…. As far as I remember it was a matter of, you know there's really only certain times that you're, you know, shuckeling is sort of a bowing down and there's really only certain times during the services you're supposed to bow down.
>
> — Joseph, Interview, October 2016.

This explanation also shows that Joseph has clearly been engaging with and thinking about these movements for a long while, implying an even more complex interaction between unconscious and conscious movement, and how they figure into attention and focus throughout the service.

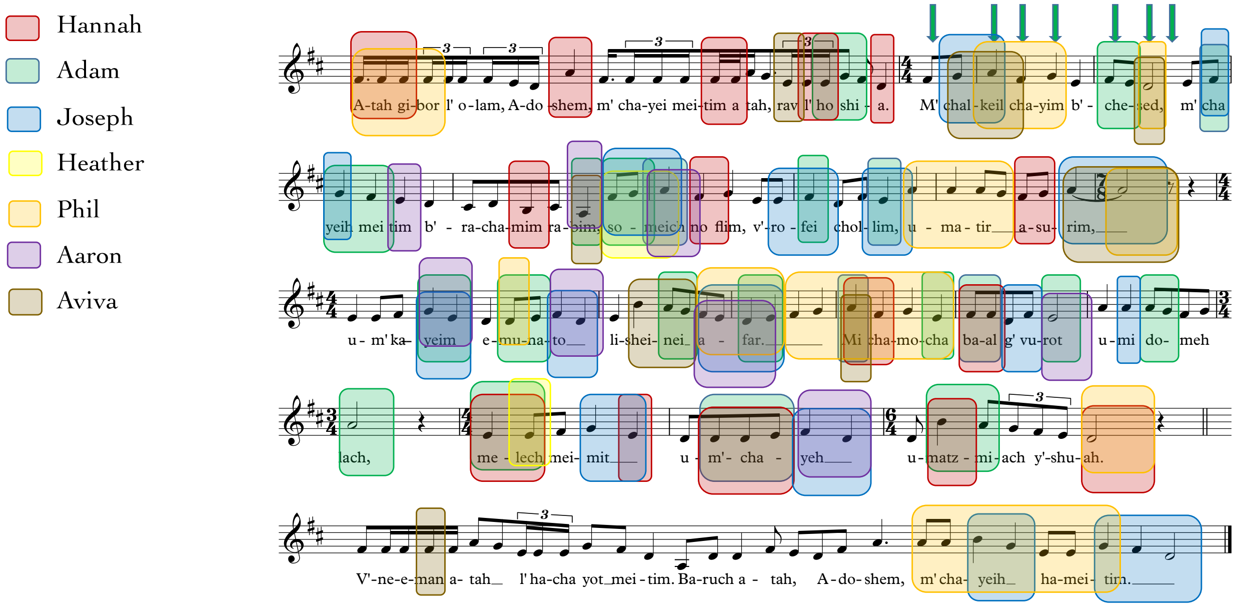
Joseph presents a case of implicit learning, saying outright in our interview, "you know, a lot of it is just a matter of imitating what other people are doing." He was clear that despite years of extensive Jewish education, he had never had an explicit learning experience of how to move freely during synagogue worship. This echoes the experiences of participants in both Conservative and Reform sites, and, I posit, falls at the heart of why such variation in free, ritually-inflected movement is seen throughout this study. Many of my informants discussed copying what they saw others doing, or just "picking it up", and then through practice they unconsciously incorporate these movements into their worship. This is a kind of physical oral tradition — a learned habitus, if you will — that incorporates different layers of expertise, observation, and adoption of movement habits. Shortly, in my discussion of the Temple Rodef

Shalom participants, I will demonstrate how the Conservative community seemed much more at ease with this type of transmission of physical knowledge than those in the Reform community.

Participant Summary: Heather, Aviva, and Leah; and Conclusions

Before I fully conclude my remarks in this section, there were three participants at Kol Torah for whom I had difficulty getting sufficient data in my observations. All women, these participants discussed similar issues as those for whom I did collect data (as discussed above), including implicit learning (Leah and Heather), ambivalence about prayer (Aviva), and use of movement to keep focused or pass the time (all three). Given my lack of substantial data for these women, I compiled the few ictus data points I had into a group comparison diagram of all Kol Torah participant ictuses during the G’vurot, across all observations. Note that Leah and Rebecca are omitted, as both were still throughout. This comparison diagram of all ictuses is shown below in example 3.12.

G'vurot, Kol Torah Participants Compiled


Hannah
Adam
Joseph
Heather
Phil
Aaron
Aviva
A-tah gi-bor l' o-lam, A-do shem, m' cha-yei mei-tim a tah, rav l' ho shi - a. M' chal-keil cha-yim b' - che-sed, m' cha
yeih mei tim b' - ra-cha-mim ra-bim, so - meich no flim, v'-ro - fei chol- lim, u - ma - tir__ a-su- rim,___
u- m' ka- yeim e-mu-na-to__ li-shei- nei_ a - far.____ Mi cha-mo-cha ba-al g' vu-rot u-mi do- meh
lach, me - lech mei- mit__ u - m'- cha - yeh___ u-matz - mi-ach y'-shu-ah.
V'-ne-e-man a- tah__ l' ha-cha yot_mei - tim. Ba-ruch a - tah, A-do-shem, m' cha- yeih_ ha-mei- tim.____

Example 3.12.

While almost impossible to read, this colorful ictus diagram clearly shows the variability of movement happening during the most metered prayer in the Amidah. While there are some moments of significant overlap, there is no one pitch, word, or section that has all participants hitting an ictus at once. Moreover, some participants appear to be ictus "outliers", accentuating moments in the prayer that almost no one else seems to attend to physically. For instance, Aviva (brown) in the last line, Phil and Joseph (orange and blue, respectively) at the end of the prayer, or Hannah and Phil (red and orange, respectively) at the opening of the prayer. This diagram is intended to give a visual sense of the constant and simultaneous movement occurring during prayer, none of which appears coordinated even though some ictuses fall together. This is the type of continuously fluctuating movement that I described in the scene that opens this dissertation, and that I observed during every service I attended at Temple Kol Torah.

From my overview of participants at this Conservative temple, it is clear that there are several issues at play during a typical Saturday morning Shabbat service. Ideas about attention and focus, and of being in the "now" thread through the examples, and participants suggest multiple ways of thinking about movement during worship. Connecting the interviews with observations showed that some informants are much more conscious than others as to their movements during prayer. Moreover, the variety of theological outlooks on prayer represented in the above examples indicates that mere physical presence, and any resultant movement patterns, within a Jewish worship space does not directly imply a specific ideology. Finally, the issue of meditation was touched upon several times. Moving to a discussion of the Reform community, Temple Rodef Shalom, I will show that many of these issues overlap, although my participants deal with them in differing manners, often due to their choice of affiliation with Reform rather than Conservative Judaism.

III. Temple Rodef Shalom: Meet the Mensches

As I walk into Rodef Shalom, I am greeted at the sanctuary doors by ushers handing out service bulletins. The room is warm, with a dark wooden ark and matching *bima* furniture, blue and grey carpeting and upholstery, and glowing stained glass panels along the back and side walls. The space has two levels, with the chairs arranged in a semi-circle such that congregants can easily see those around them from the almost anywhere in the room. The Rabbi and Cantorial soloist stand at podiums on the floor, rather than up on the Bima, and this physical closeness to the congregation seems to encourage participation from those facing them. The music is a mix of traditional nusach, contemporary composed melodies, and classical or folk melodies common in many other Reform synagogues. The latter two categories are always accompanied by either piano or guitar, depending on the service.

One hallmark of the Reform service is that it has been shortened from the inherently longer, full traditional service, and this shortening is accompanied by an implicit expectation that service-goers will arrive on time, sit attentively, and stay until the end. There is not a lot of coming in and out of the sanctuary, and if one does leave the room, or arrive late, it feels as though everyone present notices. Still, the community remains warm and friendly, with congregants who know me often inviting me to sit with them, or simply waving or smiling from across the room. There are usually some children present, running up and down the handicap-access ramp between the two levels and playing at their seats with their parents. Cellphone ringers sometimes disrupt the service, but mostly the soundscape closely follows the arc of the service itself; there is very little extraneous talking or other sounds throughout. It is in this atmosphere that my six participants from Rodef Shalom pray on a regular basis. Let's take a closer look at how that happens.

Shira

Shira is the Cantorial soloist at Rodef Shalom. Raised in an extremely traditional Conservative temple, Shira has made a transition to working in the Reform movement, but musically and physically retains habits from her Conservative roots. One such set of habits are her movement patterns during nusach. In her interview, she explained how she moves:

> And it's this, conscious yet unconscious movement…. Conscious meaning, I know I'm doing it, I'm doing it because *I want* to do it, but unconscious in the sense that I allow my body to move back and forth and occasionally side to side as I may. I'm not regulating my movement, it is something I'm conscious of, I know that I'm praying in that manner. There might be an occasion where I will consciously ask

> myself to still my body, because when I am in that motion it is part of how *I* pray, but I do recognize that for some people it can be distracting, and so, people who have not necessarily grown up in the tradition that I did, or people who maybe just did not observe it, or never observed it, to see someone moving all the time could be visually distracting and the last thing I want to do is take away from anyone's prayer. So, the way I've been able to balance this davening motion which, I guess is, as I've said is, as I'm holding my siddur [prayer-book] … it's like a gentle rocking in a sense, back and forth and side to side, or I should say forward back and side to side. And so, what I find myself doing, is…when I'm am chanting nusach, when I am singing in traditional chant [*explains Nusach*]…. then I do daven with my body as well…. So, ideally movement during nusach and attempt for non-movement not in nusach in composed melodies, but, I'm not positive that I always achieve that which is why I do attempt to still myself several times throughout the service.
>
> — Shira, Interview, June 2015.

In this manner, she combines her upbringing of "conscious yet unconscious movement" during traditional chant with the more "presentational" movement style that is typical in Reform Judaism. In observation, this distinction is very clear. Her gaze shifts towards her *siddur* (prayer-book), and only returns to the congregants when she is engaging them in responses. Shira's movement profile is B, though sometimes also E (shown in figure 3.7). She has two discernible ictuses, a forward and a back. Each ictus is reached with emphasis and weight, though the forward ictus feels distinctly more variable than the backward ictus, which is likely due to the ease of gravity in the completion of the movement. (Perhaps it goes without saying, but when one ictus is being emphasized, the opposite is not).

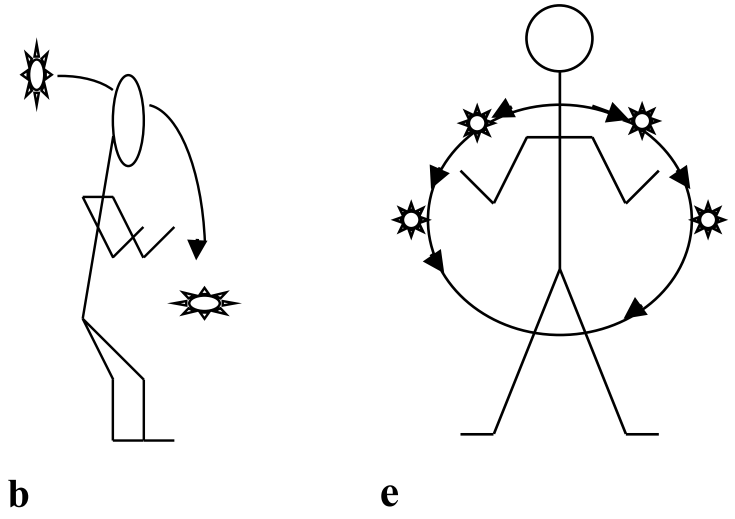
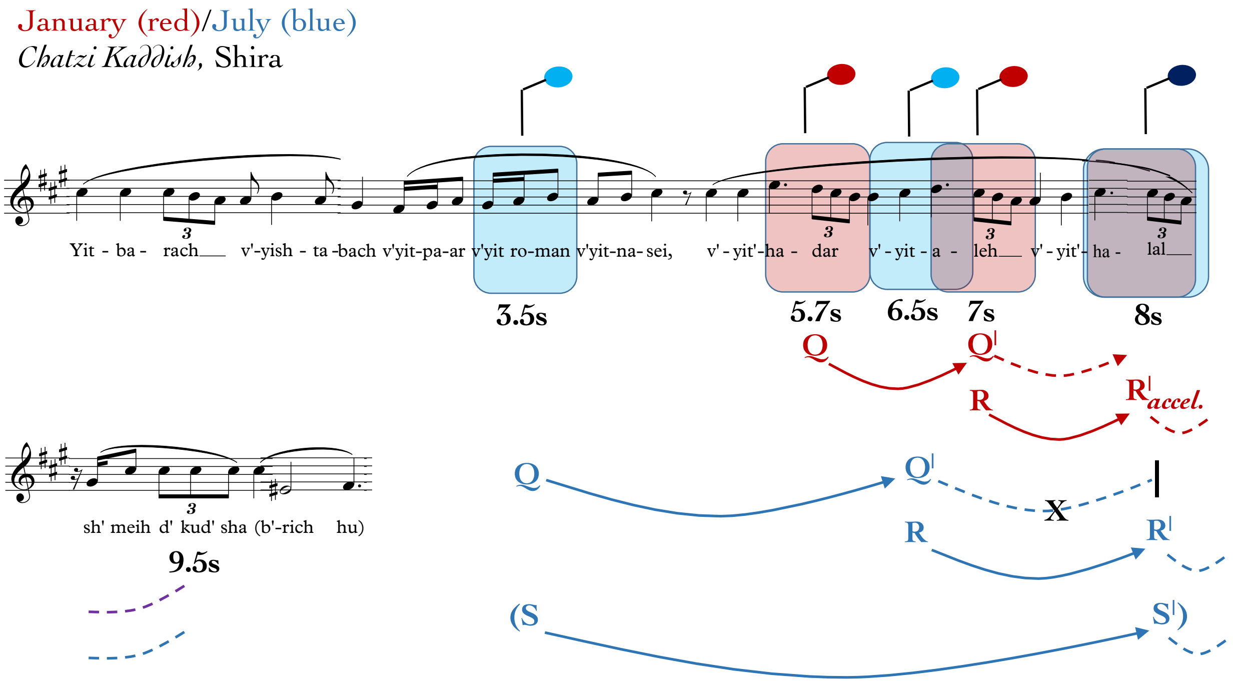


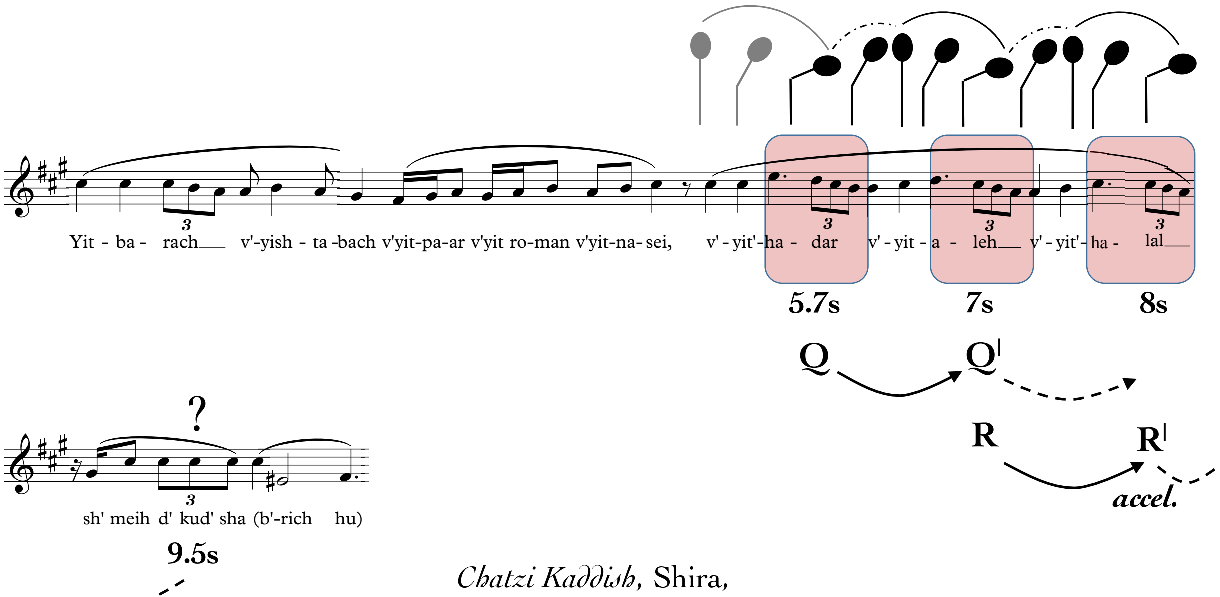
Figure 3.7. Shira's Movement Profiles.

How is this movement is realized in a prayer? The below examples are drawn from the *Chatzi Kaddish*, a prayer sung in nusach and full of sequential melodic motives. A "half" Kaddish, the prayer text discusses the magnification and sanctification of God's majesty. Its placement in the structure of the service is like a bookend, marking the start of the main service. Primarily chanted by the leader, I observed Shira leading the prayer, collecting data for her in January of 2016 and then again in July of 2016. I found that, while the vocal work remained the same, there was a distinct shift in her physical patterning.

In the diagrams below (examples 3.13-15), red circles indicate the January 2016 movement and blue circles indicate the July 2016 movement, both identifying where the forward ictus is met. The two movement frequencies come together at the end of the sequential text on "-halal", before the declamatory "sh'meih d'kud'sha" and the congregational response in parentheticals. The red highlights and projective analysis demonstrate an approximate one-second frequency, with a slight acceleration on the second iteration. This movement meter is coordinated with the melodic and prosodic emphasis on word endings and falling pitches. Further, as the phrase ending is reached with the triplets' falling pitches, the acceleration implies a feeling of gravity and drive towards the cadential motion of "sh'meih d'kudsha". This vocal sense of gravitational pull is simultaneously felt in the body's repeated falling towards the forward ictus. Thus, some regularity is created in the physical time and space between attacks on the forward ictus, which is the more physically emphasized of the ictuses.

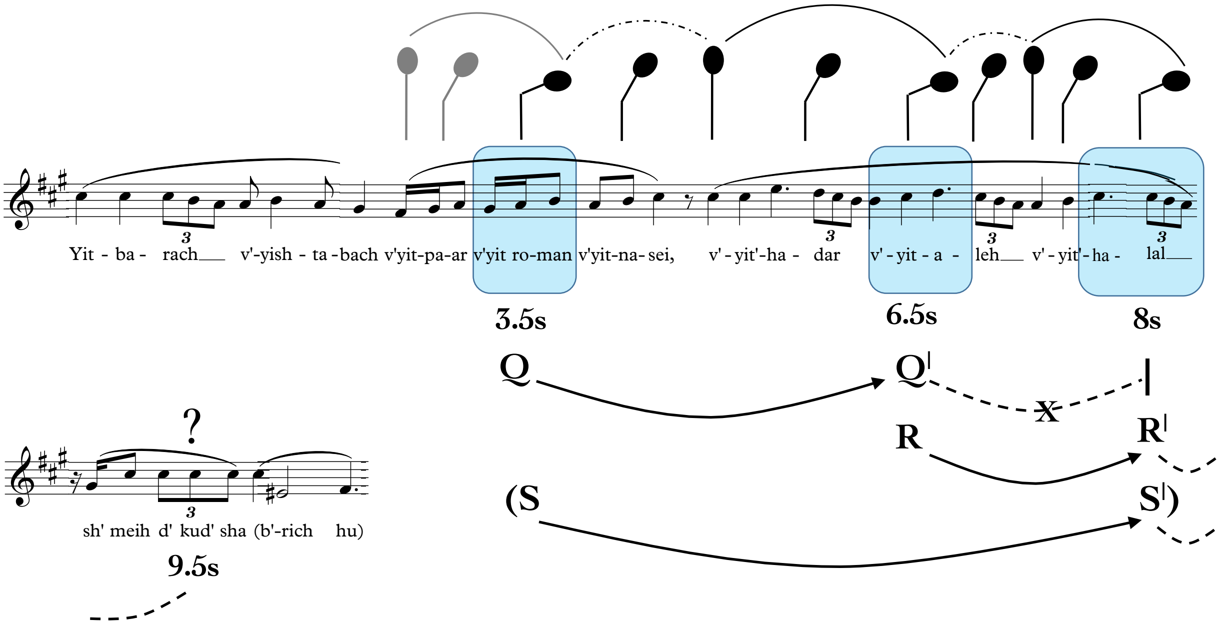

January (red)/July (blue)
Chatzi Kaddish, Shira
Yit - ba - rach___ v'-yish - ta -bach v'yit-pa-ar v'yit ro-man v'yit-na- sei, v' - yit'-ha - dar v' - yit - a - leh___ v' - yit'- ha - lal___
3
3.5s
5.7s
6.5s
7s
8s
Q
Q|
R
R| accel.
sh' meih d' kud' sha (b'-rich hu)
9.5s
Q
Q|
X
R
R|
(S
S|)

Example 3.13. Combined analyses.


Yit - ba - rach___ v'-yish - ta -bach v'yit-pa-ar v'yit ro-man v'yit-na- sei, v' - yit'-ha - dar v' - yit - a - leh___ v' - yit'- ha - lal___
3
5.7s
7s
8s
Q
Q|
R
R|
accel.
?
sh' meih d' kud' sha (b'-rich hu)
9.5s

Chatzi Kaddish, Shira,
Jan. 2016 Movement Pattern

Example 3.14.

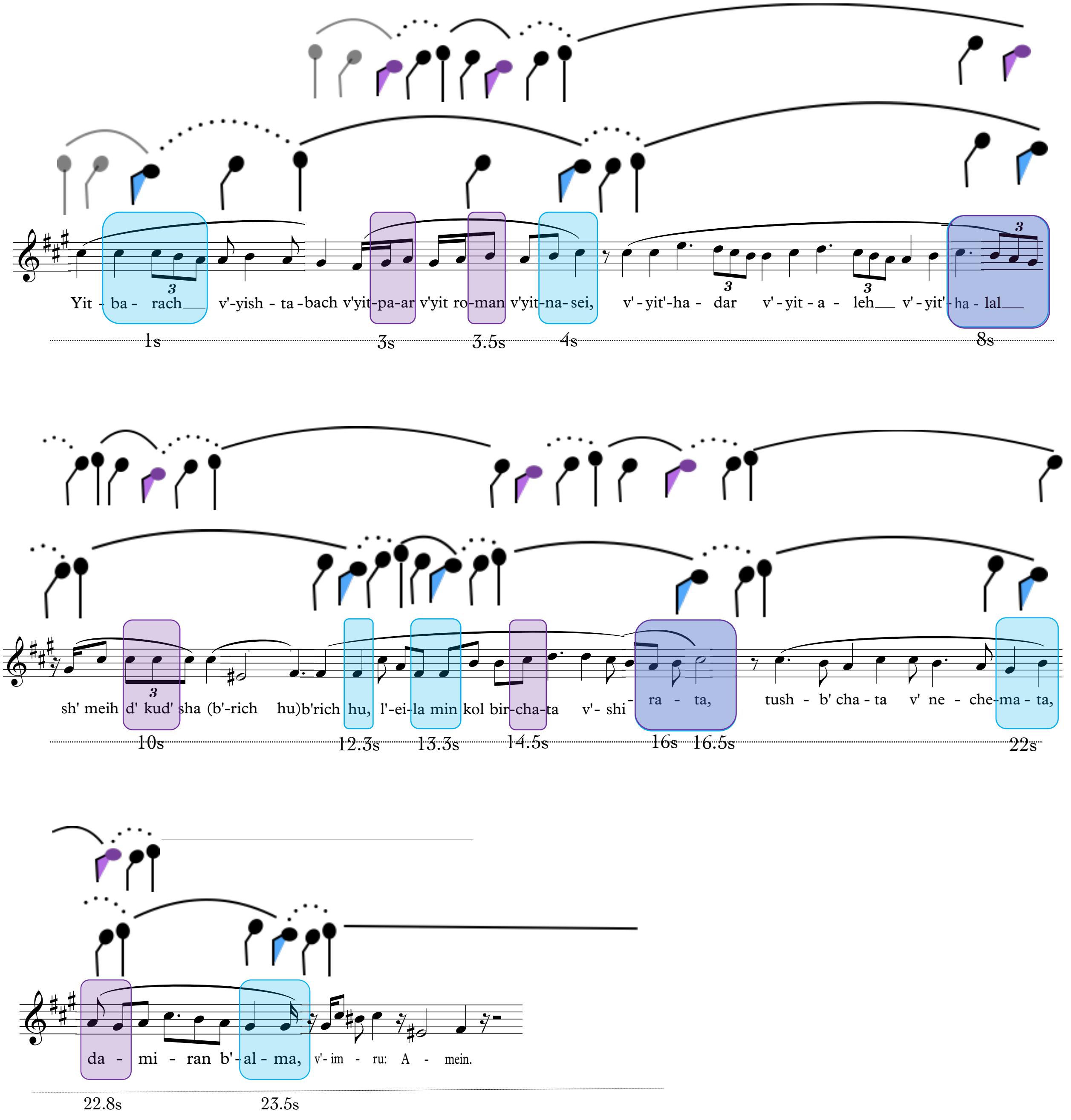

Yit - ba - rach___ v'-yish - ta -bach v'yit-pa-ar v'yit ro-man v'yit-na- sei, v' - yit'-ha - dar v' - yit - a - leh___ v' - yit'- ha - lal___
3
3.5s
6.5s
8s
Q
Q|
X
R
R|
(S
S|)
?
sh' meih d' kud' sha (b'-rich hu)
9.5s

