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Applying Synesthesia and Modes of Limited Transposition to Olivier Messiaen's *Theme et Variations for Violin and Piano*

BY

HAN NA WOO

THESIS

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Musical Arts in Music
with a concentration in Performance and Literature
in the Graduate College of the
University of Illinois Urbana-Champaign, 2022

Urbana, Illinois

Doctoral Committee:

Professor Rudolf Haken, Chair and Research Director
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ABSTRACT

Olivier Messiaen (1908-1992) never received an official synesthesia diagnosis, but his experience perceiving colors when he heard music is well-known to music history students today, as is his systemizing of the modes of limited transposition, combining whole tone, octatonic, and other modes in symmetrical, repeated intervallic patterns. This paper will focus on introducing synesthesia as a condition (or phenomenon) and analyzing how Messiaen applied synesthetic concepts to his early violin music, specifically *Theme and Variations for Violin and Piano*. The analysis aims to reveal an extra layer of music beyond the notes that Messiaen could have had embedded based on his physiological condition. The goal of this paper is to educate the reader about synesthesia, offer a different perspective from which to experience Messiaen's music, and encourage synesthete and non-synesthete performers and listeners alike to enhance their aesthetic experience by acknowledging what's possible when two or more of the five senses converge.

ACKNOWLEDGEMENTS

I would like to thank my doctoral committee members for their acceptance of my thesis topic. Without Professor Haken's continuous guidance, support, and patience every step of the way, I could not have finished this degree. I am grateful to Professor Milenkovich for inspiring me to write about synesthesia and for teaching me in violin lessons not only about music-making but about achieving and maintaining a balanced lifestyle. I would like to thank Professor Mattax for the phenomenal Baroque chamber coachings which elevated my appreciation for Baroque music. Lastly, I owe a debt of gratitude to Professor Magee for helping me narrow down the topic and introducing me to many of the valuable academic resources I used for my research.

For the stylistic integrity of the final manuscript, I am deeply indebted to Dr. Maureen Murchie, whose critical editing has allowed me a degree of confidence in the accuracy of my expressions and a pride in the clarity of what I am presenting that would not otherwise have been possible.

I am indebted to my friends in the Chicagoland area for attending all my degree recitals and providing me with much-needed laughter over shared meals. These relationships have taught me that shared vulnerability is essential to lasting friendships, and I will cherish them long after my degree is completed.

Finally, I would not be where I am without unconditional love and support from my family. They motivate me to strive for higher levels of achievement in all areas of my life. I am fortunate to have their support system as a model—not only of how to rely on others but how to be a source of help to others in return.

To my loving family, Sangchul Woo, Jesun Hwang, and Paul Woo.

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

I first became interested in the connection between music and colors during a lesson on the Brahms G major violin sonata. My teacher, in an attempt to "distract" me from focusing only on the notes on the page, suggested that I think of colors when playing certain passages. For a vibrant, energetic passage I chose orange. In more mellow, lyrical passages I thought about green or brown. Once I made a color association with one passage, I assigned that color to similar passages throughout the piece—more orange in the passionate sections, more earth tones in the relaxed, connected passages and so forth.

It worked! As a player, my "color plan" helped direct my attention toward bringing out specific phrases and moods instead of strictly playing every note correctly in tune. As a listener, it helped me be more attentive to different points of focus in the music, just as a painting might draw the observer's eye from one focal point to the next. I learned that especially for music without words, color association deepened my understanding of the music because it added a layer of meaning to the overall story.

Many, many times as a student I had been asked to "imagine" the sound, characterize a phrase with an adjective, or picture some scenery appropriate for a given excerpt. Mendelssohn's Midsummer Night's Dream *Scherzo* is "light", *Eroica* funeral march is "dark", and *La Traviata* overture could be either or both. I rarely found vague adjectives like these helpful in my own performance. Keeping them in mind did not help me play more beautifully, nor did it help the music make more sense to me as a performer. However thorough my preparation was, still in performance my first and foremost concern was executing the correct pitches, rhythms, and articulations.

But something clicked for me when color entered the picture. Following my experience with the Brahms sonata, I learned about the relationship between Kassily Kandinsky and Arnold Schoenberg, which further increased my interest in the sound-color association. I was struck by the fact that Kandinsky painted to the sounds of Schoenberg's music, which led me to the fascinatingly complex and controversial world of synesthesia, specifically the colored-hearing synesthesia that affected French composer Olivier Messiaen (1908-1992).