Chatzi Kaddish, Shira, July 2016 Movement Pattern

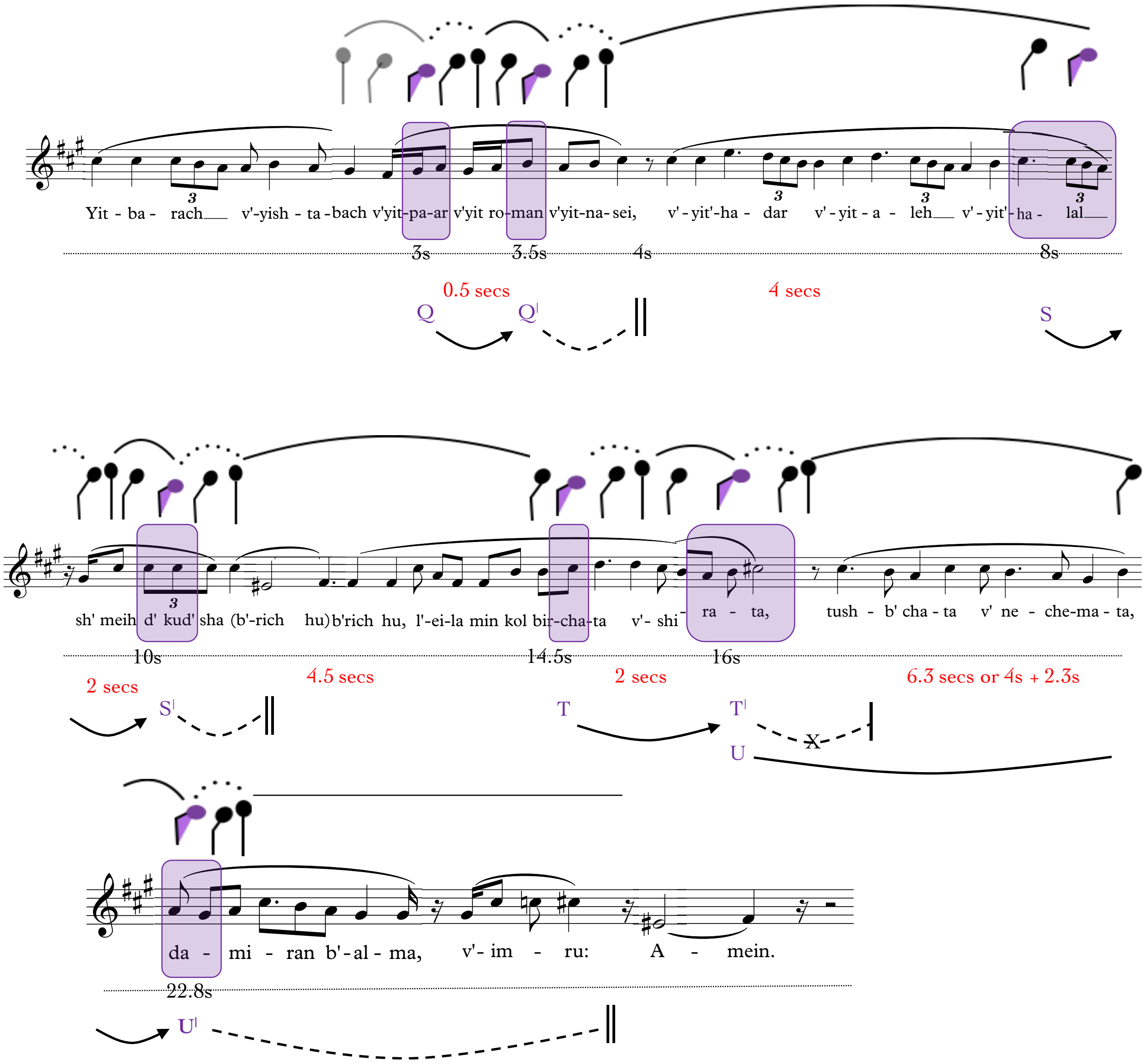
Example 3.15.

The blue circles, identified in July 2016, show a hyper-metrical shift in the larger movement meter of the phrase. Almost a physical hemiola, the "duple" frequency of the red circles from the previous example are now articulated as a kind of floating, uneven triple. The projective analysis shows that the third ictus is reached in half the time of the first, implying a second analysis of the entire three ictus attacks as a single metrical unit (S-S'). Further, it is notable that these time spans are much longer between forward ictus attacks than the January data. While the longer time span might be understood as larger physical movements that take more time to complete, this is not at all the case. In fact, Shira's movements in July were much smaller and seemingly more regularly spaced throughout every prayer. In casual conversation with her after the service, she mentioned that she was feeling quite ill, and was under a lot of stress with family and work. Perhaps this factored in to the distinct change in her movements, though of course any such correlation will remain presumptive. So why does this "uneven triplet" movement meter appear here, in a sequential melodic text that is easily entrained to? One interpretation is that it is actually less physically regulated, allowing for less strain on one's body, whereas the regularity required of the movement meter that matches the prosodic and melodic meter requires more energy and physical effort.

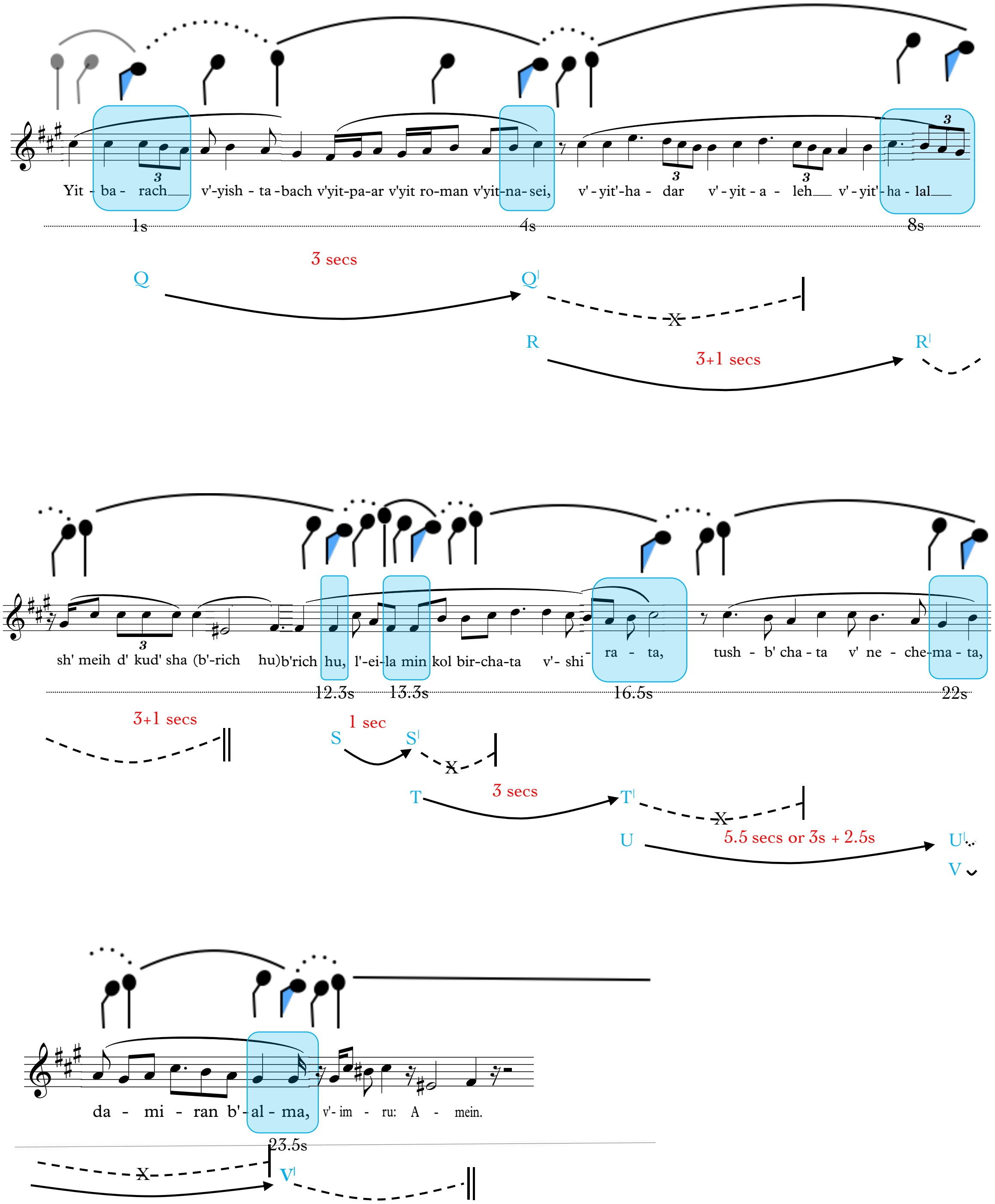
As I continued to observe Shira during the Chatzi Kaddish later in the summer of 2016, I noticed a continual shifting of where the emphasis was placed in this second half of the prayer, regardless of her use of the same movement profile. The following diagrams (Examples 3.16-18) show a comparison of her movements on August 12th, 2016 (in purple) and August 19th, 2016 (in blue). From these examples, it is apparent that there are only two points where Shira reaches her forward ictus in the same location ("-halal" and "-rata"). These both represent phrase endings, and seem to be stable movement points.


Yit - ba - rach___ v'-yish - ta - bach v'yit-pa-ar v'yit ro-man v'yit-na-sei, v' - yit'-ha - dar v' - yit - a - leh___ v' - yit' - ha - lal___
1s
3s
3.5s
4s
8s
sh' meih d' kud' sha (b'-rich hu)b'rich hu, l'-ei-la min kol bir-cha-ta v'- shi - ra - ta, tush - b' cha - ta v' ne - che-ma - ta,
10s
12.3s
13.3s
14.5s
16s
16.5s
22s
da - mi - ran b' - al - ma, v'- im - ru: A - mein.
22.8s
23.5s

Example 3.16. Shira, *Chatzi Kaddish*, August movement patterns combined.
Purple = 8/12/16, blue = 8/19/16.


Yit - ba - rach v'-yish - ta - bach v'yit-pa-ar v'yit ro-man v'yit-na- sei, v' - yit'-ha - dar v' - yit - a - leh v' - yit' - ha - lal
3
3s
3.5s
4s
8s
0.5 secs
4 secs
Q
Q|
S
sh' meih d' kud' sha (b'-rich hu) b'rich hu, l'-ei-la min kol bir-cha-ta v'- shi - ra - ta, tush - b' cha - ta v' ne - che-ma - ta,
10s
14.5s
16s
2 secs
4.5 secs
2 secs
6.3 secs or 4s + 2.3s
S|
T
T|
X
U
da - mi - ran b'-al - ma, v'- im - ru: A - mein.
22.8s
U|

Example 3.17. Shira, *Chatzi Kaddish*, August 12, 2016 movement pattern.


Yit - ba - rach v'-yish - ta -bach v'yit-pa-ar v'yit ro-man v'yit-na-sei, v' - yit'-ha - dar v' - yit - a - leh v' - yit'-ha - lal
1s
4s
8s
Q
3 secs
Q|
R
3+1 secs
R|
sh' meih d' kud' sha (b'-rich hu)b'rich hu, l'-ei-la min kol bir-cha-ta v'- shi - ra - ta, tush - b' cha - ta v' ne - che-ma - ta,
12.3s
13.3s
16.5s
22s
3+1 secs
1 sec
S
S|
T
3 secs
T|
U
5.5 secs or 3s + 2.5s
U|
V
da - mi - ran b'-al - ma, v'- im - ru: A - mein.
23.5s
V|

Example 3.18. Shira, *Chatzi Kaddish*, August 19, 2016 movement pattern.

On August 12th (example 3.17), Shira demonstrated paired movements with long breaks in between. While at first glance these seem random, they are actually spaced quite evenly, with a slight rallantando across the entire section. The duration values (shown in seconds) can be seen in red on the graphs. As meter, these pairings create projective expectations that are continually stopped by hiatuses, preventing the physical movements from feeling connected across the phrases. It is also notable that many of the movements occur near phrase endings, rather than beginnings.

The following week, August 19th (example 3.18), Shira again demonstrated an emphasis on phrase endings, but this iteration has many more forward ictus attacks on phrase beginnings as well. Here, although again the projective metrical expectation is continually denied, looking at the time span between attacks on the forward ictus is illuminating: it seems to take Shira roughly three to four seconds to complete the phrase movements. This pattern gives a sense of regularity to the phrase lengths and accompanying movement, implying a rubato freedom of the improvisational performance style rather than "unmeteredness".

The issue of emotionality in prayer is one that is brought up in literature as often as it was in participant interviews. In her book *Deep Listening* (2004), ethnomusicologist Judith Becker discusses emotionality as linked to experiences of trance states. She notes that emotion as a result of intense musical experience is an important factor in creating trance states, whether spiritual or secular. But "emotionality" is complicated: made vague and variable by the daily and weekly obligations of synagogue experience. In Judaism, a balance between *keva* (ritual obligation) and *kavannah* (ritual intention or spirit), is considered integral for the most effective prayer experiences. Thus, the goal in many congregants' opinions, as explained in interview settings, is *not* to experience an ecstatic religious moment, but rather to fulfill prayer obligations and to find other types of prayer moments — be them quiet and solitary, or in coming together with the community.

In my interview with Shira, she spoke at length about her goals for kavannah during prayer, and her responsibility to the congregation, saying:

> I fully admit that I am human and therefore completely infallible [*sic*], and so sometimes despite my best intentions I, probably like everyone else, I'm not always as focused as I would like to be. But ideally, there is a Hebrew word "*Kavannah*" which means intention, and the, as I'm going into, anytime I'm leading a service or a minyan or a *shiva* minyan my Kavannah, my intention, is to be in the moment. I think that it is one of the most important things, and it's hard to do at first, but you need to learn to not look at your congregation, but *see* your congregation, *hear* your congregation. And I don't mean in the, like "I see you", I mean like, *see*, like, be aware of. And that's hard to do, it takes time. I can't say that I've always been able to do this, and I can't also say that I can always do it. But the intention of Kavannah is to be one with the congregation. Another word for a service leader is a *shaliach tzibur*, an emissary of the congregation, it's your job to be the voice of the congregation, to help be, the person who literally calls them to prayer and conducts the call and response of certain sections asking, you know, "are you ready to pray", asking "will you join me in prayer, will you join me in song?" These are responses that are sort of built into our liturgy. So, ideally, I'm there, ideally, ideally, not only am I there but I'm with my prayer partner Rabbi, we as a team do our very best to lead but to also observe the congregation in a way that we may adjust as we go.
>
> — Shira, Interview, June 2015.

As is clear from her explanation, focus and being present is vitally important to her idea of what an emissary of the congregation should be. She wants to "read her audience", to react to, to engage, to aid, and ultimately to guide her congregants through the prayer service. She goes on to describe several ways in which she does this, but also explains her own prayer experiences. In order to be present, Shira notes that she must distinguish her movement and vocal style in order to differentiate various musical settings and prayer styles throughout the service. There are three main prayer styles seen in any Reform service: *nusach* (unaccompanied chanted Hebrew), composed songs for the synagogue (often accompanied by piano or guitar), and spoken Hebrew or English. Since the first is of concern in this study, my remarks have been and continue to be focused around nusach and participant interactions with this semi-metered chant.

It is apparent already from the analyses of movement meter in nusach discussed above, that each iteration of the same prayer by the same person (on different observations) is a bit different, and that participants tend to adjust their movements based on time, physical comfort, and size of community, among other factors. However, there are also distinct moments of continuity amongst these varied iterations. In Shira's case, she treats some phrases or words in the same exact manner at each iteration, the davening looking almost identical week-to-week. While these moments are fleeting, they demonstrate important signposts for a higher level of movement meter and the creation of structure in the prayer. Shira makes the same movements at specific moments, while still moving freely in other areas. This mirrors what is heard metrically in the meter of the nusach: at some points the meter feels regular and is similar across iterations but other parts of the prayer are free and improvisatory, sometimes slowing, sometimes speeding ahead. The resultant balance between structure and freedom echoes the balance between *keva*, ritual obligation, and *kavannah*, ritual spirit or intention, which when combined allow for an ideal prayer space and experience.

When asked about her use of body movement during prayer, Shira again came back to issues of being present and focused. She explained:

> For me there's a little bit of a nostalgia part of it. Both connecting me to my childhood growing up but also I guess it's the same nostalgia I carry towards, not nostalgia, but, I feel like when I am davening, when I am moving and chanting the traditional nusach, that connects me not only to every person in the congregation, that connects me to every Jew who has ever come before me and everyone who will ever come after me. And it's like, when you're chanting something so traditional you realize that you're just like one tiny little speck, little grain of sand in that piece that is all of Jewish practice. Now that's not to say necessarily that we've practiced in the same ways always but, thinking in the Rabbinic times and forward, post

> Temple times — Temple with a capital T, in the post Temple era, the era of the synagogue as the center of Jewish prayer as opposed to the Temple, which included ritual sacrifice which obviously we do not do, that left with the destruction of the Temple — but in the time since then, in that way we've been praying basically the same way for thousands of years. **So when I allow myself to start moving backwards and forwards, side-to-side, it sort of allows you to go into a meditative state, not a trance-like state but a meditative state. And in the true sense of meditation to quote a great teacher of mine, you are able to "be here now." That the act of meditation should not allow you to go off somewhere, far from it, but to be truly here in the moment. To be observant of your breath. To be observant in the meditation sense of praying. To be observant of those around you in the collective sense. To breathe together, to hear together, to see together, to sing and pray and listen together**…. So when I'm moving, it puts me in my prayer place. It just, it's like **this is my connection to the old**.
>
> — Shira, Interview, June 2015.

I've highlighted some portions of this quote for emphasis. As Shira addresses meditation as an entrance for prayer — a way to be present and in that way to pray — she also addresses movement as a vehicle for creating that prayer space. Her movement connects her to her people and her heritage; her way of praying is deeply connected to her Jewish identity. Shira's depiction of her own connectivity seems to echo much of the literature on trance, prayer, and emotion, and yet she notes outright that a trance is not something she sees herself entering into. Perhaps this is a semantic difference, yet I think the avoidance of the term "trance" should not go unnoticed in the interview transcription, as it was similarly avoided in almost all the interviews. These Jewish participants aren't looking for an ecstatic experience. Many are not even looking for what they would term an emotional experience; they are looking for a prayer experience. Just like movements that look "dyssynchronized" and "messy", and semi-metered chant that seems "unregulated", perhaps "trance" or "emotion" isn't enough to describe what prayer *looks* like from the outside. As my participants explain, prayer states, created by movements that feel as natural as one's skin, are achieved through a combination of factors, and are importantly focused on the *experience* of being in a specific space and time, not the emotion connected to that space or time, emphasizing process over product. “Prayer” is not an emotion — something to feel as a reaction — but rather it is an action that results from a series of other actions, understood as embodied technique (Spatz 2015), or perhaps a Bourdieuian *habitus* (Becker 2004).

Vera

Another aspect of movement I examined in my observations were two participants moving at the same time. I saw an example of this while observing Shira, the cantor about whom we’ve been speaking, and Vera, an elderly congregant. Vera is one of my oldest informants. She was raised in a then-predominantly Jewish area of Chicago, by academics whose University community was more important to the family than their Jewish community. While Vera grew up with an Orthodox grandmother in the home and both parents identifying as Orthodox, she described her experience of Judaism as very familial but “not ritually strong”, mostly due to her parents’ lack of involvement in a Jewish temple community. When asked if she remembered learning to use her body in prayer, Vera noted that she watched and copied, picking up movements and maintaining the ones she liked doing. This tendency to copy movements that seem interesting or meaningful to her has continued throughout her adulthood. Vera also spoke of “making up for her childhood” by becoming very active in her congregation, encouraging extensive Jewish education for her children, and participating musically and educationally in temple activities at Rodef Shalom.

In observing Vera, her movements appeared more gesture based, rather than metrical. Unlike the metrical regularity of Cantorial soloist Shira’s “conscious yet unconscious” movements, Vera’s movements seemed tied to the prosody of the Hebrew text. While she watched Shira intently during several prayers, appearing to mimic Shira's movements, I only observed Vera actually in sync with Shira once (though at many points Vera seemed to be almost in sync). In accordance with Warren-Crow's (2011) discussion of synchrony types, Vera seemed to be striving for synchrony but mostly unable to reach it, ending up in dyssynchrony with Shira. I also observed her to be *out* of sync — asynchronous — with Shira, and these moments always occurred when her eyes were focused on the prayer-book rather than the people around her.

Foremost, I observed Vera copying Shira's profile B, with modifications based on her own physical limitations. Vera has to stand with her left knee slightly bent, and her forward and back movement is therefore completed by her shoulders, with her locus only in her upper core. However, Vera also made this movement with her shoulders while sitting, especially during nusach and silent prayer. Furthermore, she often tapped her right foot when sitting, allowing her to entrain during composed congregational melodies, and sometimes continued to tap (quietly, due to carpeted flooring) during English readings. These movements were observed in the fall and winter of 2015-16, following Vera's recent shoulder surgery. I discussed her movements during the healing process in chapter two.

In the summer of 2016 I observed Vera once more, to check that my earlier observations remained representative of her movement patterns. Much like I saw with Shira, Vera's movements had changed drastically: she continued to do the bows for the ritual choreography, but was otherwise still, both while sitting and while standing. This change indicates a couple of possibilities. Perhaps Vera was moving more in the winter because it was closer to her November 2015 interview, and she was aware (or assumed) I was observing her. Possibly Vera was experimenting with her range of movement following her shoulder surgery in the winter, causing her to make larger, more frequent movements. In contrast, perhaps in the summer Vera assumed that I was observing someone else, or maybe she, like Shira, wasn't feeling well. The tendency to move more directly after the interview is one I saw several times, but most starkly with Vera and Dan (discussed below) at Rodef Shalom. Likely a combination of having recently thought a great deal about movement during prayer, and knowing that I'm there observing, this slightly more intense self-awareness of their movement is something my participants noted again and again as an aspect that they appreciated from the interviews.[81] Beyond the "interview effect", the shifts in movement patterns over time that I observed seem to indicate the dynamism of personal prayer experiences.

Watching Shira and Vera move during one of the central prayers of the service, the *Avot v'Imahot*, I noticed an interesting interaction: both worshippers were ostensibly doing the same thing, but at different times. In example 3.19 below, it is clear that both women start out emphasizing the end of the Hebrew phrases, but then one shifts, showing a strict two-second movement frequency, while the other continues in the previous pattern with the Hebrew text.

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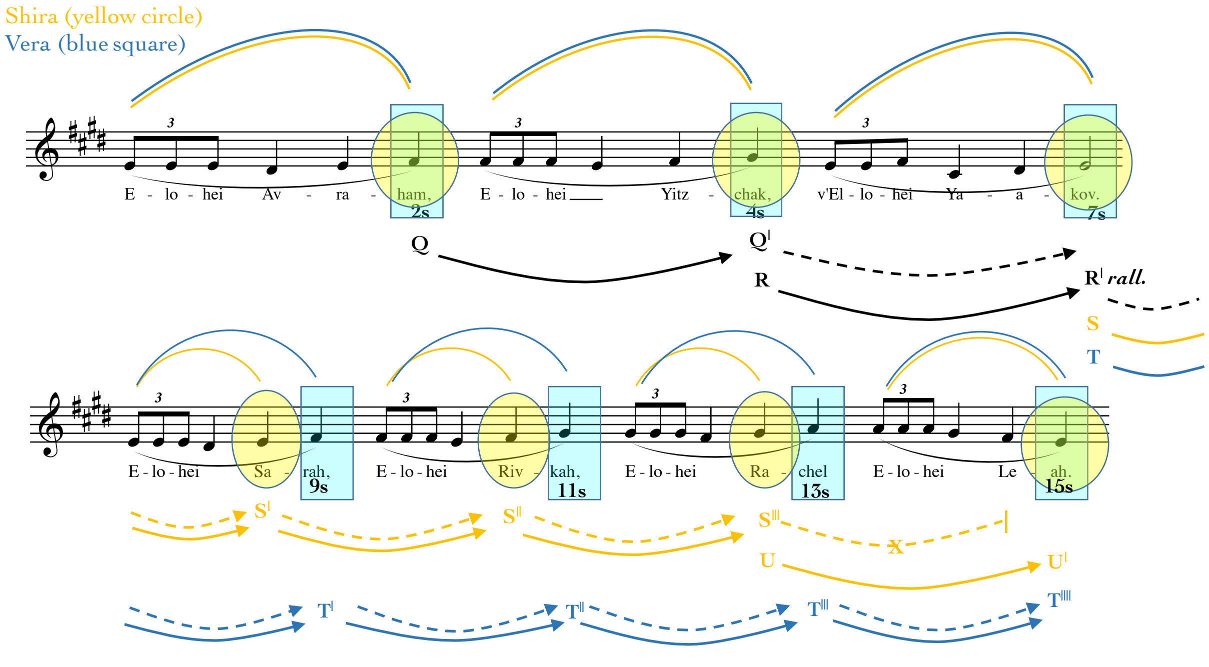
[81] Despite my best efforts to arrive a little late, quietly slipping into the back or side of the sanctuary to avoid being noticed by my participants, many times they looked around at some point and realized I was there, acknowledging me with a smile or wave.


Shira (yellow circle)
Vera (blue square)
E - lo - hei Av - ra - ham,
2s
E - lo - hei Yitz - chak,
4s
v'El - lo - hei Ya - a - kov.
7s
Q
Q'
R
R' rall.
S
T
E - lo - hei Sa - rah,
9s
E - lo - hei Riv - kah,
11s
E - lo - hei Ra - chel
13s
E - lo - hei Le - ah.
15s
S'
S''
S'''
X
U
U'
T'
T''
T'''
T''''

Example 3.19. *Avot v'Imahot* opening, Shira & Vera Comparison.

Both the projective analysis and the circle-square markers (Shira is the circle, Vera the square), show that what begins as synchronized movement which mirrors the phrase length is thrown off by the slight lengthening at the end of the first system. In the second system, the participants' body movements maintain internal regularity but become asynchronous when observed together. This requires an adjustment for the S/circle (yellow) movement stream, enacted by Shira.

Connecting this example to the participant interviews helps to illuminate the asynchrony occurring during this prayer. As this is an instance of nusach, Shira (the circle) will be making "conscious yet unconscious movement"; she will be davening. Thus, the shift of movement meter can be understood as an unconscious shift, that doesn't account for the extra second at the end of the first line (on text, "v'Elohei Yaakov"). Shira is simply moving in a regular rhythmic pattern, which negates the need for physical adjustment based on semantic change.

In contrast, Vera noted the following about movement in her interview:

> I'm not as knowledgeable as I would be had I had I suppose a different background, about what some of the movements are that you do at different times, but I just look and see what other people are doing and decide if I want to do that or not. And quite a few of the movements I do do, because I feel comfortable doing them.… I've seen people all my life davening in the old fashioned way, ["Shira"] does, not extremely but she does, but I don't know when you do that one way or another way and I understand from her that it's all quite spelled out at least in some traditions, but I don't have the background, so I just sort of copy and do a little of this and a little of that.
>
> — Vera, Interview, November 2015.

This statement indicates that she is tying her movements to what patterns she can glean from her own observations of others' movements. Thus, of course Vera is using the same movement profile as the cantor (Shira), and she begins moving in sync. However, she continues to tie her movement frequency with the Hebrew phrase and the sequential melody, reaching her ictus at the end of each phrase — similar to a marker of prosody — and therefore she falls out of sync with Shira, whom she is mimicking. This brief example shows a nuance of movement and musical interactions that begins to illuminate the complex movement/sonic connectivity occurring during a regular Shabbat Service.

Dan

Dan's case echoes some of the stories from the Conservative site, as his movement in the synagogue is tightly entwined with his upbringing and formative experiences. Dan admitted outright in his interview that he is very uncomfortable in his body. For example, he noted:

> D: So I, **I move awkwardly**, but hopefully unnoticeably. Yeah there are times when, so I'm sure, getting caught up in the rhythm can for me feel like it adds a level or a dimension.

> R: Are there certain types of movements that you make, like do you tend to sway, do you tend to do a faux-shuckel?
>
> D: Actually Rosa, that's a really good question. So I think I sway, but I think another way, a minor distraction from where I want to be in that moment, in that prayer space, is, **I don't want to make myself feel self-conscious.**
>
> R: I like that, "being self-conscious of being self-conscious".
>
> D: [*laughs]* Yeah, so, and **if I didn't have a body at all, then I wouldn't have to worry about any of that. I can just be my head**.
>
> — Dan, Interview, August 2016.

It was fascinating to hear Dan try to describe the movements he makes. He described himself at one point as a "disembodied human", and talked about how he was very uncomfortable in his body and very comfortable in his mind (also noted in the above quote). When I pushed Dan further on this, it became clear that a large part of his movement experience in the synagogue setting is related to his experiences as a young person. In telling me about his experiences learning to pray and even just to be in the physical space of the synagogue, he explained:

> I grew up in a different era of Reform worship and I grew up in a pretty non-observant home, and one of my constant reminders was "no shuckeling!" So it, for my dad I think it was just his personal history that he didn't like his upbringing with his father so he went to the no shuckling!" ... I think it was, "sit still." And "*shecket b'vakashah*!" ... I mean, there were things, it's not only, 'you're not required to do them' but, 'you're expected not to do them.' So, you don't put on a kippah. It's not one of those, 'it's an option'.
>
> — Dan, Interview, August 2016.

Growing up in a physically restrictive prayer environment, Dan, now in his mid-sixties, has become a searcher. He described his upbringing in a Reform temple as "Protestant-like": sitting straight and tall, not moving or being loud, and he is still, as an adult, struggling against the voice of his father saying "no shuckeling!" and "shecket b'vahkasha!" (literally "quiet please" in Hebrew, but often said in a manner which sounds more like a command than a request [e.g., "be quiet!"]).[82] All of this was part of his father's response to his grandfather's religiosity — Dan recounted memories of his grandfather, a devout Orthodox Jew, mumbling Hebrew very quickly throughout the Passover *seder*. As such, these extremes seem to have settled into Dan's physicality, leaving him searching and stiff; uncomfortable in his body, awkward in many of the physical customs in the service, but also knowledgeable and observant, continually striving for what is "right".

Unlike many of the other participants from Rodef Shalom, Dan did not get emotional about his bodily experience. Indeed, every time I tried to steer the conversation towards specific movements or bodily feelings, he quickly changed the subject — sometimes to other people and their stories, and sometimes to his own mind. This aversion of bodily discussion is an important component of bodily awareness.[83] Moreover, the awareness of "Reform-ish" movement, "Conservative-ish" movements, and especially "Orthodox-ish" movements, are important markers throughout interviews and Dan's is no exception. Consider the following interview excerpt:

> R: You said earlier that you're a very disembodied human, can you just explain what you mean by that?
>
> D: … So I guess it's just a way of saying I've never been particularly comfortable in my own body and I am more comfortable in my own head. Which periodically over the years I've made efforts to work at some.

---

[82] Early and mid-twentieth-century American Reform synagogues had many social practices that differed from those seen today. The push to assimilate with their Protestant neighbors saw Jews ceasing to wear traditional garb such as *kippot* (skullcaps) and *tallitot* (prayer-shawls) during worship, as well as adopting hymn-like musical settings of prayers in place of traditional nusach. As Dan noted more than once, this attempt at partial-assimilation included the elimination of "old world" or "traditional" styles of movement such as shuckeling.

[83] While this discomfort is also possibly gendered, but such assumptions are not only beyond the scope of this study, but also are not directly supported through evidence in my interview with Dan nor in my observations of his movement during services.

R: So when you're davening when you're in shul, how does that work?

D: Oh, here I'll show you. The *Aleinu* prayer for example, ok so it says down at the bottom: there's something about bowing at the waist and there's something about then bowing at the knees and there's something about the steps of getting involved.[84] I can't do that. So I can do this [*demonstrates bowing down*], and then this [*demonstrates straightening up*]. And I'm like, "I'm missing something!" It's like a dance step that I don't get.

R: That's all it is — you bowed at the waist and then you stood up.

D: Right, but you're supposed to not bow at waist and the knees at the same time, they're supposed to be two separate things right? That's the part I — yeah.

R: Ah I see, sure sure sure. I mean, some people do it that way.

D: Yeah so I don't, I mean probably, it's probably not noticeable to anyone else but I'm just like, "I want to try it. Ok, which do I do first, do I bow this way [*mumbling sounds*], how do I get up, am I backwards?"

R: It's hard to do it when you're reading from a book I imagine.

D: Yeah, I, so it's one of those, I could go up to someone and say "can you show me how to do this?" But I haven't.

R: Does that thinking distract you from your praying?

D: Yeah, yeah it can, it can throw me a little off.

R: And so, is that part of where the being more still helps you pray?

D: So maybe the, not having to think about it, yeah is — like, so I also haven't figured out totally, there's also the unscripted body movements that are just of the swaying with enthusiasm. So that's the "no shuckeling!" And so, it's just one of those, it's a funny "dad-ism", so it was a very big thing to him, so, "no shuckeling!"

R: Do so you every find yourself wanting to do those free movements?

D: Yeah.

— Dan, Interview, August 2016.

---

[84] Dan is referring to the explanations of ritual choreography found in the footnotes of the *Mishkan Tefilah* prayer-book, which Temple Rodef Shalom uses for their services.

This conversation reveals a bit of Dan's movement thought process. The learning from the book, and finding the disconnect between what he knows how to do and what he doesn't know how to do, and his own disconnectedness from his body, seem to disprove my assertion that embodied technique is crucial for understanding how prayer experiences are created in the synagogue. However, it is precisely the ingrained physical knowledge of *not moving* in shul that seems to hold Dan back from his desire to pray with his body (to some extent). While the embodied technique assertion works against outmoded Cartesian mind-body dualism, Dan seems to buy into this dualism, as we saw with his comments on feeling disembodied, and the possible happiness he's feel as only a head. But he doesn't seem to give himself credit for what he knows how to do very well: stand stiff and straight in synagogue, not shuckeling — just as his father taught him. This weight of embodied technique learned from parents was similarly discussed in my interview with Conservative participant Aaron. Aaron noted that as a child, he was especially aware of trying not to burden his parents (who were Holocaust survivors), and that many of his choices as to how to behave in synagogue stemmed from this attempt to be a good son in any way possible. Dan, too, learned so well the lessons of his youth as related to Judaism that he now must struggle to unlearn them.

What does all of this have to do with entrainment, metricity, and chant? Besides providing background explanation for Dan's lack of movement and entrainment during worship, this case study clearly demonstrates how movement as a part of prayer is not straightforward. Dan's lack of movement in services, based on his physical inhibitions, is distinct from Vera's lack of a developed bodily technique for worship. Moreover, both of these movement patterns can be distinguished from participants like Rebecca, who not only has physical limitations on her movement, but also strives for meditative, active listening, noting that *not moving* actually aids her in achieving this focus. As such, there are myriad contributing factors to the choices individuals make in worship settings, many of which are so deeply ingrained that they are unnoticeable — that is, until the individual is called upon to examine them.

Participant Summary: Deborah, Judy, and Ellen; and Conclusions

Several of my participants claimed they moved more than they did in observation. In fact, some had so little ritually-inflected movement during worship that I was not able to collect any analytical data for them. At Rodef Shalom, three participants fell under this umbrella, making almost exclusively ritual choreography and socially-inflected movements, without free ritually-inflected movements. Despite many personal differences, these participants, Deborah, Judy, and Ellen, were all women in between fifty-five and seventy years of age, and all extremely involved in synagogue community life: serving in Temple board positions, active participation and governance work in the Temple sisterhood, and participation in temple community events and activities. All three women have adult children who were raised, at least in part, at Rodef Shalom, and all of the women expressed a sense of deep connection to the temple community and history. From there, their experiences diverged. While I will not present analytical interactions between voice and movement for these women, it would do both them and the reader a disservice to erase them from the study altogether. Each interview brought out important issues of physical experiences in the temple based on social and educational grounds. Thus, in what follows I will briefly outline highlights from their respective interviews.

Deborah continually emphasized how important the community was to her in the synagogue. She highlighted again and again how coming to a Friday evening Kabbalat Shabbat service allowed her to relax "at home" with family and friends. A choir member and music lover, Deborah’s discussion of her own movements during worship ended up surrounding synagogue song, rather than nusach. She discussed her love of tapping, clapping, swaying, and “head bobbing”, and her constant movement during worship as a way of interacting with and relaxing into the service.

> D: I like to move my body. I kind of like standing because I don’t like to sit a lot so, I enjoy the movement….
>
> R: What kinds of movement?
>
> D: I will sway, I like to sway. I will head bob. If it is appropriate to do any type of hand movements I will do hand movements. Sometimes I will “lu lu lu” even if I know the song… I like that, it makes me comfortable… there’s freedom there. I feel free, I don't feel as tense as I do during the week…. you don’t want to think about anything you just feel so free, and your body is free, and nobody’s asking of you anything, and, if I don’t want to speak I don’t have to, and if I don’t want to sing I don’t have to. And those are those moments, and they’re very precious.
>
> — Deborah, Interview, January 2016.

When I observed Deborah, I found that she did indeed move almost constantly during the services, and harmonized freely with the lively synagogue song — many of which were either folk melodies or contemporary melodies based on the popular music vernacular, accompanied by one or two guitars and a small djembe. Deborah’s prayer experience seemed to fall somewhere between prayer and a dance party, and her connection to the service only seemed to deepen when her husband or friends were sitting around her: her voice sounding stronger, her movements more closely entrained to the regular meter of the composed melodies.

During nusach however, although Deborah participated in the ritual choreography, only once did I notice her moving freely in semi-regular ways. Even then, she seemed to be scanning the room, checking out others’ activities and movements. Fore the most part, I observed her standing still during nusach, praying the words loudly but without harmonizing as she did with the synagogue song, and completing the ritual choreography stiffly. When I asked her in our interview what sorts of things she did during nusach, Deborah distinguished between ritual or formal movements and bows, saying:

> I do not do the ritual movements that are taught, the davening, the choreography of prayer because I don't know that. And I don't feel bad that I don't know that, but I respect that and I'm kind of fascinated by it. And I will always, as far as the actual bows… I will always participate in that, but again the formal movements, I don't know them…. I don't find that the room davens a lot so it's not like I'm the odd man out. [*R asks what D does when not bowing*] I would say, holding the prayer-book, and standing, and then I will [*demonstrates swaying*], I just don't stand there.
> — Deborah, Interview, January 2016.

Except she did, in many instances, just stand there. Of course, Deborah was actively participating with her voice, but movement-wise she became still, or at least much stiller than she was during instances of synagogue song.

Deborah's encounter demonstrates that nusach is not, in many instances, the epitome of prayer in the synagogue, and perhaps especially in the Reform synagogue. As discussed in chapter two, there are multiple types of prayer: silent, spoken/read, chanted, and sung. For Deborah, it seems that sung prayer is the most affective and this is highlighted by her physical involvement; the ability to synchronize with the music allows her to experience that group cohesion which so many ritual scholars note as crucial for deep ritual experience (e.g., Bell 1992; Dissanyake 2009; Friedmann 2012). Deborah's lack of formal ritual education and her focus on communal and cultural Jewish experience from a young age indicates that it is those experiences wherein she feels most in sync with her community, which are the most meaningful as prayer experiences for her.

Judy exhibited a similar interaction with music and movement in the synagogue. She too, despite my prodding, focused her discussion on composed synagogue song rather than nusach, and her active movements therein. However, Judy spoke to a great extent about appropriateness and behavioral propriety as implicitly stated throughout the congregation. For example, she noted:

> I think when I'm praying, I think I'm sitting up more… very often, tapping with my heel, and sometimes, moving a hand, though I'm not sure, I'm just guessing…. if we're standing, I might even catch myself sometimes swaying, but then I'll stop because I don't feel that's what's acceptable in this congregation.
>
> — Judy, Interview, November 2015.

Throughout the interview, Judy returned to her wish that more movement and more vibrant vocal engagement felt "appropriate" in the congregation. She wants her fellow congregants to move more freely and to sing louder, in order that she not feel she is "sticking out" by doing so herself. Judy talked about how the formality of the space and service text felt spiritually restrictive, and that even sitting with certain people or in certain locations in the congregational seating would make her self-conscious and restrain her worship experience. While tensions with appropriateness and the appearance of "strangeness" or "weirdness" came up in several interviews (e.g., Hannah's discussion of covering her head with her prayer-shawl), no interviews were more focused around this or as emotionally charged than Judy's. Sitting across from me in her living room, Judy came to tears more than once during our interview as she described her deep connection to God, which she felt she could not fully express within the confines of the Rodef Shalom worship service.

As I observed Judy in worship she seemed stiff and still (though perhaps some of this was due to a recent knee surgery). Moreover, Judy seemed to have a heightened awareness of those around her, modulating her voice and continually scanning the room. Again, while her lack of movement and her general physical stillness negates my creation of analytical examples of her metricity in movement and vocal interactions, the way in which she conducted herself during worship demonstrates the power of the social aspects of the worship community in a manner distinct from Deborah's experience. While both women wish for intensification and a heightened sense of community during chant and song, Judy wants this so that she might feel more comfortable worshipping as she pleases, whereas Deborah would like such a change in order to have more people joining her in her already exuberant worship during Shabbat.

Finally, of all my participants from the Reform community, Ellen moved the least. She suggested during the interview that her movements were somewhat coordinated with the chant she was hearing. Similar to Deborah and Judy, Ellen had little educational experience as to how she was "supposed" to move during nusach. However, she spoke at length about her early family experiences of musical participation with folk and protest music of the 1960s and 70s.[85] Ellen described how she learned something about praying from these experiences, and that because of them, these musics felt exceptionally Jewish.[86] As I observed Ellen on multiple occasions, it was clear that she did not move very much at all during the services. She seemed highly attuned to socially-inflected movements during the service, often looking around her at other congregants coming in and out of the sanctuary, and continually making comments to her neighbors. This resulted in a fairly constant "in and out" for Ellen — a breaking and rejoining with the service structure and liturgy. While her posture changed throughout the service, both when sitting and standing, Ellen's actual movements reflected much more of a community experience than one of physical interaction with the sonic environment.

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[85] In one fantastic anecdote, Ellen describes how her parents would invite revolutionary folk musicians to their home for gatherings involving ample singing — sometimes led by Pete Seeger!

[86] Here is an interesting connection to Adam's "not Jewish" movements involving a "good tune". While they are of a similar age, Ellen and Adam clearly think about Jewish and secular musics (and movements) in very different ways.

Participants from Reform Temple Rodef Shalom, while overall exhibiting much less movement than those at Conservative Temple Kol Torah, did show distinct interactions with the concepts of movement, music, and prayer. There was a much stronger emotional connection with these parameters of worship, and active participation and involvement with all three seemed paramount to what individual participants considered to be fulfilling worship experiences. The lack of "traditional" movement choreography training for most participants gave each individual different approaches for navigating what to do with one's body during chant. Some moved freely, but their movements fell mostly during composed melodies to which they could entrain with a clap, sway, or bob, rather than semi-metered nusach (e.g., Deborah, Judy, and Ellen). These participants physically treated synagogue music as they might secular music of a similar genre (folk, classical, or popular), but described feeling more or less comfortable in their physical interactions with the music based on the synagogue atmosphere.

Other participants noted an interest in learning about the "right" movements to make, especially in regards to what they saw as a mix of ritual choreography and free, ritually-inflected movements (e.g., Vera and Dan). Their lack of formal training, and in Dan's case, past influences of different movement training for the synagogue, kept them from speaking confidently about how they moved and how their movement affected their sense of worship and connection with the music. However, these participants were actively watching others in the sanctuary, studying movement instructions in the prayer-book, and trying different types of movement each week. Both Vera and Dan saw themselves as 'works in progress', searching for what those "more traditional" Jews seem to get from intensified free, ritually-inflected movements in prayer.

Finally, Shira demonstrated a more Conservative style of movement, mixed with the pressures of her position as a clergy member to lead and encourage all types of prayer within the synagogue. Her use of specific language, as discussed, dovetails nicely with the discrepancies amongst the Conservative participants' language, and suggests something deep about the relationship between movement, prayer, meditation, and internal worship experience.

IV. Conclusions

Christopher Hasty's explanation of "now" provides an important intersection of his larger theory of meter as process with the bodily creation of structure in music. Hasty notes:

> To avoid equating now with the event itself and to avoid calling now a time point, I suggest that now might be regarded as a continually changing perspective on becoming. **Now is continually changing and ever new,** because becoming is ever new and never fixed or arrested. What has become is fixed and past, but what is past becomes past only with a new becoming and is past only for what is becoming or will become. **By calling now a perspective I mean that it is a "view" taken on present becoming from the standpoint of the particular opportunities offered by what has become and what might become. In this way, "now" might be considered most generally as a condition for freedom of action and more specifically as a condition for feeling rhythm** (1997, 76, emphasis is my own).

The experience of the now that Hasty describes aligns well with the descriptions of free, ritually-inflected movements that my participants have given. In the above quote, Hasty articulates 'now' as a "condition for freedom of action" and as a "condition for feeling rhythm". This suggests a way around the rift found between the scholarly literature — music scholarship on ritual, entrainment, movement, and music — and the lack of regularity and synchronization within and across my participants' free ritual movements and the music of the chant. Perhaps, in part, the manner in which participants' focus on the "now" of prayer necessitates a consistent experience of Hasty's "present becoming", wherein not only their perception of rhythm but also their actions and articulation of the felt rhythms are continually at the fore of their embodied experience, while predictions about future durations are not (consciously or unconsciously). This assertion has grounding in the Jewish participant experiences in three ways: first, through reports of what it feels like to daven or shuckel, second, through continual interest and discussion around present-ness in prayer, and third, in the discrepancies between how my informants thought they move and how I observed them moving. Further, the issues of flow and "now-ness", focus and attention, and the physical enactment of religious concepts are continually touched upon within each of these larger discussions, as evident from both participant interviews and the analytical examples above.

One intriguing aspect of my participants' discussions of their movement during prayer was the simultaneous ease with which the words came to them, and the experience of novelty that they expressed in regards to actually talking about moving during worship. For almost all of the individuals, it was not difficult to explain "what they do with their body" (though for some finding the right words was difficult), but everyone also noted that they hadn't thought explicitly about movement during prayer in such a manner (i.e. focused on ritually-inflected movements during nusach). This was even the case for clergy or those with extensive formal training in Jewish worship and leadership. Many noted that they themselves were surprised by their own answers — by the things they knew about themselves that they hadn't realized previously — and that they were interested in and expecting a change in their own movement experiences during worship, following such rigorous thought on the subject. This relative freedom of self-critique and self-reflexivity during prayer indicates a prior experience of “now-ness” during prayer — a now-ness that, for some, allows for focused attention on something other than physical movement. This philosophical assertion aligns with embodied cognition research indicating the body as a site of experience, rather than as the focal point of experience (e.g., Crossley 2007; Leman 2007; Godøy 2010).

While participants stated that they had not previously thought in depth about how they moved during prayer, most seemed to have a strong sense of how they interacted with the concepts of shuckeling or davening movements. Participants had clear ideas about whether or not they enjoyed this type of movement, often connected to formative memories from childhood or adulthood. I witnessed these relative comfort levels throughout my observations and they are shown throughout the respective examples. In addition to the quotes in my above discussion, the following are a few excerpts showing the range of specificity with which my participants interacted with the shuckeling and davening concepts:

> R: So, what does moving side to side help you do during the service? If you know.
>
> J: Yeah, I mean it’s just, it just feels better than just standing there stationary.
>
> R: Consciously?
>
> J: Not really. You know it’s just one of those things that is just, it just feels good to do it.
>
> — Joseph, Interview, October 2016.

> The rocking, Yiddish term for that is “shuckle”, just like you shuckle a *lulav*. That just comes, sometimes it’s used to, to keep awake, sometimes it’s used to focus, sometimes it’s used to eliminate boredom, sometimes it’s used to be playful, there’s lots of different reasons for that. But typically it’s something that I just find myself doing, or just did, it just happens. But, it’s so much better than just standing there like a tree, because that doesn’t do anything for you over a long period of time…. Again it’s not, it’s not a conscious decision. It just happens. But it’s typical —

> typical's the wrong word — normal for me.
>
> — Aaron, Interview, December 2016.

> H: And then when I'm standing I kind of you know, I do sort of a sway kind of thing, kind of to the, you know I'm often to the tempo of which I'm reading the prayer or chanting the prayer.
>
> R: So when the prayer is silent, you'll still be doing the tempo —
>
> H: I'm like, doing it in my head…. I try as best I can to make sure that I'm like pronouncing each word. And I suppose my Hebrew is, you know, doing it is maybe faster than I, you know than years ago when we first started. But yeah I think I have kind of a tempo and there's certain things I like more than others and, like sometimes, I think well, "should I keep this thing? No, I like it I'm going to read it, I'm going to do it." So I usually do the whole, I go through the whole thing….
>
> R: What does keeping the rhythm help you do? Does it help you go faster? Pay attention to what you're saying better…?
>
> H: I think that, more, you know, it helps me focus on the words….
>
> R: Is it conscious?
>
> H: I don't think so.
>
> — Heather, Interview, October 2016.

These worshippers know that they move, and they all can describe to different extents why that movement is something that they choose to do during worship. Ultimately, in each of these explanations, moving helps them with something. Whether it be as simple as "it just feels good" during prayer (as Joseph noted) or as "better than just standing there like a tree" (as Aaron suggested), or as complex as aiding Heather in keeping her tempo during silent Hebrew prayer, shuckeling and davening movements are utilitarian: always intended to lead towards a different prayer experience, space, or focus.

Another theme arising from this fieldwork was the effect of group cohesion on worship experiences, and its importance therein. Participants like Deborah, Judy, Shira, Hannah, and even

Adam demonstrated how those praying around them had the ability to affect, improve, and hinder their own prayer. Attentiveness to how others are praying (and for clergy, how the congregation is responding to one's leadership) helps group cohesion to build, regardless of synchrony. In contrast to the assertions from synchronization and ritual scholarship, noted in chapter one, perhaps group cohesion is divisible from synchrony in that moving or singing together does not actually indicate, in these Jewish worship settings, that individuals are having prayer experiences together. When worship experiences and connectivity, like that longed for by Deborah and Judy, are felt, it is not because of the "togetherness" of the chant or the movement, but rather is due to the sincere engagement with the prayer experiences, expressed through vocal and physical freedom (and, it follows, likely asynchrony). In this manner, synchrony of affect, dynamics, pacing, or even just being together in space, is different from the metrical entrainment of bodies and voice within and across participants.