My goal with this paper is to offer an overview of synesthesia; to discuss Messiaen's theories of hearing colors as defined in his *Technique de mon langage Musical*; and to examine the application of those theories in his early work *Thème et Variations for Violin and Piano*. Though I am not a synesthete myself, thinking about colors in music has given me both a deeper understanding of the works I play and a broader range of tools with which to communicate to listeners. I hope that this study will equip, inspire, and benefit my fellow performers and their audiences in similar ways.

CHAPTER 1:

SYNESTHESIA AT A GLANCE

Definition and Types of Synesthesia

The term *synesthesia* was not coined until after 1848.[1] Previously, a type of synesthesia had been referred to as *audition colorée* or "color hearing." The term comes from Greek, combining *aisthesis* ("sensation") with *syn* ("together" or "union"), and translates as "two or more sensors occurring at the same time."[2] Cytowic, a neurologist specializing in synesthesia, points out that the word also originates from *anesthesia*–"no sensation."[3] The definition of *synesthesia* also can extend to mean "joined or coupled sensation." It is a neurological sensation that triggers one to involuntarily cross the sensory modality.[4]

Because synesthesia involves many variables, Cytowic categorizes it into five types: colored sequences, colored music, affective perceptions, nonvisual couplings, and spatial sequences.[5] Synesthetes with colored sequences see colors in "ordered sequences," such as alphabets, numerals, and days of the week.[6] Those with colored music experience the *audition colorée* explained above, where music evokes color. Affective perception synesthetes match color with an emotion felt through touch or a distinct memory, whether pleasant or unpleasant.[7] Those with nonvisual couplings exhibit a nonvisual response stimulated by any sense, e.g., vision stimulating a smell or sound stimulating a taste.[8] Lastly, spatial sequence synesthetes are

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[1] Cytowic, Richard E. *Synesthesia.* Cambridge: The MIT Press, 2018, 21.
[2] John Harrison, *Synaesthesia: The Strangest Thing*, Oxford: Oxford University Press, 2001, 3.
[3] Cytowic, *Synesthesia,* 2.
[4] Tessa M. Van Leeuwen, "Modality and Variability of Synesthetic Experience," in *The American Journal of Psychology* 125, no. 1 (2012), https://www.jstor.org/stable/10.5406/amerjpsyc.125.1.0081, 81.
[5] Cytowic, *Synesthesia*, 65.
[6] Cytowic, *Synesthesia*, 65.
[7] Cytowic, *Synesthesia*, 65.
[8] Cytowic, *Synesthesia*, 65.

those whose stimulus response occurs in a three-dimensional space. For purposes of this paper, I will focus on the colored music category of the five synesthesia types.

Synesthesia researcher Sean A. Day surveyed 1,143 participants about their synesthesia experience. He listed all the possible synesthesia types and then asked the individuals to select the one that best matched their own experience. According to the data that Day collected, the most common type is the colored sequences, specifically a grapheme stimulus invoking a visual response. About 700 participants experienced visualizing shapes or colors while reading a grapheme. Colored music was shown to be the third most common synesthesia type in the survey. Approximately 285 members experience the sound to vision (including color) synesthetic type.[9]

Analysis of Tessa Van Leeuwen's synesthesia data also confirms a similar outcome. Here, a smaller pool of 63 synesthetes responded to the questionnaires, and the most common type found was the grapheme–color type, found in roughly 50 participants. The next condensed category identified music–color response in about 26 people. Participants with the two types exceeded the number of total participants, leading Van Leeuwen to propose the multimodal synesthesia theory—that is, more than one synesthesia type occurring simultaneously."[10] Her research highlights the interchangeable nature of synesthetes' modalities.