While no informants used terminology like synchronization, cohesion, or even the idea of alignment, several participant interviews did emphasize meditation, attention, and focus. This became another other striking component of "now-ness" arising from the examples above. I've discussed some of these findings already, especially in relation to participants Shira and Rebecca. Regardless of the term 'meditation' or 'active listening', for these two participants the ideal state was a focus on the present rather than a teleological expectation for physical movement, the chant, or the prayer as a whole. This implies that their goal is to enter a state of "flow", a construct drawn from psychologist Mihaly Czíkszentmihályi (1975b), wherein the optimal combination of difficult (and/or novel) and achievable (and/or familiar) tasks or challenges in an activity allows the individual to enter a state of "optimal experience" or "flow". As Czíkszentmihályi asserts:

> **Because of the deep concentration on the activity at hand, the person in flow not only forgets his or her problems, but loses temporarily the awareness of self that in normal life often intrudes in consciousness**, and causes psychic energy to be diverted from what needs to be done…. **In flow the self is fully functioning, but not aware of itself doing it,** and it can use all the attention for the task at hand. At the most challenging levels, people actually report experiencing a ***transcendence* of self**, caused by the unusually high involvement with a system of action so much more complex than what one usually encounters in everyday life (1992, 33, italicized emphasis in original, bolded emphasis my own).

Is this what is occurring for many of my Jewish participants while they move? I think especially of Shira, Hannah, and Adam in their descriptions of physical engagement and consciousness. Similar to Spatz's (2015) concept of embodied technique, it is helpful to understand participants' movement goals to be about flow states, and the use of embodied technique to achieve these states. Although it looks different across participants, and certainly is affected by comfort, background, knowledge, experience, personality, and belief amongst other factors, understanding participants as reaching for flow states dovetails with Hasty's observation about the experience of feeling rhythm in the "now". If a worshipper is truly in the experience of "now", and not predicting or evaluating, they will likely be both in a flow state and in a state of asynchrony with those around them and their sonic environment. As an observer of such a worshipping individual, *I* might be utilizing the prediction and evaluation strategies that Hasty outlines in his theory, as I have shown in my analyses of ictus durations above.

One manner of reconciling this flow state (Csíkszentmihályi 1975b; 1992) of embodied technique seen in synagogue worship and the prediction and evaluation inherent in Hasty's model of metric attending (as well as other models of entrainment), is to consider the role of ritual choreography as a physical "start button" for the worship flow state. For example, the choreography at the beginning of the Amidah, the main prayer section and one that is almost entirely composed of nusach, invites worshippers to use free, ritually-inflected movements throughout. The first prayer in the Amidah, the Avot (v'Imahot) involves two choreographed mvoements: a worshipper would take three steps backward and then three forward as a preparation gesture, and then they would bow at the waist on the words "Baruch atah, Adonai". One clergy participant, Hannah, discussed the specificity of the steps as follows:

> You know you take the three steps backwards so then you can take the three steps forward into God's presence. So the three steps backward starts with your weaker foot and the three steps forward you're ending on your strong dominant foot and then you exit starting with the dominant foot and reenter life with your weaker foot. But you know it does really feel like you're approaching God.
> — Hannah, Interview, August 2016.

While it is probable that not all of my participants are thinking about the steps into God's presence at the same level of specificity as Hannah is, it is clear that there is a deep level of detail and attention to the physical movement that occurs at the start of the prayer. Whether silent or aloud, this is the beginning of the main section of blessings and prayers, and the physical movements acknowledge that separation. As such, the choreography gets the worshipper started, both metaphorically (toward God) and literally (beginning physical movement), moving during prayer. As shown in the examples from Hannah's observation, the ritual choreography bow is the strong beginning, while subsequent shuckeling can be understood as continuations of that movement. Thus, the ritual choreography is an invitation to continue moving ritually, providing a predictable frame around the flow — the *now* — of the bulk of the prayer.

Separation of sacred and profane in Judaism is very important, as noted in numerous writings (e.g., Abraham Joshua Heschel 1951, among others), by rituals that include candle lighting (for instance, at the start of holidays including Shabbat, and the act of extinguishing a candle during *Havdallah*), and by the physicality and interactions of time and space in Judaism.

Heschel notes:

> Judaism is a *religion of time* aiming at *the sanctification of time*…. There are no two hours alike. Every hour is unique and the only one given at the moment, exclusive and endlessly precious…. Jewish ritual may be characterized as the art of significant forms in time, as *architecture of time* (1951, 8).

Such architecture is built through the modal sounds of nusach, the ritual choreography, and the structures of the services themselves. This is the *space* of *worship* as it exists in *time*. Such interactions with temporality, for instance, the tendency, especially in the Conservative synagogue, to sing quickly, almost rushing, indicates the expectation of functionality over musicality in chanted nusach. Physicality, too, should be functional, ritually-inflected movements (or lack thereof) aiding worshippers in a variety of ways. Within this space of worship time, communal activity affects individual worship to varying degrees, but ultimately movement comes back to individual embodied technique. Considering the importance of the "now" in both flow experiences and ritually-inflected movements, it is evident that these structuring components of worship provide a strong "container". This structure provides both space and time for the enactment of free, asynchronous movements and chant, and for the creation of focused, present experiences for individual participants. Participants who are existing all at once, together and separate, in the time and the space of Jewish worship.

Chapter 4

Crossing, Prostrating, and Censing:

Body Movements in the Greek Orthodox Communities

I. Introduction

Like Jewish chant, Greek Orthodox liturgical chant is also semi-metered, and it can be heard almost continuously throughout a typical worship service (a two- to three-hour event). Congregants stand most of this time, and respectfully watch as the priest, and perhaps the deacon, perform the ritual blessings and functions to prepare the Eucharist for communion, the final part of the service. Movement “to” music in the Greek church is unlike the music and movement intersections of the Jewish communities discussed in chapter three. Upon entering the space of the church, there is both a theological and a communal urge to direct one’s attention to the rites at hand. As such, prayer is shown overtly as an outward explication of embodied knowledge. By directing one’s physical focus towards specific objects or events, the worshipper’s entire body guides them through prayer in the Greek church.

In this chapter I will first provide a brief overview of the music and liturgy within Greek Orthodox worship. This will be followed by a discussion of my two field sites and clergy participants, interwoven with analytical examples. Finally, I will draw some conclusions not only about my ethnographic and analytical findings, but also as regards methodology for research in the church. The initial and foremost question is the same as it was in the Jewish communities: *what* types of movements are made during Greek Orthodox daily or weekly prayer, and how are they connected (or not) to the semi-metered music of the prayer? However, unlike the Jewish communities wherein free, ritually-inflected movements were quite common, ritual choreography pervades the Greek Orthodox liturgy, and though there is an emphasis of physical "vigilance" (discussed further below), there is not a significant amount of free, personally chosen movements. This shift of how congregants and clergy are expected to move requires a shift in methodology on my part as a researcher, as does the difference in access and number of participants I was able to interview.

Furthermore, because ritually-inflected movements were more prevalent in the Jewish community it was easier to make connections between individuals' described internal experiences and their observable external experiences. In contrast, the more rigid movement expectations allow less room for personalization in the Greek Orthodox church, making internal (interview-based) and external (observation-based) connections difficult to draw. In this manner, my hypotheses for this second fieldwork community shifted from the smaller, more individually-focused connections between participants and their movements, to the expanded focus on my observations of the entire church community, looking at the types of movement-music metrical interactions that are prevalent throughout these worship experiences.

Worship Beginnings: Spaces for Right Practice

Physical space is layered with meaning in the Greek Orthodox church. The structure of the main (typically Sunday morning) service, the Divine Liturgy, can be interpreted not only as a service of prayer, but also as a service that retells the crucifixion through movement. As one priest whom I'll call Father Nikolaos noted, "technically the liturgy is not only a service of embracing communion, it's also a historical reenactment of the life of Christ" (Interview, April 2016). This practice of embodied remembering and retelling generates and reinforces embodied knowledge as technique (Spatz 2015). Further, it creates, week after week, a separation of time and space that allows for prayer and connection to God. In describing the space of the church, Father Nikolaos states:

> The church is based on the architecture and the design of the Temple, of the original, the Temple of Jerusalem, what the Jewish Temple is. The narthex where we light candles is representation of the wading pools of the Jewish Temple where people would immerse themselves to cleanse themselves from the outside world, and what we're doing is lighting our candles because we don't need water, we're already baptized, but we're lighting candles as the light of Christ, as a way of saying "God I'm here." It represents *you*. And say, and also another candle you can light is for people who you're praying for and as the candle melts the prayers go to heaven. [*Digression about how Russians do in this*]. Left side is for the living, right side is for those who have deceased. We pray for both. And that's the narthex, it's shutting the outside world and preparing yourself to enter into God's world.
>
> — Fr. Nikolaos, Interview, April 2016.

Fr. Nikolaos's discussion of the narthex directly specifies how the separation from secular life is integral for entering a space for Orthodox prayer. As shown below in the diagram of Fr. Nikolaos's church, St. Cyril's (figure 4.1a), one does not enter directly into the sanctuary when entering the church, but rather into a foyer or antechamber, as is the case with many indoor spaces. The difference of the narthex, however, is that it is more than a place to hang one's coat; as Fr. Nikolaos describes above, the narthex is the preparation for prayer and at the same time, the beginning of prayer.

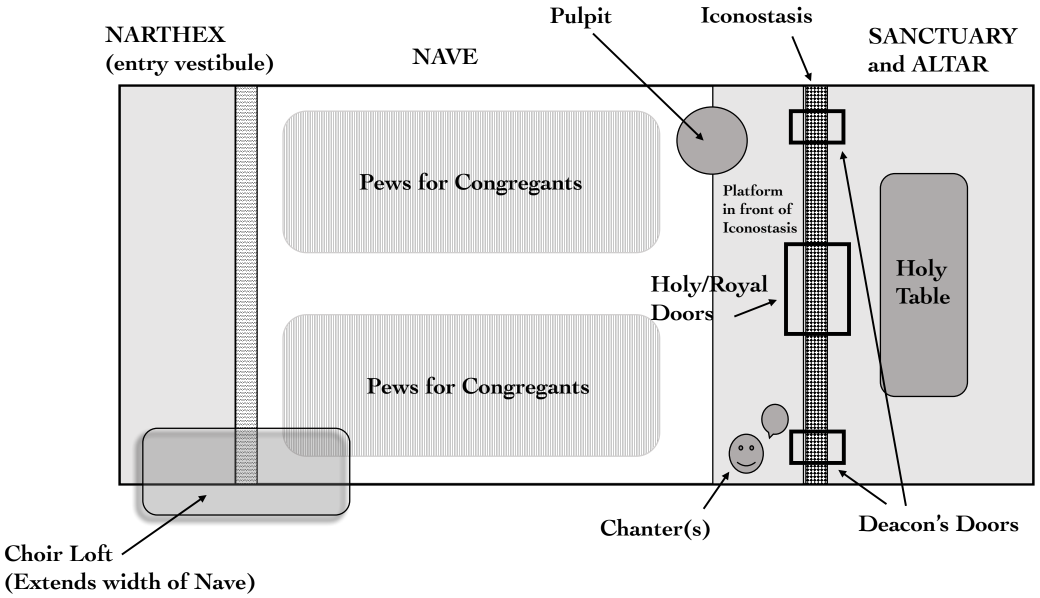
NARTHEX
(entry vestibule)
NAVE
Pulpit
Iconostasis
SANCTUARY
and ALTAR
Pews for Congregants
Platform
in front of
Iconostasis
Holy/Royal
Doors
Holy
Table
Pews for Congregants
Choir Loft
(Extends width of Nave)
Chanter(s)
Deacon's Doors

Figure 4.1a. Diagram of St. Cyril's Church Layout of Worship Space.

This architectural prayer preparation mimics the structure and teleology of the Divine Liturgy itself. The structure of the Liturgy is centered around the Eucharist and preparing the holy gifts for communion. In this manner, through the physical retelling of Christ's life, reaffirming one's commitment to Orthodox Christianity (as demonstrated through the communal recitations of the Lord's Prayer and the Creed midway through the Liturgy), and the extensive blessings and preparations for the final and climactic aspect of the service — communion — worshippers enact their spirituality through physical acts.

The physical space of the church allows for varying levels of access, facilitating status roles within the church. A congregant will move through the narthex to the main area of the church, the Nave, wherein pews (with kneelers) delineate at least three aisles (two sides and a center). In traditional Eastern Orthodox churches there were only standing pews — tall wooden structures where one could stand and lean, as opposed to the modern lowered seats that one sits upon. These standing pews were placed around the edges of the wall, designated for the elderly or those who could not stand due to physical injury or handicap, while the center of the church was empty of seats entirely.[87] The introduction of sitting pews in Western Greek Orthodox churches, especially those in North America, is due to the influence of other streams of Western Christianity. During worship, all present are supposed to be physically and mentally vigilant; thus, standing is the ideal physical position and any sitting must be done straight-backed, with feet flat on the floor. My priest participants both noted that congregants are not supposed to recline, cross their legs, or lean on the pew in front of them during worship. This vigilance is of course disrupted depending on age and responsibility: young children distract their parents and the elderly must sit more than perhaps they would like. But overall I observed this physical vigilance as quite prevalent, and practiced by both men and women in the pews, regardless of if they were sitting or standing, or what type of shoes they happened to be wearing.[88] The idea of vigilance implies a heightened physicality, and such bodily readiness allows not only for the timely enactment of ritual movements, but also requires an awareness and focus as to the physical aspects of worship.

Beyond the congregational space of the nave is the Sanctuary and Altar, separated by the Iconostasis, a wall or partition of icons with three doors: two side doors called deacon's doors, and one in the middle called the Holy Doors or Royal Doors. Only priests or deacons use this middle entrance. Sometimes the Holy Doors are propped open, allowing those in the nave to see slightly into the altar area, while at other points in the service the doors are closed. Priests, deacons, altar attendants, and chanters may all use the deacon's doors on the side. Roles in the Greek Orthodox church are highly gendered, and women are not permitted in the altar area at all.

---

[87] These types of churches are still seen in Greece. Both priests I interviewed noted that the pews are not only distinct markers of Westernness, but also of North Americanness.

[88] Even women with extremely high heels stood and sat in a vigilant position: sitting on the edge of the pew, feet flat on the floor, no leaning or shifting around. That said, many congregants did a lot of coming in and out of the service. Some seemed to have other tasks that they were completing for the church (bringing boxes of candles to people, or setting up food for the coffee-hour), but regardless, they were not present (and therefore physically vigilant) for the entire service.

Chanters are situated at the sides of the raised platform in front of the iconostasis. Up to four chanters will stand around a spinning multisided music podium, and will come and go as needed. In the cases of my field sites, at St. Anthony's there are chanters on both sides of the iconostasis (see figure 4.1b, below), while at St. Cyril's the chanters were located only on the right side of the nave (figure 4.1a, above). The choir, if present, will typically be in a choir loft, as was the case in both of the parishes I were I worked). At St. Anthony's the choir is accompanied by an organ, while at St. Cyril's they sing a cappella.

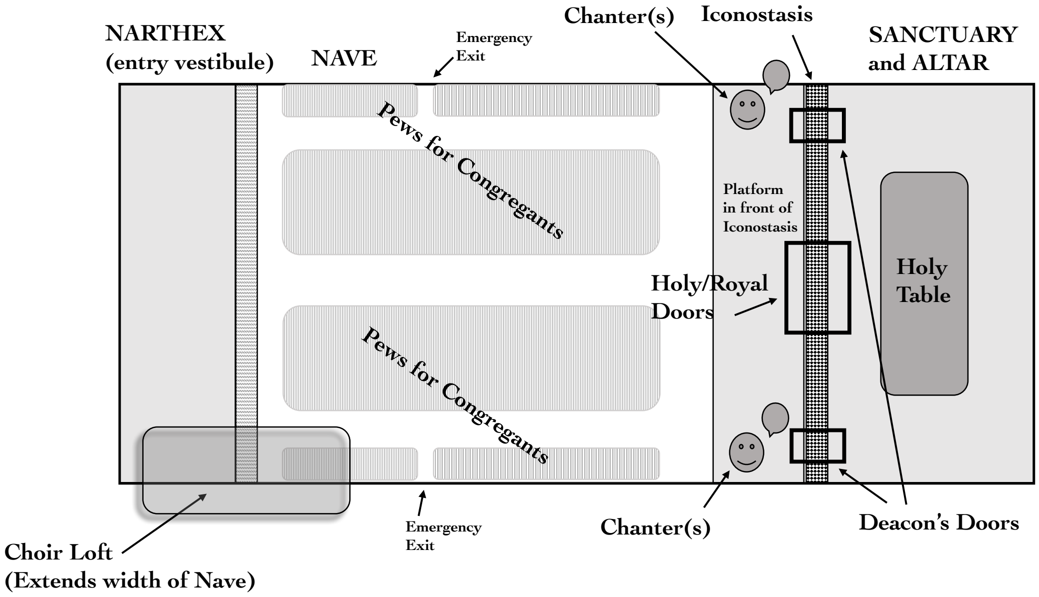
NARTHEX
(entry vestibule)
NAVE
Emergency Exit
Chanter(s)
Iconostasis
SANCTUARY and ALTAR
Pews for Congregants
Platform in front of Iconostasis
Holy/Royal Doors
Holy Table
Pews for Congregants
Choir Loft
(Extends width of Nave)
Emergency Exit
Chanter(s)
Deacon's Doors

Figure 4.1b. Diagram of St. Anthony's Church Layout of Worship Space.

Greek Orthodox worship is in many ways centered around physical experience: experience of prayer, of connection with God, and of Christ. In this manner, orthopraxy, meaning right or correct practice, comes prior to and is constitutive of orthodoxy, right or correct belief. As such, physical "practice" of belief, is central to Greek Orthodox worship.[89] As Jeffers Engelhardt notes in his study of Estonian Orthodox singing: "Orthodox doctrine and traditions emerge from liturgy and the experience of worship, not the other way around, reflecting the constitutive role of orthopraxy in the making of orthodoxy. This is what Jaroslav Pelikan aptly calls 'the melody of theology' (1974: 133-45) — the vocal and aural basis for encountering and coming to know God in Orthodox worship" (2015, 43). Engelhardt sees orthopraxy (right practice) being made into orthodoxy (right belief) through the understanding of "right singing" in the Estonian Orthodox church. He explains:

> Singing is imbued with reflexivity by virtue of being right for singers and communities. It becomes right through the mutuality of belief and practice, theology and ritual that shapes its poetics — this is not just any singing, but right singing, and therefore Orthodox. Style rather than speech matters here — the ways people approached the difficulties of performing liturgy apart from explicit descriptions of those experiences (2015, 13).

He continues on to expand on the ways in which the aesthetic aims and concerns of musical performance are secondary, if at all present, in the issues of "right singing" and performance of liturgy.

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[89] This diverges from what was seen in Jewish worship, where while physical action is very important, it is not necessarily tied to belief in the same manner. As my Jewish Atheist participants demonstrated, action in Jewish worship has very little to do with orthodoxy. This is not to assume that there aren't a variety of levels of belief within Greek Orthodox congregants, but rather that the way worship is structured supports belief in a different manner.

For Orthodox Estonians, negotiating authentic Christianity and voice is wrapped up together in methods of singing and worship. This sentiment can be expanded to movement. I posit that my participants (who are both priests) are focused on the sequencing of movements (orthopraxis) as well as the simultaneous inner state (orthodoxy) required in tandem during the process of performing the Divine Liturgy. This effort to balance and integrate belief and practice, whether musical or movement, is central to Orthodox Christianity.

Chant and Chanters

Chanters are not considered clergy, but they do have special training in Byzantine notation and hymnology.[90] One priest, Fr. Theodoros at St. Anthony's Church, described the role of the chanter in relation to his own spoken and chanted priestly duties as follows:

> So my role as a priest is to lead the people in the song and to give commands: "let us pray to the Lord, let us pray for the peace of the world," it is more of a command to the people, "yes, let us pray for the peace of the world," and they nod their heads and everyone is supposed to respond by saying, "Lord have mercy". So it's a dialogue between the priest and the people who are in the pews. This is how it used to be in Antiquity. Unfortunately — well, I don't want to say unfortunately — now, we have a chanter or we have a choir that speaks on behalf of the people, that's the difference. But in Antiquity it's always priest, deacon, people, *laos*, the people. So they speak on behalf, "let us bow our heads", so there's a chain of command.
>
> — Fr. Theodoros, Interview, February 2017.

In both of the parishes where I worked, the chanter and/or choir did indeed seem to speak the responses instead of the congregants in these instances. However, there were always moments during the service (not including the spoken prayer and creed that were communally recited) where some congregants, particularly the elderly members, would be singing along quietly with the chanters or choir. Yet, in most instances the replacement of the chanter's voice for the people's voice was especially stark.

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[90] For an interesting and more expansive understanding of the way knowledge is transmitted from teacher to student chanter, I encourage the reader to consult Mavromatis 2005.

One such common example of this phenomenon may be seen during the antiphonal prayers, such as the Great Litany at the opening of the Divine Liturgy, where "the people" repeat "*kyrie eleison*" in response to the priest's petitions (Magoulias 2004, 3-6).[91] The chanted responses seem to be sung solely by the chanters, allowing for vocal emphasis of the complexities of the changing melodic lines in the repetitions, as well as for alternation of Greek and English throughout. While this practice of language alternation makes the service more accessible to those comfortable praying only in Greek or only in English, it also creates issues for congregants who might "sing along", unless they are exceptionally familiar with the customs of the particular parish. In the services where the choir is not present, the chanters sing almost constantly throughout the service, with breaks only occurring during the readings of the Gospel and Epistle (which are sometimes read by members of the chanter staff), the sermon, and announcements. Occasionally the priest or deacon will join the chanters for special hymns.

The Byzantine chant heard during Greek Orthodox worship is based on a set of eight modes, each of which begins on a different "tone". The first four are considered "authentic" and the latter four "plagal" (Lungu et al. 1984). They are as follows:

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[91] All direct liturgical references will be drawn from the edition of the Divine Liturgy of St. John Chrysostom written and compiled by Rev. Protopresbyter Jon Magoulias (2004). There are multiple versions of this text (as well as the Liturgies of St. Basil, used in some churches or for some seasons/festivals). However, this particular edition is not only in regular use at St. Anthony's, but also provides a multilingual format and commentary that has greatly aided me throughout my research.

I. Dorian (authentic)
II. Lydian (authentic)
III. Phrygian (authentic)
IV. Milesian or Mixolydian (authentic)
V. Hypodorian (plagal)
VI. Hypolydian (plagal)
VII. Hypophrygian (plagal)
VIII. Hypomilesian or Hypomixolydian (plagal)

These modes have been then divided into three categories, according to their scale or tonality. They are:

Diatonic: I, V, IV, VIII
Chromatic: II, VI
Enharmonic: III, VII

Note that while these terms are similar to those in Western music, (especially plagal-the-fourth [the eighth mode], which resembles a major mode/Ionian scale in Western music), the use of half- and quarter-tunings and the overall structures *do not* mimic Western scale systems (Lungu et al. 1984; Conomos 1984; Takis 2006). In addition to modes, Byzantine chant uses a fixed solfege-system (figure 4.2).

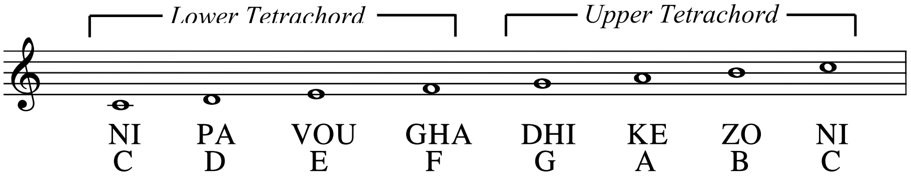

Figure 4.2. Byzantine Note-names (Solfege). Example reproduced from Takis, 2006.

Each hymn has specific modes and each mode is used in the Divine Liturgy for one week, beginning after Easter and continuing throughout the year. In this manner the modes are cycled through, the cycle repeating every eight weeks (with the exceptions of special feast days or holidays where occasion-specific modes are used). As such, Byzantine chant orders time, similar to the Jewish nusach discussed in chapter three. Given the standardization of the liturgy and hymnology, Orthodox Christianity never has to ask the question “what tune should we sing?”, unlike other branches of Christianity. Every melody, mode, and text are dictated by the calendar (Engelhardt, 2015). One informant, Fr. Nikolaos, tried to begin to explain the modal system to me during our interview. He said:

> Even the hymns, the pitches, they’re called the tones, there’s eight of them. And they recycle every eight, after the eighth one. There’s first tone, second tone, third tone, fourth tone, plagal the first, plagal the second, not plagal the third, they call it grave tone, I don’t know why, and then plagal the fourth. Plagal the fourth is almost like the [*singing*] “do-re-mi-fa-sol-la-ti-do”, where plagal or first tone is like a very kind of a minor, [*singing ascending steps in minor third*] “da-du-duh”, if you know your music, “C-D-D,” it starts on a D, [*sings example of hymn opening on “duh”*] that’s the bass [tonic?] note. So it gives you the bass note of what, it tells where you’re going to be, where second tone is more of an angelic tone, because tradition says the angels sing in second tone [*Sings example of second tone on “duh”*].
>
> — Fr. Nikolaos, Interview, April 2016.

I’ve included this quote to give a sense of the way these modal shifts and qualities are internalized in the clergy’s understanding of the liturgy, and how they might be communicated in relation to Western music "on the spot" (as opposed to the systematic explanations found in pedagogical texts like those quoted within this section).

There are three rhythmic "modes" for Byzantine hymns. One-note-per-syllable hymns (what Western music theory would consider syllabic) are called *heimologica*, and are typically faster with shorter note values. *Sticheraica* are hymns that tend to be slower, with two or more notes per syllable. Finally *papadica* hymns are much slower and melismatic, allowing the priest time to complete the many requisite tasks to be accomplished during these hymns. An example of a papadic hymn will be discussed below in my analysis of the Cherubic hymn. While these tempo classifications are not necessarily fixed, they provide a guide for the level of melodic complexity and the ornamentation in liturgical music (Takis 2006).

Clergy in seminary and chanters will learn not only these melodic and rhythmic modes, but also the chant notation specific to Byzantine liturgical music.[92] An example of this notation is shown in figure 4.3. A well-educated chanter would be able to read this notation without the aid of the Western notation, and as such one will see only the text and cantillation symbols printed in cantillation books. As in the Jewish tradition, Western notation remains a pedagogical tool for Byzantine chant. Congregants will not be familiar with this notation, and will learn the hymns and chant modes simply through oral transmission and enculturation.

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[92] Again, there is an analog for this cantillation system found in the Jewish tradition, specifically for reading Torah.

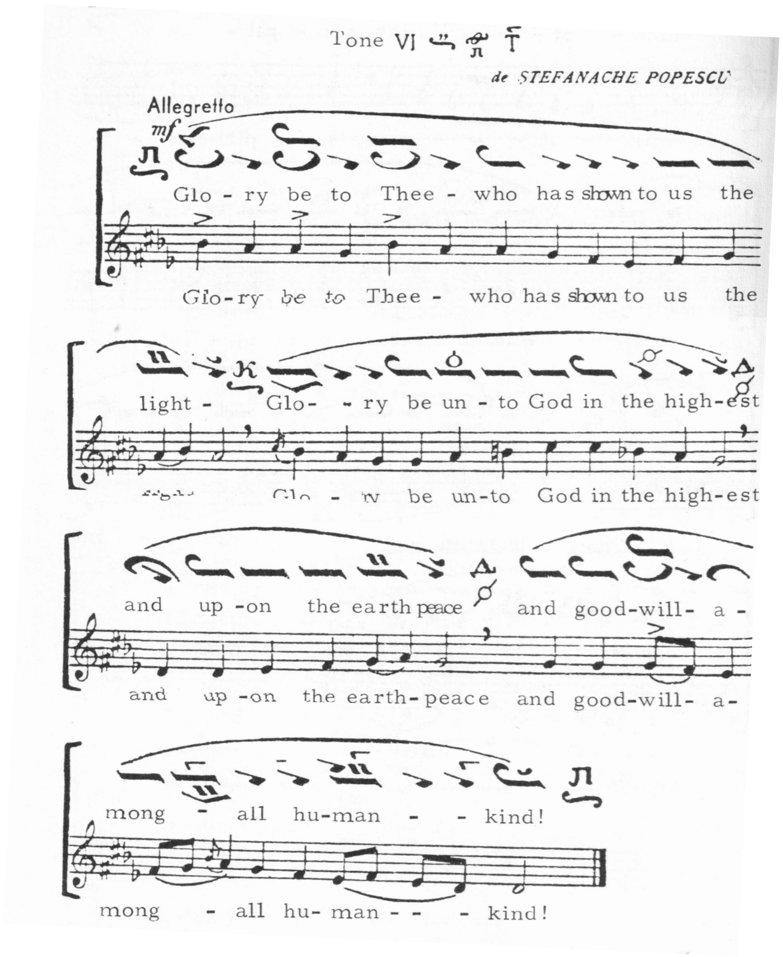
Tone VI
de STEFANACHE POPESCU
Allegretto
mf
Glo - ry be to Thee - who has shown to us the
Glo-ry be to Thee - who has shown to us the
light - Glo- - ry be un - to God in the high-est
Glo - ry be un-to God in the high-est
and up -on the earth peace and good-will- a -
and up -on the earth-peace and good-will- a-
mong - all hu-man - - kind!
mong - all hu- man - - - kind!

Figure 4.3. Example of an Irmologica Hymn (Form of Tone VI) in Tone VI, from the Doxology. Example reproduced from Lungu et al. (1984, 88).

Service Structure and Body Movements

The Sunday service is broken into two main components: the Matins service, also known as Orthos, and the Divine Liturgy, the core worship service (see service diagram in figure 4.4 below).[93] The Orthos service is mainly a recitation of psalms while the Priest prepares aspects of the Eucharist, a practice known as "Proskomidi" or "the bringing of the gifts" (Magoulias 2004, 1).[94] The service ends with the singing of the Great Doxology, a multi-part hymn that begins with the Angelic hymn and concludes with the Trisagion ("thrice holy") hymn (ibid., 1). This "hinge" between Orthos and the Divine Liturgy is musically memorable, and allows for continuity between the two services (there is no actual break in between, although the two services are often given separate estimated start times in service schedules published on parish websites or bulletins).

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[93] For a more extensive understanding of the components of the Divine Liturgy, I encourage the reader to consult the *Grove Music Online* article by the same name (authored by Levy and Troelsgård).

Service Section	**Content (Priest, Chanters/Choir, Congregation)**	**Priest Only**

Orthos/Matins	• Psalms 3, 38, 63, 88, 103, 143
	• Petitions and Hymns
	• Great Doxology
	  • Angelic Hymn
	  • Trisagion
		Proskomidi (preparation of the gifts for the Eucharist)

The Divine Liturgy	• Liturgy of the Catechumens
	  • The Great Litany
	  • The Small Entrance
	  • Hymns and Trisagion
	• Readings of Epistle and Gospel
	  • Sermon (sometimes located at end of entire service, prior to the Antidoron)
	• The Liturgy of the Faithful
	  • Cherubic Hymn
	  • The Great Entrance
	  • The Creed
	  • The Holy Anaphora
	  • Hymn
	  • Lord's Prayer
	  • Holy Communion
	• (Optional Memorial Service)
	• Thanksgiving and Conclusion
	  • Dismissal Prayer
	  • Distribution of Antidoron
		• Final Preparation of the Gifts
		• Censing of the Church
		• Consecration of the Holy Gifts

Figure 4.4. A Typical Greek Orthodox Sunday Service Outline.

Just as each hymn, reading, and chant are purposeful, every movement throughout the service is connected to a specific meaning, doing meaning-making work as orthopraxis. In this manner, there are no long stretches of free, ritually-inflected movement, as was seen in the Jewish community with shuckeling or davening. Instead, in the church there are opportunities for personalization of specific motions, such as the way (size and speed) and number of times one makes the sign of the cross. For example, some people make a small pathway across their bodies but do so quite quickly, while others trace a larger pattern more slowly. While I was unable to measure a large enough participant pool to have an empirical understanding of the trend, I did notice in my observations that the smaller crosses tended to be faster and more likely to come in threes, while larger crosses tended to be slower, and often only in one iteration. Further, some people chose to actually touch their bodies during this movement, while others hovered above all of the points, and still others made physical contact with some parts of their bodies but not all.

---

[94] This "warm-up" psalm recitation is quite similar to the Psukei D'zimra and Kabbalat sections in Jewish worship.

The sign of the cross is typically accompanied by a slight bowing of the head and shoulders: sometimes a deep bow from the waist, while at other times just a bend of the head. Here again, while I observed considerable variation of the movement itself throughout congregants and clergy, each individual seemed to have their own way of bowing that was consistent throughout the service. At certain moments, the bows and crossing would be exaggerated, such as during the Great Entrance or the censing of the congregation. Additionally, although it perhaps goes without saying, much of the variation can be attributed to varying ableness, gendered experience, and past enculturated experiences of parishioners. I observed these trends in both congregants and services leaders (priests, deacons, and chanters).

Other types of personal movements that are made by congregants during worship include prostrations (small/half and great/full), and the re-organization of the body in the space of the nave: turning to follow the Great Entrance or the censing with one's bodily orientation; sitting, standing, and kneeling at different points of the service; lining up and receiving communion; and the veneration of icons when initially entering the church.[95] But unlike the ritual movements in Jewish worship, all of these personal movements are not exactly what I would call “free”. Despite the slight variations of the style in which the movements are executed, the location of these movements within the temporal space of the service is prescribed. Moreover, these movements are almost always in response to a stimulus (if not the liturgy itself, than the actions of the service leaders). As such, movements are rarely the result of internal whims, being instead elicited by the events within the worship experience. When asked if they had ever been moved to make a changes to their movements, the priests I interviewed both noted that they don’t have the authority to change aspects of the service, or their manner of executing the service. Fr. Nikolaos noted that when he has, in the past, been moved through worship to make an extra movement, he would either make the sign of the cross again, or more likely, would do a small prostration (Interview, April 2016). Therefore, whereas being moved by prayer in Jewish worship was typically seen to result in free movements like swaying or bowing, being moved to move in Greek Orthodox worship, means to add to the choreographed movements that one already is completing.

Due to these differences in how movement itself is figured in Greek Orthodox worship, and to differences in the number of subjects and their roles between the Jewish and Greek Orthodox sites, I simply could not follow the same exact research method for my Greek ethnography and analysis. Therefore, I examine my findings through case study examples in the two parishes in which I worked. Following these cases, which aim to draw out major issues within the interactions of movement and chant in Greek Orthodox liturgy, I will provide some conclusions and discuss directions for future research in the Greek Orthodox worship community.

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[95] Most of these movements will be discussed analytically in more detail below.

II. The Parishes

I conducted research in two Greek Orthodox parishes in the Chicago area: St. Cyril's and St. Anthony's. Unfortunately, the congregants and chanters at these congregations were not easily recruited for participation in the study, despite many different attempts. However, priests at both sites were willing to provide me with lengthy interviews, and permission to video-record during services. Given that my small subject pool (two participant interviews) is made up entirely of clergy, I will discuss themes that arose from their respective interviews, as well as analytical examples arising from my observations (which I was able to conduct on several different occasions). Since I was observing services from amongst the congregants, I do make some remarks in the below analyses as to what sorts of movements these congregants make and how they are aligned with the music of the chanters. In this manner, while I cannot provide interview evidence for every person I observed, I am able to speak in some ways to my observations from where I stood with the congregation. Before beginning with examples however, I will give the reader some grounding on the space of each church parish.

St. Cyril's and St. Anthony's: Greek Orthodox Churches

St. Cyril's is a large parish located in a busy neighborhood on Chicago's north side. The interior of the church itself is austere: tiled floors, dark wooden pews and beams, and high cathedral ceilings make the nave dim and chilly on even the warmest of days. Tall stained-glass windows along the sides of the nave showcase various saints' icons, and the ornate iconostasis at the front glows as a combination of white wooden framing and gleaming golden inlay. The icons of Christ and the Virgin Mary, displayed in a golden sunburst on the back of the Sanctuary as well as the usual ceiling icon, glow and glitter in the darkened room. The height of the ceilings and materials of the walls and floor allow any sound to echo loudly around the space. The service itself is quite straightforward, with chanters in black robes continually singing from the right side of the nave, and on Sundays, a choir joining from the loft above the back of the nave (please refer to the space diagram, figure 4.1a).

The head priest at St. Cyril's is Fr. Nikolaos, who has been working in this capacity for over twenty-five years and at St. Cyril's for almost fifteen years. Fr. Nikolaos is a friendly middle-aged man, who seems relaxed despite physical limitations due to health and back issues. He is beloved by his congregants and staff, and deeply committed not only to his faith and his church, but also to both the broader Greek community, and the Chicago community.

St. Anthony's Church, located in a residential, family-oriented area of the city, is a large church with a lively school attached. The second-floor sanctuary, nave, and narthex allows one entering the building to feel as if they are ascending to a heavenly space. Indeed, once up the long flight of stairs, red carpeting extends through a broad narthex and into the airy, domed nave. The room has small-stained glass windows around the top of the walls, letting in ample light in addition to the bright bulbs along the edges of the curved ceiling. Below the windows are oil paintings of various saints, framed in a warm wood that matches the pews and the framing of the icons on the iconostasis. St. Anthony's has white walls, which makes the space appear much brighter than St. Cyril's. The pews are set in four sections, two main areas and then a row of smaller, one- to two-person pews along each wall. Chanter podiums are placed on each side of the iconostasis. Since the room is carpeted, the lighting brighter, and the ceilings much lower than those at St. Cyril's, St. Anthony's exudes a feel of closeness amongst congregants in the nave; an awareness of being seen and of seeing. Sound does not reverberate as it does at St. Cyril's, but rather is slightly muffled. These sonic differences are strong enough to come through on my service recordings, despite the fact that both parishes have service leaders using microphones that feed into speakers placed around the entire worship space.

Fr. Theodoros is the head priest at St. Anthony's. Older than Fr. Nikolaos from St. Cyril's, Fr. Theodoros commands respect from his congregants and staff, and exudes an outer sternness which softened as he relaxed into our interview. In each of my conversations with these priests, two main discussions arose around body movement in Greek Orthodox worship: that of attention and inattention in worship, based on automatic, procedural memory, and that of the senses in worship. I shall discuss each of these in turn, drawing at length from the interviews in order to better frame the subsequent analytical examples.

III. A Priest's Perspective, part I: Attention/Inattention in Worship

When I asked Fr. Theodoros about choreographed movements, he balked at the term, seeming unsure about if it fit what he knew I was trying to ask. I suggested "prescribed movement", which also didn't seem quite right. Still, Fr. Theodoros seemed to understand what I was getting at, and proceeded to describe four prescribed congregational movements: making the sign of the cross, raising the hands during specific moments of prayer, the kiss of peace (which is no longer done in many congregations), and the veneration of the icon. While noting that most of these actions have "fallen into disuse," Fr. Theodoros's explanation of the movements themselves was very procedural. As he described a part of the movement, he demonstrated it as well, breaking down a single move into smaller components. When I asked him about his own experiences making these and other ritual movements, he responded at length. (While the following is a long quotation, it is worth reading in its original).

> The motions, Rosa that I do, are automated. It's a, instinctively now. When I was first ordained, it was more like a recipe book: in other words, [*demonstrates movements as he speaks]* "Priest takes bread, places on paten," ok, "then lifts star and places to side." I'm trying to say it was something — "turn around, bless people", "turn around bless the" — it was more like a recipe book. Now that's all to the side and that's just all, comes, automatically. And we do these movements, if you want to add this, in extremely reverent, prayerful status. I don't place myself in the zombie mode or something, you know like, "mmm", I don't do that, that's not prayer, that's not prayer, but I know that I'm doing something on behalf of the people for the people, and I know that I have to do these acts in the most awesome and gracious way because God is right there. Because our faith believes the bread and the wine is the very, the body and blood of our Lord and Savior Jesus — it's God. So this is why I, why we do this with *absolute* and awesome reverence. And to be extremely careful.
>
> R: If you're doing things with your body that are very automated in that way, how are you thinking about your focus?
>
> T: The mind, my mind, is to be completely and utterly, myopic, in such a way that my only focus is to do that. That's very hard to do, especially when you have altar boys or a custodian that's running — but it's very hard to remain focused. That's why, in the monastic life or in the monasteries, only the priest is in the altar by himself so that he is completely and utterly focused. As a matter of fact, even in the monastic monasteries everything is completely and utterly dark so that the only thing you see is a candle and you don't know what's going on off to the side, everything is now shut, to help the priest remain focused. But for me personally, it's like the horse that has those blinders [*pantomimes blinders*] and I just, we're focused on exactly what we're doing, but in such a reverenced, awe. And then whatever we do is also with a prayer, like we'll take the body of Christ and we'll mention his resurrection and we ask him to enlighten us, and all those prayers. So it isn't, the Divine Liturgy for example is set in such a way so that our mind will not, "Oh, what am I going to have for lunch?" "Gotta go see my mother today — gotta go with my wife — gotta take my kids here." It's nothing like that. So the priest is constantly you know, in movement. These are great questions.

> R: What are you listening to during this? Do the blinders help with your hearing too?
>
> T: No, off.
>
> R: The blinders are not on for your hearing?
>
> T: No, I'm not paying attention. For example, I remember when I was a young priest, and I was preparing the gifts and because I love chanting, I used to love chanting, I was listening to the airs then and the older priest he reprimanded me, he goes, "you're supposed to stay focused on what you're doing now." So now, it's off. The only way that they can get my attention is if they stop abruptly or something like that, or, my gosh, if someone interrupts me or something, they need to ask a question or something like that, but that never happens, rarely really that will happen. So, then when I finish, I see where they're at, and then I will make announcements after in regards to the holy communion, and then we give the reception of the communion. And we are giving the Eucharist, again it's the same thing, we don't listen to anyone, we don't want to, it's not like, [*whispering*] "hey how are you? Good to see you this week, have some communion." NO, no, no. It's absolute reverence and awe because God is here, and we are holding God, we are receiving Him."
>
> — Fr. Theodoros, Interview, February 2017.

This concept of automated movement was quite powerful for Fr. Theodoros, especially given the specificity and complexity of the movement series required in each service. Further, the concept of blinders for both sight and sound that he introduced will help in addressing metrical interaction between body and voice in the analyses below. As Fr. Theodoros describes it, a priest must commit to a high level of intense focus as he enacts the ritual, an mode of attentiveness that seems to be deeply embodied learning. Notice that he discusses how the physical movements of the priestly duties help to maintain the metaphorical blinders, allowing him be reverent and fully immersed in every action during worship. Fr. Theodoros returned numerous times to the concepts of automated physicality and religious experience, finally noting how the structure of post-ordination duties for priests allows for the automation process to occur:

> After I was ordained a deacon and then a priest, I wasn't praying. There was no praying because I was concerned of making sure that I did this right, and chanted this right, and I was greatly concerned and speaking to an elder, an older priest of the church, and I go, "Hey you know Father, can I ask you a question?" he's like, "What? Is everything ok?" I say, "Yeah, I'm not praying. I'm just doing a recipe book here, and I just can't stay focused here, is this?" He started laughing and goes, "Well, it happened to me too. Wait five years," he says, "wait five years and you'll see it's all gonna—" just like he said.
>
> R: So how did it happen that you then can pray now while you're doing that?
>
> T: Confidence? Is that what you're trying to get at? Self-esteem? I, no, that's the wrong word. Assurance?
>
> R: That you would be doing it right?
>
> T: That this is right and, yeah. I don't know if I've answered your question but it's just, after you keep doing something over and over and over, then, the prayer then, it just comes automatic, and you don't have to worry about, it's just automatic. Like I said we're not in zombie form like, "uhhhhh", it's just like, I know that I have to grab the cloth and then to put it down [*pantomimes*] and then to continue to pray. And not knowing, not worrying that, [*mumbling quickly*] "oh, did I do this right or did I do this wrong or what did, what it goes—" that's all, that's all gone.
>
> R: Right right right, and not thinking, "now I get the cloth," but just, your arm reaches for it.
>
> T: Yeah. I think you should put this down in your notes that, when a priest is ordained so that all of that can vanish — I didn't have this opportunity because it wasn't afforded to me — after he's ordained the priest is supposed to do Divine Liturgies the next 40 days, every day. This is the practice of our church. Every day, every day, so that by the time he got to the fortieth he's like, "Ok, I know the chalice is here, the paten is here, I know that…." I don't want to say, because I don't want to undermine or lower the, cause what the priest does it's the highest greatest thing that, the president of the, of any corporation in the United States, it's just, it's like picking up a bike and knowing how to ride it — I'm not gonna fall, it's just not gonna fall.
>
> — Fr. Theodoros, Interview, February 2017.

Fr. Theodoros's explanations move around the issue of distinguishing "going through the motions" from "moving for prayer", even when both are choreographed movements. Whereas in the Jewish communities the choreographed movements seemed more pointed and attended to while the free movements were more automated, Fr. Theodoros's discussion implies that movement in the church is more consistently and simultaneously both attended to and automated. And at the same time, movements are neither all automated nor all closely attended to as separate movements. Instead, there is a blending of these aspects of focused-ness and automated-ness into an embodied technique (Spatz 2015) for prayer. This blend allows for the "blinders" of sound or sight that Fr. Theodoros mentions. These blinders are necessary to maintain his own role within the service and perform his ritual duties in a deeply prayerful and thoughtful manner, without setting him in total "zombie mode" (as he would say).[96]

The *SAGE Glossary of the Social and Behavioral Sciences* defines procedural memory as "A type of long-term memory that consists of our stored knowledge of well-learned habits and skills…. Procedural memory is oftentimes hard to verbalize, and it can be done without consciously thinking about it" (2009).[97] Common examples of such actions stemming from procedural memory are walking, or riding a bicycle, as Fr. Theodoros mentioned above. He compared his tacit physical knowledge to knowing he won't fall when he rides a bicycle, regardless of how long it has been (drawing on the well-known adage, "it's just like riding a bike"). If the movements that Fr. Theodoros makes to enact ritual are completely like riding a bicycle, however, they will not be imbued with the reverence and prayerful consciousness he notes as requisite for worship. Therefore, it is more than procedural memory; it is embodied cognition — Fr. Theodoros knows the liturgy through the site of his body. Perhaps the concept of a habitus is also productive here, as an all-encompassing way of being through which Fr. Theodoros enacts his knowledge of the rituals of Greek Orthodox worship.

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[96] The concept of the "zombie mode" was interesting coming from Fr. Theodoros, an elderly and experienced priest. In both moments of mentioning the zombie mentality, Fr. Theodoros assumed both the sound ("mmm" or "uhhh") and a rigid posture to mimic what a zombie might look like going through the movements of prayer. By distinguishing the bodily technique of a zombie praying from those of a priest (an alive human) praying, Fr. Theodoros, perhaps unknowingly, shows his intimate understanding of embodied knowledge and the exceptionally kinesthetic, physical expertise required of priests.

[97] "Procedural Memory." In *The SAGE Glossary of the Social and Behavioral Sciences*, edited by Larry E. Sullivan, 407. Thousand Oaks, CA: SAGE Reference, 2009. Gale Virtual Reference Library (accessed July 17, 2017). http://go.galegroup.com.turing.library.northwestern.edu/ps/i.do?p=GVRL&sw=w&u=northwestern&v=2.1&it=r&id=GALE%7CCX3202202015&asid=26b1a897c83949bd7cba8f4adccfb2a4.

In contrast, when asked about his focus during movement, Fr. Nikolaos at St. Cyril's Church said that he does listen to the chanter, even when preparing the oblation table. He explained:

> R: Are you listening to him [the chanter]?
>
> N: Oh yeah. I can sing along with him sometimes.
>
> R: That was going to be my question, when you're listening does it kind of factor in, or does it—?
>
> N: Oh yeah, sometimes, sometimes, like last Sunday, I decided to hop in with the next hymn that was ready to be sung and I, I sang it from the inside, chanted it from the inside, from the altar.
>
> R: Nice. And you wear a mic?
>
> N: I have a mic, yeah. We all have mics.
>
> R: Right, so if you're singing with him, people, congregants, will hear?
>
> N: Yeah, if the chanter hears me singing he'll stop singing and let me sing it. Cause he thinks I want to sing it with him. Usually what I'll do, usually when I sing with him sometimes, I'm holding what we call an *ison*, I'm doing a bass note [pedal/drone?], so like say he's in first tone, so if he's in first tone I'm singing the D, I'm at the D. And I'm following, I know the words I'm just keeping that pitch in D, and it makes a nice, almost like, you sound like humming bird, "hmmmmm" [*demonstrates*], and he's singing the melody and it's really, it's really beautiful when it's done.
>
> — Fr. Nikolaos, Interview, April 2016.

Clearly Fr. Theodoros's approach is not the only way to conduct a service as a priest. Fr. Nikolaos seems to be quite attentive to the musical aspects of the service, and quite enjoys doing so. My observations of him conducting the Divine Liturgy did indeed show him singing drone pitches, and joining the chanters during hymns throughout service (something that Fr. Theodoros did occasionally, but not to the same extent as Fr. Nikolaos).

Yet Fr. Nikolaos also noted the need to intently focus on the worship patterns, as described by Fr. Theodoros. Fr. Nikolaos explained that he is deeply connected to and aware of the community, noting that if he looks out at the congregation he will recognize if the regulars are missing. At the same time, however, he asserted that he does not (and cannot) pay attention to everything that is occurring during worship. When I asked him if there was anything that congregants did that made him adjust his movements, and if there was anything about where or how people sat that might affect his worship, Fr. Nikolaos explained as follows:

> So, the whole part of us as priests, and other people in there is when we see someone missing, part of the church is missing. And that's the feeling of the, of another indication of what we feel in regards to the question…. and they [the congregants] ask me, "Don't you ever get disturbed Father?" I go, "No." When I'm doing the service, I will see someone there, but if I hear a child cry out, it doesn't bother me. If I hear someone say something, it doesn't bother me. If I hear a door slam, doesn't bother me, because I'm focused right here. My focus is on the altar on that part. Now I mean sure, if there's going to be a big turmoil, they're going to have to — (R: Right, if the fire alarm starts going off, you'll notice.) — exactly, yeah, you'll notice at that point. — (R: But if there's a fussy kid, of course not.) — No, you leave those things to be and that's why you try to envelop yourself into the moment of where you're at instead of the um, things. And of course, I mean, when we're saying things, like for example the part of the service that we're saying when we're consecrating the gifts, and the priest is saying, you know, he'll say and he'll point to the gifts and the deacon has his sash and he'll point to the gifts that are there and he'll say, "Take, eat, this is my body which is broken for you for the forgiveness of sins." And then he'll say, "Likewise he took the cup saying," and he'll point to the cup, "drink of this all of you, this is my blood of the new covenant which is shed for you and for many for the forgiveness of sins." And then he'll say, "Then remember therefore the command of the Savior," and it's a thing, a small little prayer, "remember the command of the Savior and all that came to pass for our

> sake, the cross, the tomb, the resurrection, the third day ascension to heaven, enthronement." And the one thing you have to realize Rosa is, I don't memorize a lot of these things. And the thing is, you're not supposed to. You're supposed to do it from here [*gestures to book*], because memorizing means you're creating an ego in yourself, and you don't want to build an ego. This is more something holier than that. And I did that once as a deacon, I thought I knew the petitions, it was three sets of petitions, and I walked out without a book, and I forgot 'em! [*laughs*] So, there's a way God humbles you."
>
> — Fr. Nikolaos, Interview, April 2016.

Just like Fr. Theodoros's distinction between zombie mode and priest mode, Fr. Nikolaos is clear that memorization hinders prayer, and that focusing on everything that is happening in the church also hinders prayer. Here, again, is a description of a blend or balance of physical activity — procedural memory — and focused attention. Both priests, in different ways, explained that as clergy they have an expectation that their bodies know how to create prayer movements, and will focus on the prayer over focusing on the body, but do so without truly setting either on auto-pilot.

Analyses

Examples will help to explicate how this blended attention/automation plays out during chant. The instances below showcase this balance of embodied knowledge as demonstrated through metrical interactions between body and voice during chanted worship. Example 4.1a shows a transcription of the melody line of the Cherubic hymn, sung by the choir mid-way through the service.[98]

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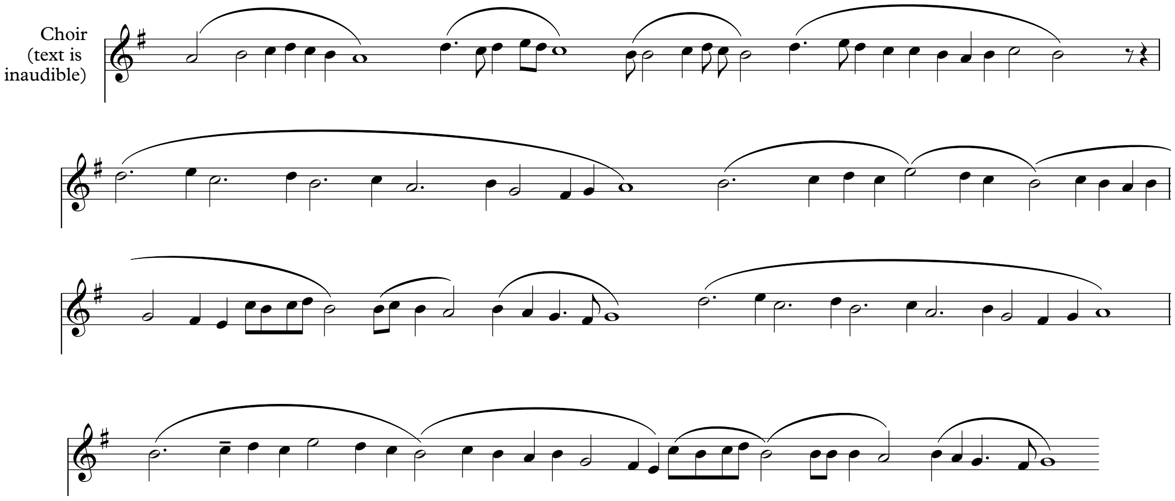
[98] In the recording for this particular service, the choir was continuously out of tune, and sometimes missing inner harmonies (likely for lack of personnel). Such issues are understandable in a volunteer choir. As such, I have generalized the music of their parts into one melody line, which does not show the pitch inconsistencies heard on the recording. In other words, I've transcribed the upper melody line "as it should be", not as it sounds, pitch-wise. However, I have kept the rhythm and duration as it is heard (i.e.



Example 4.1a. Cherubic Hymn, St. Anthony's, melody only.

This hymn is intended to "remind us that the duty of the angelic hosts is to glorify God. We are invited to represent and imitate the angels and to 'put away all worldly care so that we may receive the King of all'" (Magoulias 2004, 13). While the hymn is chanted, the priest completes several tasks within the altar area, reciting prayers and psalms as he goes, and finishes by censing the altar area, icons, and congregation (ibid., 13-14). During this time, the entire congregation is standing and they watch closely as the censing begins within the altar and then moves outside of it, along the path shown in the diagram below.

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as closely as possible to the actual recording). I have not included expressive timings (or micro-timings). These apparent inconsistencies on my part as an analyst are due to the focus in this study on meter, rather than pitch.

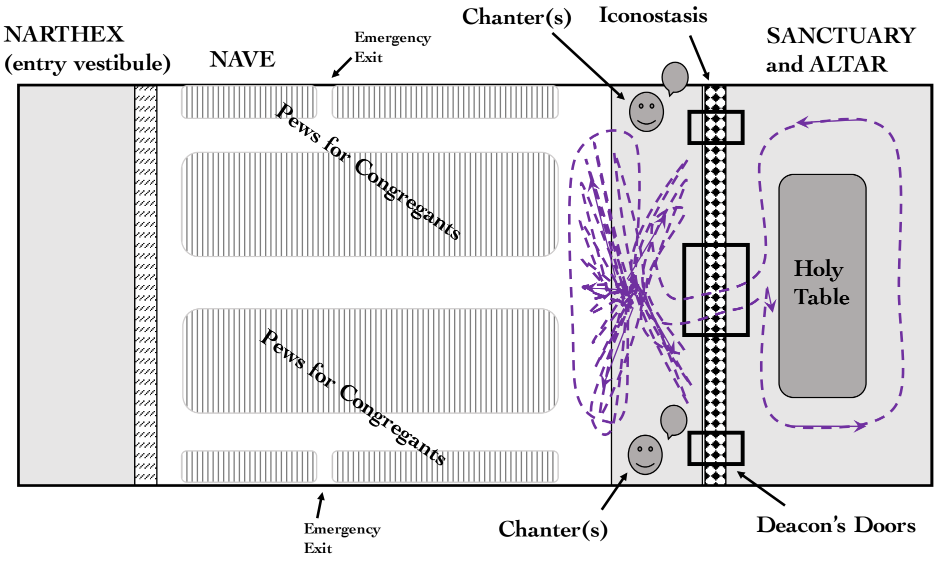

NARTHEX
(entry vestibule)
NAVE
Emergency Exit
Chanter(s)
Iconostasis
SANCTUARY and ALTAR
Pews for Congregants
Holy Table
Pews for Congregants
Emergency Exit
Chanter(s)
Deacon's Doors

Figure 4.5. Diagram of censing pathway.

Fr. Nikolaos described how censing occurs, (as mentioned in chapter two), in the following quote:

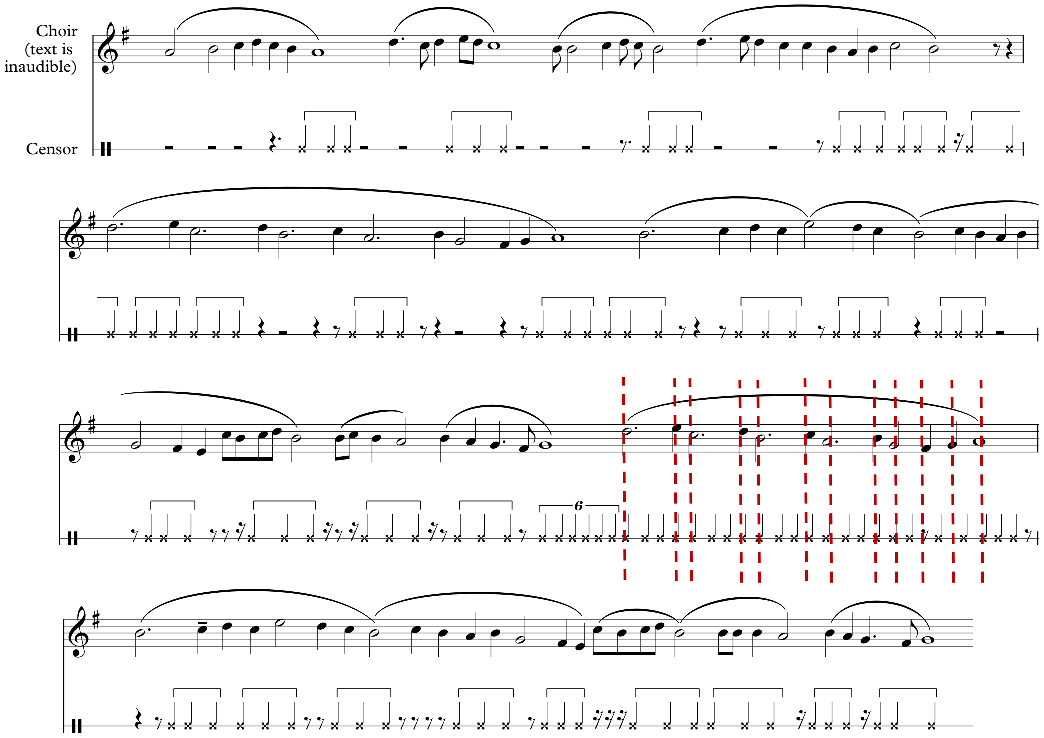
> Everything is done in threes, it's in threes, when I cense the altar table, I cense the front of the altar table three times, I cense the side three times, the back three times, the other side three times. I'll cense the cross three times which is in the back, and I'll cense the oblation table where it has the host and the chalice waiting to be transferred out three times. Then I'll come outside the main holy altar door and I'll cense the bishop's throne three times…. [*digression about bishop and Christ*], and then I'll do the icons, all six icons three times each, and then the people I just cense randomly all the way across, there's no three times for them. I'll do then the icons, the icon of Christ, and the icon of the Virgin Mary three times again, not all the other ones just the two main ones. Then I'll come in, cense the altar table in front again three times, cense the deacon— the uh, oblation three times, the ante-oblation three times, and then I'll cense the altar boys, they all get one cense. A priest actually, I cense him twice. He doesn't get the three censes he only gets it twice, because threes are reserved for God.
>
> R: So when you're doing the three… do you count? Or is it so automatic that—?
>
> N: It's so automatic, that I feel it.

> R: And do you think about the space between the breaks of the three? Like, “I’ve done three here and now I have to do three over here, and how long do I have to make a break,” just as long as it takes—?
>
> N: There’s nothing, it’s just, as long as it takes to turn, long as it takes to turn. And I know, you don’t have to count because when you cense, you cense the center of the altar table, one, corner of the altar table, two, corner of the altar table, three, go on, cense center–corner–corner, back, center–corner–corner, back, center–corner–corner, back—
>
> R: I’m sure you don’t have to count—
>
> N: Well, after twenty-five years, I, maybe at the beginning yeah I did. But you know when you’re a deacon, like I did count because when you’re walking out to cense the bishop and he’s sitting on the bishop’s throne, I call it the twenty-one-gun salute, because you do him first three, and you turn to the icons, you do them all, and then you go back to him and you do him nine. And you gotta count. And every time you do nine you do one-two-three, step forward, one-two-three, step forward, one-two-three, step forward. Then you do the priest twice, and there if they’re lined up. Then you do the congregation, you walk all the way down cense the congregation, walk all the way back up, cense the other side of the congregation, come back, to the metropolitan, turn toward him, nine more times stepping backwards, one-two-three, step back, one-two-three, step back, one-two-three, step back. Do the two icons, three and three, turn to the metropolitan bow, and come in.”
>
> — Fr. Nikolaos, Interview, April 2016.

Based on Fr. Nikolaos’s explanation, the expectation is not particularly that one is actually thoroughly counting, but rather is using procedural memory of embodied knowledge to move through space with the censer. Even the way Fr. Nikolaos describes his movement around the space — in extremely particular terms, but without any actual physical demonstration — shows the blend of attention and automation discussed above. He doesn’t *have* to count, but he *can* count if needed. From just the way he is thinking about the censing procedure, for instance noting that the altar table is censed as “center–corner–corner”, it is apparent that, unlike riding a bike or other procedural memories for which one might lose explicit language, the sacredness of the priestly duties makes them always available as explicit knowledge (even if they are typically portrayed as implicit).

This middle-ground is where embodied knowledge, and truly embodied technique, exists separately from procedural memory. The sense of attentiveness that both Fr. Nikolaos and Fr. Theodoros have indicated makes wholly automatic physical processes impossible; although it may seem like “riding a bike”, since one has to pay attention it really is not so procedural. But to what are these priests attending? Unlike bicycling, where the physical activity may or may not be connected to the thoughts of the rider, Greek Orthodox worship involves orthopraxy (right practice) as a way of creating prayer experience and reinforcing the orthodoxy (right belief). Therefore, the practice of prayer must be first embodied technique (Spatz 2015), such that the individual knows how to use their body to create prayer, to pray *within the site* of their body (a la Crossley [2007]). (The embodied cognition literature, and the ritual literature reviewed in chapter one, support such a reading.)

How, though, does this figure into the sonic activities during such embodied prayer? Given Fr. Nikolaos’s description of the censing process above, it is clear that there is no metrical coordination (or lack of coordination) required for the sonic layers of the censer and the chant. In the instance of the Cherubic hymn shown in example 4.1a however (drawn from observations at St. Anthony’s), there is at one moment a general slowing of the choir which allows for fleeting synchronization between chant and censer. This short-lived coordination feels somehow purposeful on the part of the singers (at the direction of the choir director) to be “in time” with the censing of the congregation. Example 4.1b shows the censer strikes laid alongside the Cherubic hymn. Brackets denote the groupings of three described in Fr. Nikolaos’s explanation above. (Note that the common denominator for the pulse in my notation was based on the choir’s pulse). Within themselves, these groupings are metrically consistent; the quarter note pulse is even, each set of three being created by a practiced arm and hand movement.[99]



Example 4.1b. Cherubic Hymn, St. Anthony's. Shows melody and censer strikes.

When combined with the hymn melody, the censer strikes frequently occur slightly before or after the melodic attacks. However, as the priest begins to cense the congregation, rather than the icons, the censer strikes align with the chain of suspensions in the melody, as shown with red dotted lines in the above example. Each dotted-half-note is filled in by three quarter-note censer strikes, followed by a simultaneity of quarter-note durations in the censer and the voice. This synchronization of sonic lines can only occur *because* the censer is not being deployed in sets of three, but rather is censing across the congregation in a regular pulse — momentarily sounding the quarter-note tactus of the hymn. When grouped in threes, rests that sonically delineate the groupings are created by physical movement of the priest through the space, as he advances to the next censing location. This involves turning, walking, or sometimes just redirecting focus to the next icon (adjacent to the one just censed). In example 4.1b, the "syncing up" of the two sonic lines is stark, demonstrating the effects of bodily choreography in worship.

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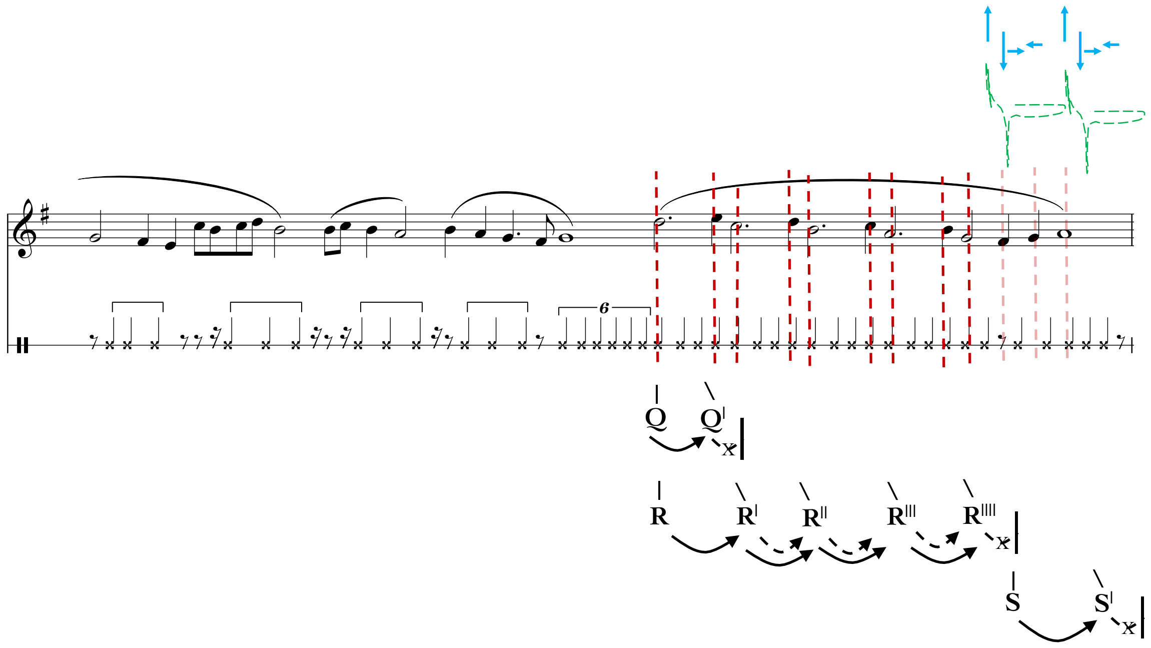
[99] Although purely conjecture, I would expect that if the sets of three censer strikes did not have internal metrical consistency, they would take more thought and attention to produce, and would require counting. Further, since irregular meter would require discrepancies in the physical movement, the accuracy and evenness of the censing would suffer, causing the church to be censed unevenly and thereby imbuing the censing with implicit bias of some aspects being censed — blessed with incense — more than others.

This is not to say that the moment of convergence between the censer and the hymn melody is in any way purposeful or felt as a unique part of the ritual. In fact, the focus of the congregant is at that moment on the censing, the hymn relegated to background sound. The congregants are actually physically responding to the censing, bowing their heads slightly and making the sign of the cross. One woman's crossing meter is shown in example 4.1c below. She is on the latter half of the church to be censed and thus her crossing occurs towards the end of the congregational censing. This four-part movement of touching the forehead, middle of chest, right-side, and left-side provides yet another metrical layer in the transcription.



Example 4.1c. Cherubic Hymn, St. Anthony's. Shows melody, censer strikes, and sign of the cross (shown temporally with blue direction arrows and green pathway).

The projective analysis, based on the interaction between the censer and the chant, shows a dotted-half note duration (Q) that is projected; its predicted repetition is then denied ($Q^{|}$). The initial duration is then reinterpreted as four quarters, or rather, a whole note (R), and this projection is continually achieved until the end of the censer-chant synchronization section. It is in this moment, just after $R^{||||}$, that the woman's crossing movement begins, the censing having reached her at the end of the congregational censing. She visibly crosses herself twice, creating a projection (S-$S^{|}$) that is not repeated.

The synchronization of the censer strikes and the chant seems easier to achieve when not censing in groups of three. Of course, this is logical, as the semi-metered Byzantine chant does not typically assert a triple meter. However, it is interesting that the passing synchronization can occur with different chants using the same censing trajectory and style of censer. For instance, example 4.2a shows the censing of the altar, icons, and congregation at St. Cyril's church, in an identical sequence to the one shown in figure 4.5 (above). Note, though, that music of the chant is quite different: this instance is drawn from a Monday evening presanctified liturgy during Holy Week (also sometimes referred to as the Bridegroom Service).[100] The melody is much more ornamental, with longer note values punctuated by mordents and quick turns or slides. In addition, the deacon who is censing is not as consistent with his censer strikes. This seems to be in part because of his particular physical choices in walking around the altar and turning back and forth between the icons. As such, these "interim" body movements do not allow him to create a regular "pulse" for the censing when grouped in threes. It also seems, in part, to be due to the height and speed of the censer. In some instances, the deacon raises the censer quite high when activating it, achieving a height parallel to his chest, while at other times he only raises the censer as high as his hip. Although this variation depends in part on what he is censing, these differences in height also require different levels of physical exertion. The more effort he must expend to move the censer, the faster the strikes come together. As example 4.2a shows, these durations range from an eighth to a quarter, with the dotted-eighth acting as a placeholder for the "in-between" durational values.

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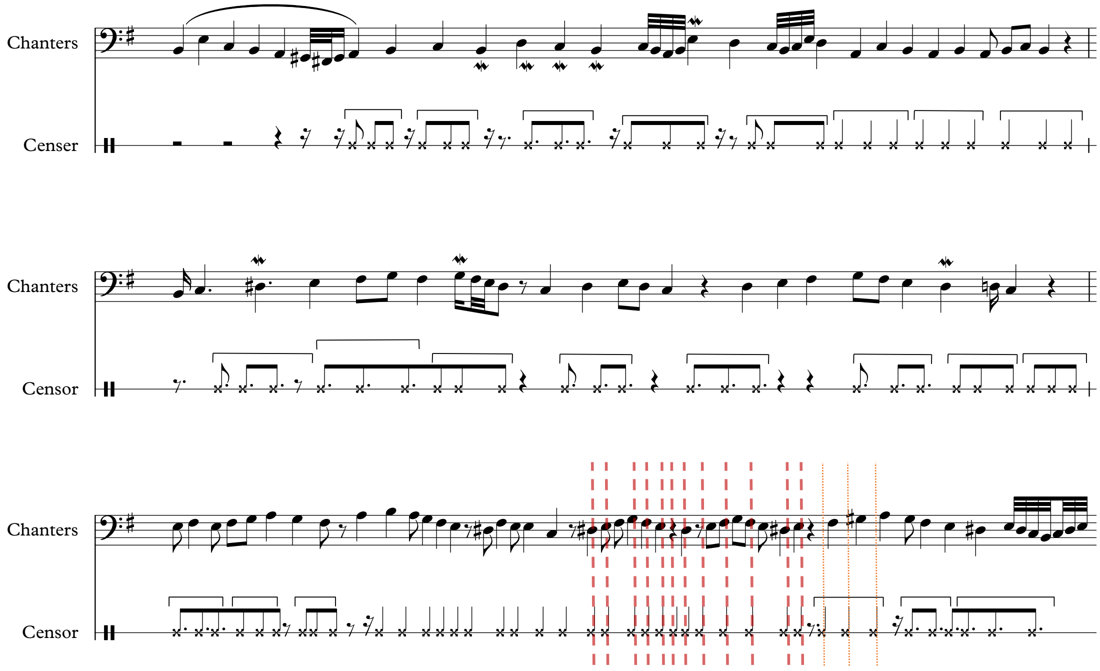
[100] "Presanctified" implies that while the service follows the structure of the Divine Liturgy, the Eucharist has already been blessed and sanctified. These services are held on weekdays during Lent.



Example 4.2a. Censing during presanctified Liturgy, St. Cyril's.

When the deacon begins censing the congregation, just as we saw in the Cherubic Hymn example above (4.1b), the censer strikes align with a quarter-note pulse in the melody. Although fleeting and not aligned with what one might consider phrase meter, this synchronization indicates an interesting overlap between the two sonic activities.[101] Again, the focus of the congregation is on the censing, and its alignment with the chant, even for a moment, makes both components sound, and feel, metered in a semi-metered space.

Notice, in example 4.2b below, that the moment of alignment between censer and chant supports a similar projective analysis as the above alignment shown in 4.1b, during the Cherubic hymn. The parallels between these two instances, drawn not only from different services, but from different parishes entirely, indicate that the censing of the congregation is a unique opportunity for synchronization between the sonic streams of percussive censing and melismatic chant. This is, of course, not meant to imply that the congregation, the priest or deacon doing the censing, or the chanters or choir are at all *attending* to the entrainment that is occurring.

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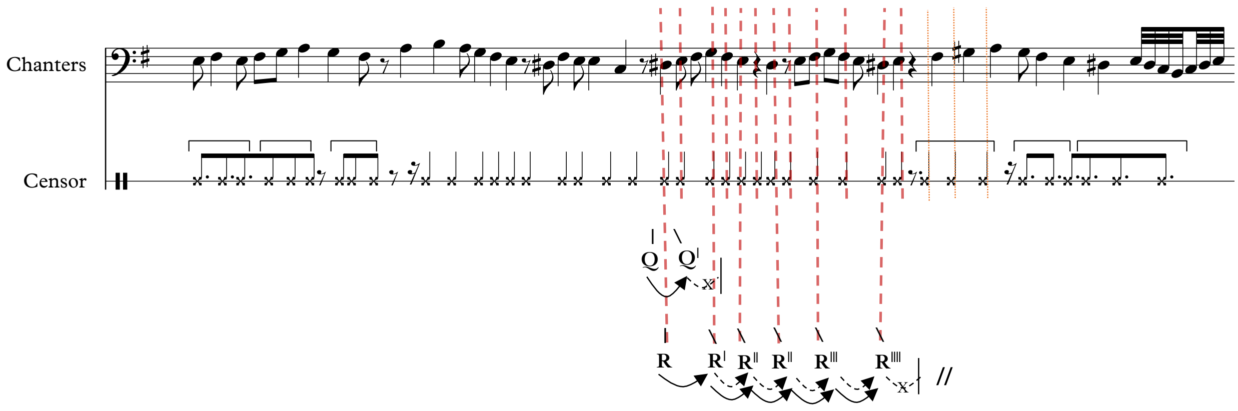
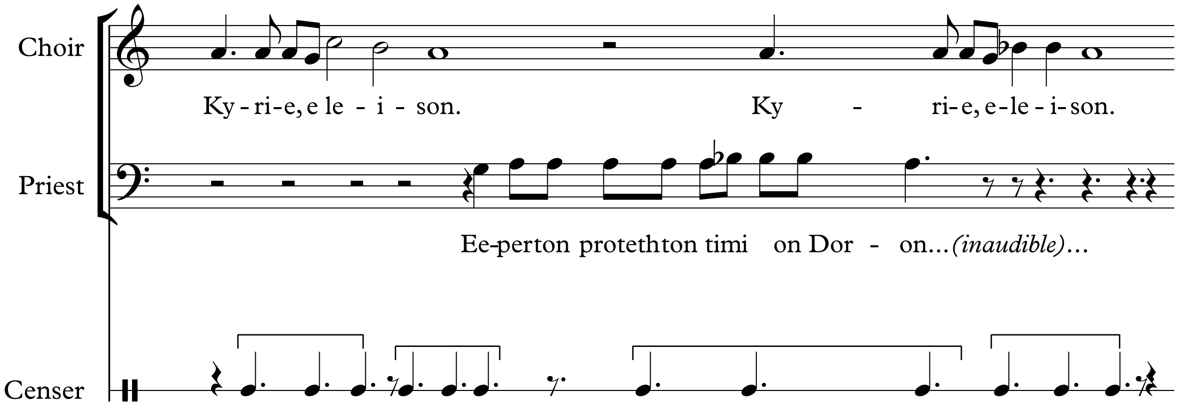
[101] An example involving phrase meter alignment will be shown below in example 4.4.



Example 4.2b. Censing during presanctified Liturgy, St. Cyril's. Shows censer/chant alignment.

By considering these moments as synchronized, the initial assumption of complete asynchrony must be re-evaluated. Both the distinctions drawn from Warren-Crow (2011) earlier in this dissertation, as well as evidence from the clergy interviews, imply that since there is neither intention, nor even *attention*, to possible resultant synchrony or dyssynchrony occurring between the censing and the chant, one might consider this event completely asynchronous. In that case, the momentary syncing up of the two components is not only accidental, but also likely to go unnoticed by worshippers. It seems highly unlikely that there is actual entrainment happening, and more likely that it is only aligment occurring. However, as an observer (and, granted, one with an embodied proclivity to be attentive to moments of synchrony of all kinds), hearing the percussive censing of the congregation align with the semi-metered chant (in a manner which seems not only synchronized, but also somewhat metered) opens a door to question the status of synchrony between these components throughout the entirety of the worship setting. Moreover, its presence in both congregations suggests an opportunity for further investigation in future research.

Despite these alluring and complex examples, alignment does not always occur. For instance, in the Kyrie hymn following the Great Entrance, the priest censes the gifts on the altar while singing antiphonally with the choir. A brief example of this, drawn from an observation of the Divine Liturgy at St. Anthony's, is shown in example 4.3.


Choir
Ky - ri - e, e le - i - son.
Ky - ri- e, e - le - i - son.
Priest
Ee-perton protethton timi on Dor - on... (inaudible)...
Censer

Example 4.3. "Kyrie Eleison" following the Great Entrance, St. Anthony's Church.

Three separate metrical streams appear: 1) the choir's voices, unable to be seen by anyone else given the location of the choir loft, 2) the priest's voice, whose is unable to be seen clearly by the congregants as his back is to them and he is standing inside the altar, and 3) the censer strikes, that are also difficult to be seen, but can be smelled (although there is a time delay as the smell wafts out of the altar and into the nave). Unlike the above censing examples where the agents of the sound are visible and the embodied techniques creating the sounds are on display, this moment encourages the focal point to shift from the eyes–ears–nose, to primarily the ears alone.[102] Because the actions of the priest's censing are hidden within the altar, and the choir is above and behind, those sitting in the pews are unable to actually see any of the sound-producing bodies or gestures. This means that despite the multisensory events happening, the sonic components are those most accessible to the congregants during an example such as 4.3 above. Such sensory issues are significant to Greek Orthodox prayer, and as such, I will now turn to a detailed discussion of these parameters of worship.

IV. A Priest's Perspective, part II: The Senses in Worship

Example 4.3. provides an opportunity to turn now to the figuring of the senses in Greek Orthodox worship and liturgy. This perspective on the senses is somewhat different from the well-established body of research on perception, as well as scholarship concerning theories of the senses. Greek Orthodox worship holds to an Aristotelian viewpoint, considering the five senses of sight, sound, smell, taste, and touch as integral to the liturgy and to prayer (at least in conversation). For instance, Fr. Theodoros noted: "So when we worship our whole body is being used. We taste, we even say, 'taste and see how good the Lord is.' We hear, the music as best that they can chant. We smell the incense, we feel the touch of another individual or the kissing of the icon rather, or the blessing of the priest's hand, so that, that's why everything is shut off for every Orthodox Christian" (Interview, February 2017).[103] While he omits sight, I assume it is implied, especially as he later discusses icons, and because the visual aspects of the church are as ornate and detailed as the worship music and smells. Fr. Nikolaos also acknowledged the importance of the senses, saying, "I should say all the senses are very much active inside the church. Smell, sight, hear, touch…" (Interview, April 2016). It is therefore clear that these five senses are the ones being considered by experts in the worship setting.

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[102] Of course, the idea that hearing occurs only with the ears sidesteps the importance of bodily vibration, auditory processing within the cortex, and other aspects of listening. It is not my intention to ignore, degrade, or misstep well-established discussions of hearing processes in this manner. On the contrary, as I will discuss below when I turn my attention to the placement of the senses in Greek Orthodox worship, I am trying to follow the mindset of those worship experts in this particular religious setting (who may or may not be experts in auditory experience). As such, my use of "ears" to imply hearing or listening is simply a way of denoting a shift in sensory focus.

Nevertheless, there is an argument to be made for physical, proprioceptive senses, which have been discussed at length in scholarship seeking to extend theories of perception and the senses. Fiona Macpherson notes that scholarship on the senses has expanded the understanding of variations in senses: for example, the sense of touch is perhaps more clearly broken down into multiple modalities of pressure, pain, warmth, and cold (2011, 11). Thus, one must decide if touch is a single sensory modality with four possible parameters, or four separate senses. This case is indicative of a larger discourse surrounding the theory of the senses. Central to this discourse is what Macpherson calls "the counting question": how many human senses are there? She notes that the "sparse view", promulgated as only the five senses outlined by Aristotle, have maintained a foundational place in literature up through contemporary theories (e.g., Nudds 2004).[104] However, as Macpherson argues, this viewpoint assumes that sensory modalities are both limited in number and discrete (2011, 15). A main critique of this sparse view is the recognition of proprioceptive and equilibrioceptive senses, which expand the discrete set of the five senses laid out by Aristotle. Furthermore, these sensory “additions” blur the boundaries of the senses, since proprioception involves bodily senses including hearing, touch, and so on. In this way, while there are still those who cling to the Aristotelian sparsity of the five senses of hearing, sight, smell, touch, and taste, the rigidity of this system has been thoroughly debunked by psychologists, scientists, and philosophers alike.

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[103] By "shut off", I believe Fr. Theodoros is again referring to the blinders concept. This quote comes from the end of the interview and this term is one he used throughout our conversation to describe focused attention.

[104] Aristotle theorizes the five human senses in *De Anima* (*On the Soul*), written circa 350 B.C.E. Macpherson's collection of essays includes excerpts from this text, translated and edited by Jonathan Barnes, 1984.

But to study the senses is to study human beings’ perception of the world around them, and in this way, as David Howes notes, all senses are culturally situated. He states: “Just as meanings are shared, so are sensory experiences. This is why it is not enough to look at the senses as ‘energy transducers,’ ‘information gatherers’ or ‘perceptual systems’ (see Geary 2002; Gibson 1966, 1979; Goldstein 2002); they must also be understood as cultural systems” (2005, 4-5).[105] This is certainly true of the senses in Greek Orthodox culture, given their place of importance in worship and the embodied experience of Greek Orthodox prayer. Culturally dependent and diverse perspectives are also illustrated by editors and authors Michaels and Wulf, wherein they note:

> This embeddedness of the senses in a particular cultural tradition and their experiences of the otherness of these traditions contribute not just to a better understanding of the historical-cultural significance of the senses in various regions of the world, but also to that of the senses in one’s own diversely differentiated culture. The classical Aristotelian pentarchy of the (five) senses, for example, which has long been accepted in Europe and partly in India, is by no means accepted everywhere (2014, 1).

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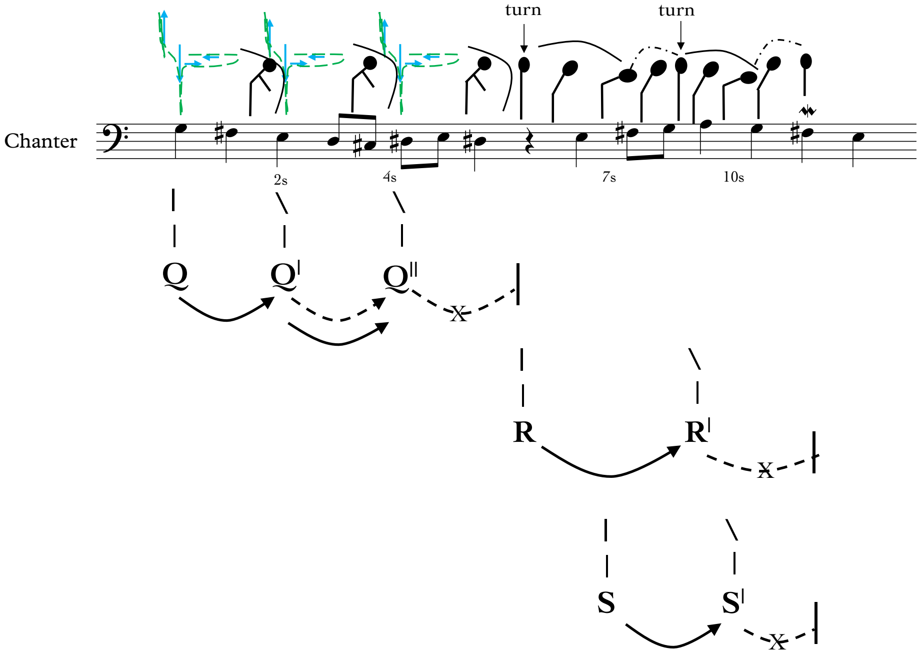
[105] Howes also discusses philosopher Michel Serres description of the senses as interconnected in a knot (2005, 9). This seems a particularly apt metaphor for understanding the experience of the senses in Greek Orthodox worship.

The pentarchy is, however, accepted in Greek worship. Moreover, through my fieldwork, it became increasingly apparent that each aspect of worship requires an attentiveness and the heightening of a specific sense over the other four. In the censing examples above, the *sight* of the censer, which indicates more precisely the *smell* of the incense, is central. Congregants focus on smelling and watching the progress of the clergy blessing the church with incense, and allow the music of the chant to shift into the background, even if they happen to be singing along. This is also the case with large physical movements. Therefore, I posit that, although the language of the culture restricts the senses to five, the actions the culture incorporate gross motor movements into the senses of both touch and sight.

Analyses

Consider example 4.4 below, drawn from a presanctified Liturgy at St. Cyril's. The diagram shows Fr. Nikolaos completing small prostrations at the altar (preceded by the sign of the cross), followed by a turn to bow to the congregation, and another turn to bow inside the altar.



Example 4.4. Fr. Nikolaos making three small prostrations and then two bows.

The prostrations are aerobic: each is begun with a sign of the cross — forehead-chest-left shoulder-right shoulder — and then made by a bend in the knees down to touch the ground with the fingers. All of this is done while the priest faces the altar table, his back to the congregation. Fr. Nikolaos, because of back problems, must hold on to the edge of the altar table with his left hand while his right reaches for the ground. This multi-step process is then repeated twice more. The prostrations are followed by a 180-degree turn to face the congregation and bow, and then another turn back into the altar to bow again.

While his movements are not aligned in precise metric synchrony with the chant melody, they do mirror a higher level of meter, with each crossing and prostration taking about a half-note's duration to complete. This is echoed in the projective analysis, where duration Q-$Q^{|}$ is repeated immediately ($Q^{|}$-$Q^{||}$). The regularity of movement creates grouping in the otherwise continuous flow of quarter and eighth notes in the chant. During the subsequent rest, Fr. Nikolaos turns around and completes his bows at the waist, arms crossed over his chest. Then, just after the melody begins again, the movement expectations are shifted, creating two equally strong ictus interpretations. The first involves reading the turn (R) as the stronger movement, with the bow as an intermediary point in the duration of R-R$^{|}$. The second interpretation shows the bow as the focal point of the movement trajectory, resulting in duration S-S$^{|}$. Neither option is repeated, and thus presenting both in my analysis allows for different ways of reading the trajectory of the movement pattern.

Despite the coordination of these silent movements with the melody of the chant, the focus for a congregant at this moment should be on the sight of Fr. Nikolaos's movements. For Fr. Nikolaos, it should be on his enactment of these multi-part movements, on these prostrations before the altar.[106] As above, any coordination or entrainment is not necessarily attended to *as* coordination, especially given the expectations for where the focus will be for the congregants and the clergy.

Along these lines, perhaps the most prominent example of the focusing of the senses occurs during the Great Entrance. This ritual happens in the middle of the Divine Liturgy, wherein a procession of altar boys carrying tall candles and the ornate cross are followed by an altar attendant with a censer (sometimes a role filled by one of the chanters), who walks backwards, facing the priest who is carrying the holy gifts. The priest chants as the attendant censes the gifts, and the entire party moves out of the deacon's door, down the left side of the nave, and up the center aisle to the Royal doors. This path is shown in figure 4.6 below.

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[106] Indeed, when I pushed Fr. Nikolaos to discuss what he might do if moved by something in the service to add his own movements, he noted that he would most likely do a small prostration.

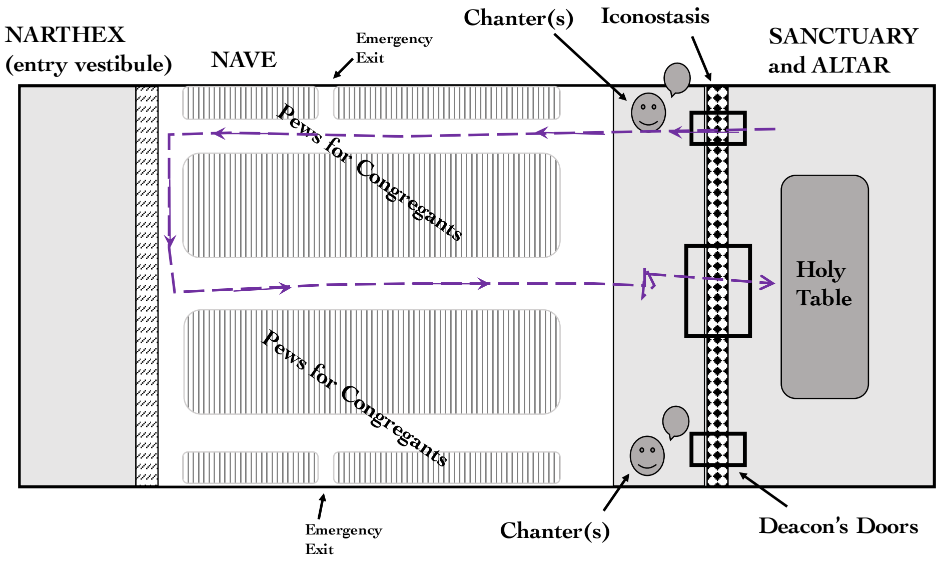
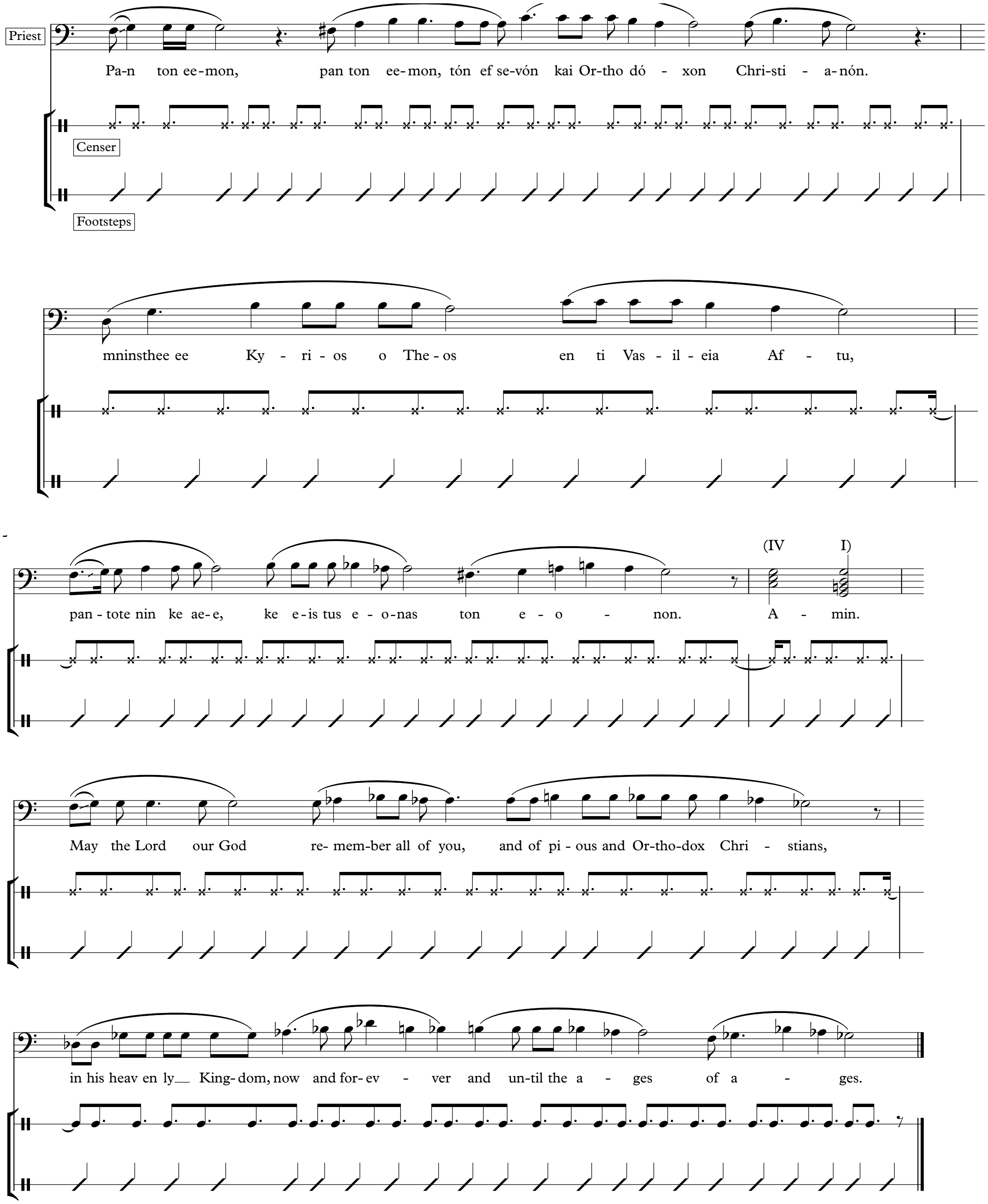

NARTHEX
(entry vestibule)
NAVE
Emergency Exit
Chanter(s)
Iconostasis
SANCTUARY and ALTAR
Pews for Congregants
Holy Table
Pews for Congregants
Emergency Exit
Chanter(s)
Deacon's Doors

Figure 4.6. Pathway diagram of Great Entrance.

During the procession, congregants (who are standing) adjust their bodily orientation, turning to follow the progress of the gifts (and priest) around the nave. As he passes them, each congregant makes the sign of the cross. When he reaches the platform in front of the iconostasis, he turns to face the congregation, holds up the gifts, and crosses the people with the raised vessels as the congregants bow their heads slightly and cross themselves in response. During this entire process the priest is singing and the censer is being activated. Example 4.5 shows a transcription of the three metrical components: the chant melody, the censer sound, and the footsteps of the priest.


Priest
Censer
Footsteps
Pa-n ton ee-mon, pan ton ee-mon, tón ef se-vón kai Or-tho dó - xon Chri-sti - a-nón.
mninsthee ee Ky - ri - os o The - os en ti Vas - il - eia Af - tu,
(IV I)
pan - tote nin ke ae-e, ke e - is tus e - o-nas ton e - o - non. A - min.
May the Lord our God re- mem-ber all of you, and of pi - ous and Or-tho-dox Chri - stians,
in his heav en ly__ King- dom, now and for- ev - ver and un-til the a - ges of a - ges.

Example 4.5. Great Entrance Trascription showing voice, censer, and footsteps. St. Anthony’s Church.

No alignment occurs in this example, due to the speed differences for each line. While the chant remains semi-metered, both the censer and the footsteps of the priest have fairly regular pulses (with a slight variation occurring as the priest rounds the end of the nave and another when he steps up to the Royal doors; both moments that require attentiveness to the physical movement he is making so as not to run into furniture nor trip). The footsteps occur about every quarter note, while the censer sounds at a slightly faster pace, about every dotted-eighth note. The chant has a mix of quarters and eighths, with longer held notes at phrase endings. The movements of the congregants' crossing of themselves appears like a wave, rippling around the space as the priest passes through it.

Yes, this is a musical moment. But moreover, it is a fully embodied moment of prayer, wherein the reverence of Christ is demonstrated by worshippers through physical posture and movement, visual attentiveness, the covering the gifts in the soft and elaborately embroidered clothes, and the scent of the incense taking the prayers to heaven. These physical sense experiences — the actions, movement, and smells — and the imagined senses (the experiences of physical empathy as described in Godøy 2010 or Cox 2011) of touching the cloth and anticipating the taste of the upcoming communion, are exceptionally present and felt in a way that the sonic is not.[107] For an analyst, the moment is confusing: there are so many layers of metricity, all of which are somehow connected because they are acting together to co-create the ritual moment, but none of which are synchronized. As such, the concepts of asynchrony, attentional focus, and acknowledging perceptual difference all assist in understanding this complex ritual moment.

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[107] Even as I write this, I realize that I have asserted that the cloths covering the gifts are soft, when in reality I have never touched them (as I wouldn't be allowed to). Thus, it is through looking at them and unconsciously imagining touching them that I have assumed they are soft.

Consider the ambiguous image below (figure 4.7.), made famous by philosopher Ludwig Wittgenstein in his text, *Philosophical Investigations*.

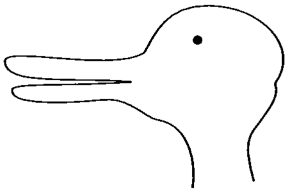

Figure 4.7. Ambigous rabbit-duck.
Reproduced from Wittgenstein (2010; originally published 1953).

Using this example, Wittgenstein distinguishes between "seeing that" and "seeing as". He is concerned with flexibility in visual experience, understanding visual experience as a combination of perception and thought. Someone viewing an ambiguous picture like the rabbit-duck must first identify both interpretations of the image before gaining the flexibility to see it in either form. I bring in this example as an aid to understand the occurrence of what I posit is a multi-sensory version of the rabbit-duck. In Greek Orthodox worship, not only are all the senses invoked and engaged, but congregants and clergy are explicitly aware of the importance of these multiple sensory experiences for full-fledged prayer. In this case, praying with one's whole body does not mean the ecstatic twirling of Sufi Muslim Whirling Dervishes, or the unpredictable movements of Charismatic Christians speaking in tongues. No, this is praying in a way that allows each sense to be utilized at some level, though none, perhaps, to an unusually heightened level.

In practice, to pray with all five senses (or more, depending on one's point of view), must require a hierarchy of attentiveness wherein some senses are more consciously and intentionally focused on, while others are allowed to fade or lower slightly into the background. I suggest that this give and take amongst the senses is continually in flux throughout Greek Orthodox worship. Given the above musical examples, at some points the sonic is at the core of the ritual moment, while at other points it plays a supporting role. When the church is being censed, one's senses of sight, and especially smell, are heightened due to the action of censing. But when the liturgy moves on to a hymn or a reading, the smell of the incense doesn't evaporate. In fact, when observing worship it was typically not until I left the church and was confronted by the outdoor air that I noticed how immersed in the scent of the incense I had been, even though I hadn't thought about it for over an hour (since the last censing).

While sensory flexibility occurs between the senses, it can, as Wittgenstein demonstrates, also occur solely within one sense. A final musical example illustrates just such an event. Example 4.6 is drawn from an observation at St. Anthony's. At the end of the Orthos service the Great Doxology is chanted, beginning with the Angelic Hymn and concluding with the Trisagion Hymn (Magoulias 2004, 1). In this particular service, the Doxology was sung antiphonally by stanza, moving between chanters and priest. The people in the congregation are standing at this point, and the priest is moving around the altar, concluding the Orthos tasks and preparing to begin the Divine Liturgy. Liturgically, this set of hymns represents the 'hinge' between the morning preparatory service and the main service.[108] Due to the transition nature of the hymn, where the beginning of one service and the ending of another are effectively overlapped, bells are also heard at this time, marking the start of the Divine Liturgy as a sonic call to worship.

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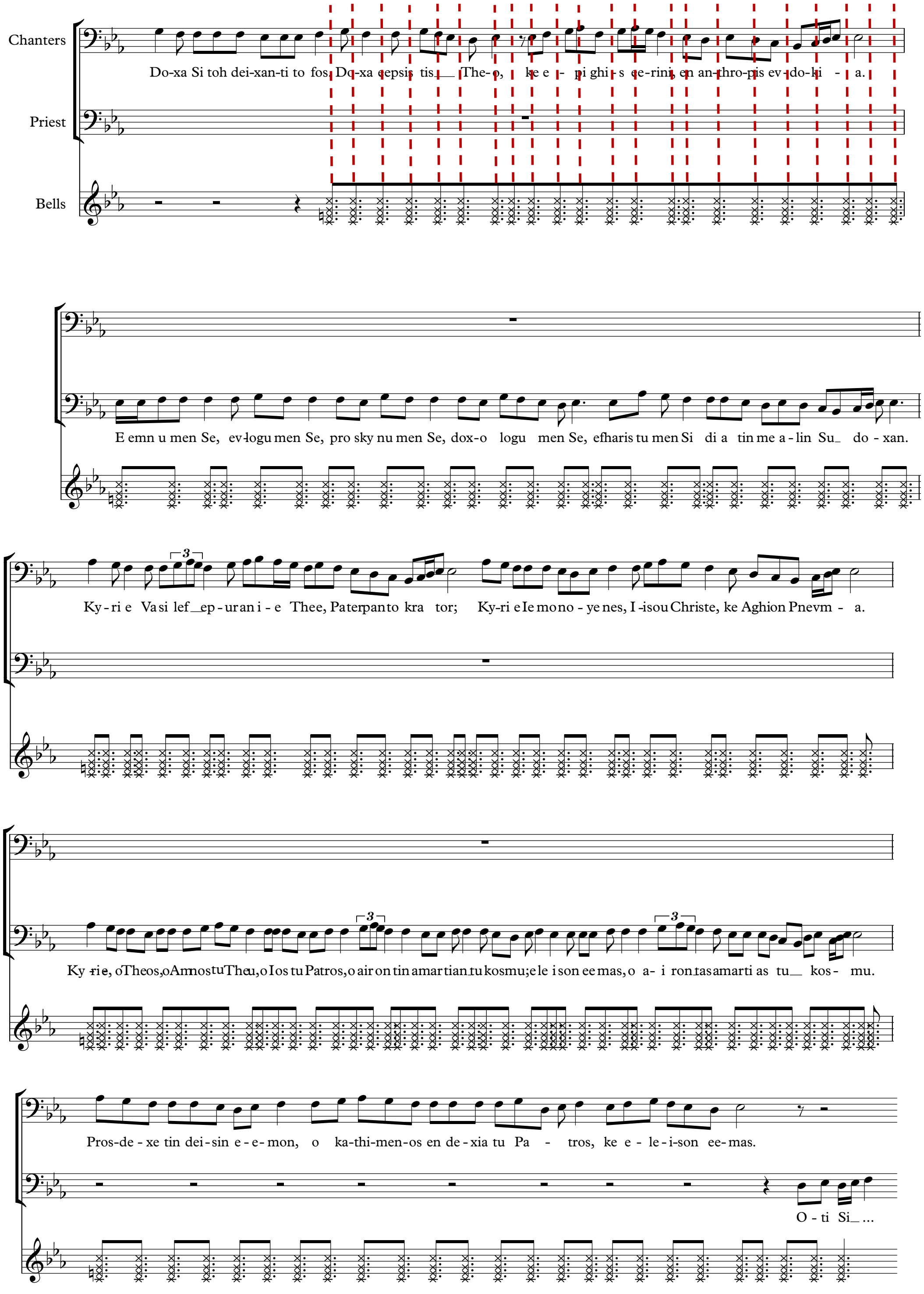
[108] It is expected that most congregants will be present by now, though in practice this varies immensely.

Example 4.6 shows the vocal line of the first part of the Doxology, as chanted by a group of chanters (top line) and the priest (bottom line). There are melodic patterns throughout, and the melody is fairly metered. Each part begins when the other has finished, sometimes overlapping slightly. Alone, this is a straightforward hymn.


Chanters
Priest
Bells
Do-xa Si toh dei-xan-ti to fos. Do-xa eepsis tis_ The-o, ke e - pi ghi - s ee-rini, en an-thro-pis ev-do-ki - a.
E emn u men Se, ev-logu men Se, pro sky nu men Se, dox-o logu men Se, efharis tu men Si di a tin me a-lin Su_ do - xan.
3
Ky-ri e Vasi lef_ep-uran i - e Thee, Paterpanto kra tor; Ky-ri e Ie mono - ye nes, I -isou Christe, ke Aghion Pnevm - a.
3
3
Ky -rie, oTheos,oAmnostuTheu,oIos tu Patros,o air on tin amartian tu kosmu; ele i son ee mas, o a- i ron tasamarti as tu_ kos- mu.
Pros-de - xe tin dei-sin e - e - mon, o ka-thi-men-os en de - xia tu Pa - tros, ke e - le - i-son ee-mas.
O - ti Si_...

Example 4.6. Doxology with Bells, St. Anthony's Church.

It becomes less straightforward, however, when a different sonic layer is added. The bottom line shows the bell tolls and the red dotted lines in the first system are provided as an aid for reading the staves together. The bells are not transcribed exactly, but rather generally, to give a sense of the meter and tonality therein. Since these are church bells, they are not only loud, but resonant for a length of time, the sounds compounding the longer they are played. Further, the feeling of the bells' chiming physically resonates in one's body, and the timbre ultimately overtakes the otherwise unaccompanied voices of the singers (especially when the priest is singing alone). As the generalized transcription shows, the chant contains an Eb as the resting tone, and a contour that involves Ab and Bb as upper high-points of the melody. In contrast, the bells are playing a C-Major triad (with subsequent harmonic partials), creating tonal dissonance when overlaid with the chant melody. Further, while the bells are loud, the melody is also amplified, and is being sung by multiple chanters at this point, creating two strong sonic forces.

While the meter of the Doxology is fairly even, and split between quarter and eight notes — fairly "square" in other words — the tolling of the bells is regular in a different manner: a new clapper strike occurring about every dotted-eighth note, offsetting the meters of the two sonic streams. Standing in the space of the church, this moment was sonically confusing and overpowering to me, a relatively inexperienced listener, with the mixing of sounds and meters creating a din-like experience of being overwhelmed by sound and bodily vibration. However, the expectation may be more that congregants will focus on the hymn, acknowledging the bells as a marker of location in the service but not as requiring worship focus. This theory is supported in that the music of the chanters and priest doesn't seem to falter or change as the bells begin, grow, or cease; regardless, the hymn continues, the musicians demonstrating hyper-focus on the task at hand. This intense attentiveness to the ritual was discussed by both priests in their interviews, Fr. Theodoros continually calling it “shut off”, as if wearing some sort of sonic blinders could help create the sonic asynchrony I observed in this moment of the Doxology.

V. Conclusions

Since movement is so prescribed in Greek Orthodox worship, my analysis of metrical interactions between body and voice takes a different focal point in this setting than it did with the free, ritually-inflected movements of the Jewish services. Everyone has their role in Greek Orthodox worship, and these roles are almost always played out simultaneously. Congregants work to make their own space in the service, while most of their obligations during the Liturgy itself are to witness the actions of the priest, respond to the priest’s words as prescribed by the Liturgy, and take communion (if they have adequately prepared prior to the service). Upon entering the church, congregants will light candles, venerate icons, and move around the space of the narthex and nave confidently. Since they are expected to stand for the entire service, unless one absolutely must sit for health reasons, individuals themselves are typically responsible for deciding when to be seated.[109] Congregants are able to respond vocally (though, as discussed above, many choose not to, allowing the chanters or choir to do the responses), and also react to physical activities happening in the space, either by changing posture or by making the sign of the cross. As Fr. Theodoros notes:

> The first thing that, that we do, during the services, is that when we hear anything mentioning about God, the saint’s name, St. [“Anthony”], or anything that has to do with the triune God, we automatically bless ourselves. Even the people in the

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[109] Clergy will often suggest that congregants sit, by making a small hand motion, when there is about to be a long hymn or something that doesn’t demand standing. But congregants tend to stand up again of their own volition, aware of the new section of the service that requires standing.

> pew will cross themselves with the symbol of the cross. That is because at that moment, we bless ourselves with the power of our Lord, Father, Son and Holy Spirit. Now, this movement is also good because we also use it as a manner of protection and, as a more of a, of the blessing that comes from God above. So, this type of action is constant, even in our private prayer after we leave. So in other words when we leave to go home from our work or from the church or when we want to drive, we will cross ourselves, asking God to bless us, to protect us, Father, Son, and Holy Spirit. The same thing a mother will do with a newborn child, they can't bless, they will bless it. Before we drink a glass of water we will bless it, same thing with the food. All these too are stemming many from rituals that come from the Jewish traditions and faith, washing of hands and things like that. It's fallen into disuse, but this is the first thing we do.
>
> — Fr. Theodoros, Interview, February 2017.

This blessing also extends to the veneration of the icons upon entering the narthex (and then possibly again when entering the nave). Early on in our interview, Fr. Theodoros provided a clear description of icon veneration, explaining:

> This act of veneration is the act of, as an analogy a mother and father sends their child off to war, in the army, they have nothing else but a photograph. And the mother will grab it and she'll hold it and hug it and kiss it, it's not really her son because he's out let's say in Afghanistan, this is how we look upon the *veneration* of icons, not worship. These are icons, it's on a piece of wood, they're fairly beautiful, they inspire us to and they move us to pray to think of holiness, and of God and the heavenly kingdom, so there is a sense of movement, but it isn't the actual saints, let's say.
>
> — Fr. Theodoros, Interview, February 2017.

Such a description defines a clear line between worship and the demonstration of respect, love, and care for the saints. Moreover, veneration — that physical closeness to the icons — clearly is intended to aid congregants in imagined closeness to the saints.

While the congregants are responsible for making their own space in the church, sitting and standing, and crossing where appropriate, chanters and the choir are charged with keeping the music of the liturgy flowing throughout the service. Only during the readings from scripture and the sermon is there no music. At St. Cyril's, the musical continuity was broken between chanters and choir, while at St. Anthony's the music was created by chanters, choir, and organ, allowing a variety of combinations therein.[110] Chanters and choirs both keep tabs on the movements of the clergy, but also are responsible for singing the Liturgy and thus must find a balance between continuing their musical work and responding to the movements, pacing, and words of the priests and deacons.[111]

Finally, clergy have many responsibilities and must stay focused on moving through the liturgy. This includes tasks — movements and spoken blessings — within the altar to prepare and sanctify the Eucharist, and tasks outside the altar, such as censing the space, or the two processions (the small and great entrances). Because clergy have microphones on at all times, just as the chanters do, many of these tasks are audible, if not visible, to congregants in the nave.

What comes out of these distinct and involved roles for individuals in Orthodox worship? There is both a co-creation of ritual space and the historical retelling of Christ's life,[112] with the layered soundscape, and sense-scape, offer varying demands on multi-sensory attentional focus. This inquiry into attentional focus during worship is a main source of analytical interest, as it questions not only the interactions of body and sound, but also the attentional capacity of worshippers. In considering both "attention" as well as the blending of physical attentiveness and automation, I encountered the phrase "it just seems natural" from my participants — a comment I've discussed at length in the Jewish case studies (in chapter three). This phrase, so easily used as explanation by congregants and clergy alike, seems to be closely attached to moments in worship — in both the Greek Orthodox and Jewish settings — wherein music scholars would say something quite different. As such, what appears from a theoretical standpoint as some of the most complex moments of worship, are for religious insiders some of the simplest moments.

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[110] For instance, during communion only the organ was played, allowing chanters and choristers to take communion without breaking the musical line. At St. Cyril's, where there are no musical instruments used, the communion music was chanted by a chanter who at some point just stopped briefly as he went to receive communion.

[111] An illustration of this can be seen in the Cherubic hymn, example 4.1a-b.

[112] As noted by Fr. Nikolaos, above.

For the Greek Orthodox worship settings, much of this tension between my observations as a theorist and my participants' depictions of their worship experiences was played out in moments of layered semi-metered (or metered) sound that is metrically detached, and competes for focal attention in several sensory capacities. These issues provided me with a challenge as an ethnographer, as they engaged not only difficulties of transcription and positionality, but also especially questioned how one researches embodied music cognition. All of the above examples are replete with embodied techniques and to understand what is going on at the core, deeper methods than interview and observations must be used. Although my study has provided a start in this direction, particularly in examining places where music scholarship and scholarship of the senses diverges from Greek Orthodox worship experience, it does not fully illuminate the embodied understanding of prayer that this worship setting suggests. Unlike in the Jewish communities where the question really became about movement as synchronized with sound and with other bodies, the Greek Orthodox communities introduced questions beyond synchrony about attentiveness and *intendedness*. Since the rituals are so communal, on the one hand, and so strictly divided by roles and tasks, on the other, how intentionality is manifested throughout various viewpoints in the church, and what this intentionality means for the prayer experience, remains relatively unexamined. I have explored the intention of attention — to senses, spaces, and levels of focus — but I believe further research in this area could answer some broader questions about intentionality as enacted through music and movement, and in that way, transcended into prayer itself.

General Conclusions and Avenues for Future Research

It is my hope that the arguments made in this dissertation have sparked the reader's engagement with the many ways in which movement and music intersect metrically in liturgical settings. I began with the following five guiding questions, laid out in my introduction:

1. How is liturgical chant metered and embodied?
2. What types of movements do people make during prayer in Jewish and Greek Orthodox settings?
3. What sort of metrical interactions occur between body and voice during worship?
4. How does one best research what occurs in prayer settings?
5. What does this research tell us (as music scholars) about the ontological standing of music for worship?

How have they been answered? First, from examinations of analysis of rhythm and meter within both Western and non-Western musics, as well as the category of liturgical music as primarily focused around textual explication, it seems clear the chant studied here is semi-metered. Part of this conclusion has to do with the ways in which chant's semi-meteredness is variously embodied by praying individuals. Some interact physically with the sonic atmosphere in a more metered and regular manner, others move sporadically, and yet others stay still. These multifaceted presentations of embodied worship do not only result in a changeable conception of meter within Jewish and Greek Orthodox ritual music, but also lend credence to my assertion that semi-metered music relies on perception of meter for the individual. Such perceptions were seen as levels of "movability" and general comfort with moving during Jewish nusach. In the

Greek Orthodox settings, varying perceptions — and general awareness about flexibility in perception and attention on the part of the priests — shows fluidity of metricity in both the chanted liturgy and physical movements.

How do these movements intersect with chant? This is perhaps an area for continued study. While the analyses I have put forth in the pages of this dissertation address some of the many ways of moving ritually to liturgical chant, they are only representative slivers of the full embodied experience. It is clear that if one considers both the music and the movement to be semi-metered, then the range of possibility for metrical intersection is overwhelmingly broad. At the same time, however, clear moments of togetherness were seen in all worship settings. While the much more frequent lack of synchronization between the physical and the sonic might be chalked up to 'asynchrony' (Warren-Crow 2011), a conceptual tool that proves useful in understanding how these two semi-metered components exist so harmoniously without ever seeming to "go together", there is perhaps a bit more to the problem. These clear moments of togetherness hearken back to the ritual theories extolling group cohesion and synchronized movements as crucial for the embodied experience of prayer. As such, I have suggested that scholars need space for both asynchronous and synchronous behaviors in religious worship, and that having a moment of physical and sonic synchrony prior to the unleashing of asynchrony is perhaps what truly allows worshippers to experience the "now-ness" of rhythm (both sonic and physical) without meter (drawing from Hasty, 1997). Further, I argued that it is this very oscillation between states of embodied synchrony that my participants can unconsciously and unintentionally move through during their active listening, meditation, and focused attention, that is also automated, giving way to the prayer experiences they continually describe as "natural".

The questions I've asked in this dissertation are on the one hand unique and fresh to the scholarly community, and on the other hand obvious and ordinary to the religious communities. It has taken a variety of methods to complete the research, and in truth, the work is far from done (and the methods far from perfect). Perhaps in the future I will be able to study embodied prayer empirically, possibly through motion capture technology, likely leading to very different results stemming from only slightly different questions. Although such scientific approaches have been alluring, I hoped to take the most ecologically valid approach possible, relying instead on the wisdom of my participants — experts in their own right and especially in these particular worship settings — and on the variable data that could be gathered from field observations. Such ethnography automatically embeds my own positionality as a music theorist, a religious Jew, and a woman, into the fabric of the research and its realization in this dissertation. What seems to have arisen most poignantly from the type and subject of the research, and my position within it, is that the communities I work with have come to care more overtly about thinking about movement and worship, as they are valued within the study of it. This is one of the beautiful aspects of ethnography, and an experience that has changed me in all aspects of my positionality, but especially as a music scholar.

The types of movements people make during worship have been shown to be widely varied in the two religious communities I investigated. Both religious settings emphasize the body as an important component of both worship and religious theology, and participants at all sites could talk about their bodies and movement in relation to these aspects of their lives. Even those for whom it was emotionally or conceptually difficult, reported that they gained something in the interview and observation process. Those who surprised themselves at their tacit knowledge about themselves and their bodies in prayer became excited about the experience and wanted to know more. The simple act of a few questions allowed individuals the space to get to know themselves and their experiences of worship, prayer, God, and community in a different way. For music theorists, recognizing the intervention of music analysis that values religious music for its religiosity, and that accounts for the entirety of the embodied worship experience as unique from other musical experiences, offers a new way to approach religious music from any background.

I am left with many future opportunities for furthering this research. One such avenue is to develop my methodologies, exploring other ways of studying Jewish and Greek Orthodox movement and music. This would require continued exploration of mimicry analysis, and other types of movement analysis such as motion capture technology. Another avenue would be to expand my religious settings, investigating different types of worship and exploring how semi-metered chant is moved with across varied religions. Good candidates for future religious communities are Orthodox Judaism, Buddhism, and Armenian Orthodoxy, and possibly Muslim recitation.[113] Part of deciding where to work falls to the methods I choose for my investigations, so these avenues do, in some ways, align. Another, more disparate avenue, is to examine the music of the Western Art canon from the point of view of religious music and embodied prayer. This would involve re-reading the liturgical work of canonized composers in a religious light.

Overall, there are many fruitful directions for this research. It is my sincere hope the project as it currently stands has answered, at least in part, my starting queries as to how movement and music are wrapped up together into the embodied technique for religious worship. At the least, it is exceptionally clear that music for and as prayer is ontologically distinct from other musical ontologies (those for performance, dance, and so on), and that this prayer ontology requires *both* movement and music to co-create the experience of prayer. While that experience differs from individual to individual, there are also similarities: semi-meteredness, focused attention on body and sound that is simultaneously automated, and procedural physical experience. More than these, however, that experience is a searching for and knowing when and how praying, and being, in a community of worshippers just “feels natural.”

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[113] In the case of Islam, issues abound surrounding the study of religious recitation that is *not* considered musical chant within the context of music scholarship. These would need to be ethically addressed in full before embarking on ethnographic research in Muslim communities.

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Appendix I

Ethnographic Study, Supplementary Documents

Body Movement in Ritual Contexts and its Interaction with Liturgical Prayer
Principal Investigator:
Dr. Mark J. Butler, Theory and Cognition, Northwestern University
Student Investigator:
Rosa Abrahams, Theory and Cognition, Northwestern University

I.1. Email Script to be used for Site Permission Letters

Hello ____!

I'm Rosa Abrahams, a Ph.D. student in Music Theory and Cognition at Northwestern University. I am conducting an IRB-approved ethnographic study (IRB #STU200856) about body movement and ritual music along with my faculty advisor at Northwestern, Dr. Mark Butler, in order to gain understanding about the interaction of body movement and vocal liturgical prayer in worship settings. Our goal in this research is to illuminate the some of the social conditions within which physicality exists in spaces of worship. I am contacting you to discover if your community would be interested in participating in the study. This could occur in several ways: 1) recruitment via email and personal conversation for individual interviews, 2) individual interviews conducted on-site about experiences in prayer settings, 3) non-obtrusive, culturally sensitive observations and/or videotaping of daily worship by researchers. Your permission to conduct research in your religious community in any or all of these manners would be greatly appreciated in support of this study. I would love to speak with you further to address any questions or concerns you may have. Please contact me via email at rosaabrahams2011@u.northwestern.edu, or by phone at 301-641-2788.

Thank you so much for your time, and I look forward to hearing from you.

Best Regards,

Rosa Abrahams
Ph.D. Student, Music Theory and Cognition
Northwestern University
Rosaabrahams2011@u.northwestern.edu
301-641-2788

I.2. Recruitment Flyer

Participants Needed

Interested in participating in research on body movement and ritual music?

Do you ever wonder how movement and prayer are connected?
What happens when a group of people are moving and praying together?
Through voluntary participation in this IRB-approved study (IRB #STU200856), you can contribute to research on the interaction between movement and liturgical chant, conducted by Rosa Abrahams (Ph.D. Candidate) and Dr. Mark Butler at Northwestern University.

What is it?

Interviews on movement and prayer practices (1 hour long), followed by optional observations during regular worship services.

Can you participate?

If you are a congregant or clergy member, over 18 years old, and an English speaker, you can participate! Your participation can be arranged for a time and location that is convenient for you.

What do you get out of participating?

While your participation is voluntary and does not involve tangible benefits, it is possible that you may gain a heightened sense of self-awareness and understanding of your prayer experiences.

Who will this research benefit?

This research, as part of doctoral dissertation work in Music Theory & Cognition at Northwestern University, is intended to enhance the understanding of prayer and movement for both academic and religious communities.

For More Information:

Contact **Rosa Abrahams** (301-641-2788 or rosaabrahams2011@u.northwestern.edu) to learn more about participating in this study.

Thank you!

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I.3. Interview Framework

Italics denote general categories, numbered items specific questions, and dashes follow ups to be used as applicable and/or needed. Other questions may be added depending on interview context. Below remains a broad guide for the shape and topic coverage of every interview.

Tell me about your current regular ritual practice.

1. How often do you attend services?
    - If so, what kind of service is it?
    - What kind of congregation is it?
    - (As applicable) Have you ever led a service? If you currently do so, how often and for approximately how many people?
2. Do you pray at home?
    - If so, for what occasions?
    - Alone or with others?
    - Do you tend to sing or speak the prayers you say at home? What language do you use most frequently?

Tell me about how you pray.

1. Tell me about the ritual choreography you do, and about movements you make that aren't "choreographed".
2. In congregational prayer, when everyone is speaking or singing together, what are your actions and experiences like?
3. How are your physical senses engaged (or not) in worship?
4. In silent prayer, what are your actions and experiences like?
5. When a clergy member is leading prayer, or as a clergy member leading the congregation, what are you actions and experiences like?
6. What do you do with your body when you pray while sitting/kneeling?
7. What do you do with your body when you pray while standing?
8. (As applicable): As a clergy member, do you change anything about your leadership style depending on whether your congregants are sitting, kneeling, or standing?
9. Can you remember any times when you've done something quite different from your normal choices?
    - What made you make a change?
    - What kind of change was it (vocal, physical, or both)?
    - How long did the change last?
    - Why didn't you stay with it longer?

Tell me about your religious/ritual background.

1. What type of experiences did you have as a child? A teen? A young adult?
    - Do you remember learning how to pray? If so, please describe.

    - Do you remember learning about what to do with your body in prayer or during services? If so, please describe.
    - If you are a clergy member and/or attending formal training in worship leadership, how did this experience differ from or reinforce your earlier experiences?
2. How are these different from or similar to your current experiences?

Other Questions.

1. Where in the congregational seating do you like to sit when you attend a service?
    - Back rows/front rows/middle/side?
2. If you pray with your eyes open, where is your focus? Who/what do you tend to look at?
3. In your opinion, what is the point of moving or staying still when you pray?
    - What does it help you do/achieve?
    - When you know you are using your body in the best way for prayer?
4. How difficult have you found it to describe how you move and pray?
5. Do you have any music background?
6. Do you have any dance, sports (including martial arts), or body work (massage, acupuncture, etc.) background?
7. Is there anything else I should have asked?

Thank you very much!

Appendix II

Prayer Translations

Chatzi Kaddish Translation

Exalted and hallowed be God's great name,
in the world which God created, according to plan.
May God's majesty be revealed in the days of our lifetime
and the life of all Israel —
speedily, imminently.
To which we say: Amen.

Blessed be God's great name to all eternity.

Blessed, praised, honored, exalted,
extolled, glorified, adored, and lauded
be the name of the Holy Blessed One,
beyond all earthly words and songs of blessing, praise, and comfort.
To which we say: Amen.

Avot v'Imahot Translation

Blessed are You, Adonai our God,
God of our fathers and mothers,
God of Abraham, God of Isaac, and God of Jacob,
God of Sarah, God of Rebecca, God of Rachel, and God of Leah,
the great, mighty and awesome God, transcendent God
who bestows lovingkindness, creates everything out of love,
remembers the love of our fathers and mothers,
and brings redemption to their children's children for the sake of the Divine Name.
*(Shabbat Shuvah — Remember us for life, O Sovereign who delights in life and inscribe us in the Book of Life, for Your sake, Living God.)
Sovereign, Deliverer, Helper and Shield,
Blessed are You, Adonai, Sarah's Helper, Abraham's Shield.

Doxology Translation

Glory to you who has shown us the light.
Glory to God in the highest and on earth peace, goodwill to all people.
We praise you, we bless you, we worship you, we glorify you, we give thanks to you
for your great glory.
Lord, King, heavenly God, Father, almighty; Lord, the only-begotten Son,
Jesus Christ, and Holy Spirit.
Lord God, Lamb of God, Son of the Father who take away the sin of the world,
have mercy on us, you who take away the sins of the world.

Receive our prayer, you who sit at the right hand of the Father, and have mercy on us.

For you only are holy, only you are Lord
Jesus Christ, to the glory of God the Father. Amen.

Each day we bless you, and we praise your name forever and to the ages of ages.

Lord, grant that we may be kept this day without sin.

Blessed are you, Lord, God of our fathers. Your name is praised and glorified throughout all ages. Amen.
Let your mercy, Lord, be upon us, as our trust is in you.
Blessed are you, Lord, teach me your statutes (3).
Lord, you have been our refuge from generation to generation. I said: Lord, have mercy on me; heal my soul, for I have sinned against you.
Lord, to you have I fled; teach me to do your will, for you are my God.
For you are the source of life, and in your light we shall see light.
Extend your mercy to those who know you.
Holy God, Holy Mighty, Holy Immortal, have mercy on us (3).
Glory to the Father and the Son and the Holy Spirit. Now and forever and to the ages of ages. Amen.

Holy Immortal, have mercy on us.

(Then we sing in a stronger voice:)

Holy God, Holy Mighty, Holy Immortal, have mercy on us.