Cytowic infers that color hearing consumes about forty percent of the synesthesia community[11] and that sound-color response is the second most common type of synesthesia. The term "color hearing" can be misleading due to the word placement; the order of the words

[9] Cytowic, *Synesthesia*, 62-64.
[10] Van Leeuwen, "Modality and Variability of Synesthetic Experience," 81.
[11] Cytowic, *Synesthesia,* 129.

suggests that one sees color then hears involuntarily. However, the opposite is true: the stimuli–response label flows in one direction, never inversely.[12]

For example, sound–color synesthesia type refers to sound triggering a color response. Similarly, grapheme–color defines a synesthete stimulated by seeing grapheme and involuntarily responding with color (not vice versa). Perhaps a less confusing classification label might have been "seeing with one's ears." Nonetheless, the term "color hearing" has been selected to describe such classification. The following is a personal statement collected from a synesthete named Rebecca Price:

> "'One of the things I love about my husband,' she says, 'are the colors of his voice and his laugh. It's a wonderful golden brown, like crisp, buttery toast, which sounds very odd, I know, but it's very real."[13]

Hearing her husband's voice triggers colors, which means Rebecca's synesthesia is the sound–color type, also classified as colored hearing. Because synesthesia research at its early stages relied solely on personal accounts and testimonies, acceptance of sound-color was very slow. However, improved technology now can reveal the direct correlation between the brain and the sensation.

History

In synesthesia's early stage, the involuntary interaction of two or more sensors in the human brain could not be explained scientifically, and the slow road to acceptance has left the current researchers with a hole in synesthesia history.[14] It didn't help that each synesthete came with his or her own unique and peculiar experience, which put limitations on data collection

[12] Cytowic, *Synesthesia*, 129.
[13] Cytowic, *Synesthesia,* 132.
[14] Cytowic, *Synesthesia*, xiii.

efforts. As a result, many of the primary sources on synesthesia paint the condition in a negative light, and for years many synesthetes hid their abilities because even the scientific research had failed to validate their symptoms.

In the early twentieth century, synesthesia was commonly perceived as an eccentric quality; some even mistook it as a hallucination in response to substance abuse. Richard Cytowic, a prominent figure in synesthesia studies, writes:

> The scientific establishment ridiculed individuals who claimed firsthand cross-sensory experiences as: crazy, attention-seeking, and prone to fantasy, "merely remembering" childhood associations from coloring books or refrigerator magnets, which is why they "imagined" that "A" was red, or "D" was green, engaging in metaphor that was no different than talking about "warm" or "loud" colors, "sharp" cheese, or "bitter" cold, or else burned-out junkies suffering the residual effects of their assumed drug use.[15]

The rise of Behaviorism[16] presented yet another challenge to the further study of synesthesia. In the 1960s B.F. Skinner substantiated the Behavioral theory that observes a "one–to–one relationship,"[17] that an input (conditioning) has a direct correlation to its output (behavior).[18] Skinner advocates that "physical stimuli" lead directly to "an organism's overt response to that stimulus," but he disregards the cognitive aspect of the recognition and response process.[19] For example, a sound (stimulus) triggers the behavior to recognize a melody, but Skinner's theory overlooks the brain's ability to store stimuli in the cognitive area for later recall from memory. In short, Behavior theory disregards subjectivity, the critical element in gathering synesthesia data.

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[15] Richard E. Cytowic, *Synesthesia.* Cambridge: The MIT Press, 2018, xiii.
[16] Cytowic, *Synesthesia*, 23.
[17] Harold Fiske and Jack Heller, "Music Psychology." In *Grove Music Online*. Oxford Music, Online, Accessed May 17, 2022, https://www.oxfordmusiconlinecom.proxy2.library.illinois.edu/grovemusic/view/10.109/gmo/9781561592630.001.001/omo-9781561592630-e-1002267271, 5.
[18] Harold Fiske and Jack Heller, "*Music Psychology,"* 5.
[19] Harold Fiske and Jack Heller, "*Music Psychology,"* 5.

Cytowic further explains the rationale behind overlooking synesthesia symptoms. In the past, medical practitioners differentiated between *symptoms* versus *signs* to prioritize the patients.[20] In the overall hierarchy, signs ranked higher than symptoms. Symptoms, described by patients, served as subjective opinion, whereas signs, such as inflammation and paralysis, provided an objective element requiring immediate treatment.[21] The firsthand testimony of synesthesia in its early stages had been classified as *symptoms* and misunderstood as patients' attention-seeking efforts. So, what finally triggered a change?

The shift of focus in literature, art, and music played a part in escalating the validity of synesthesia. Beginning in the late nineteenth century, the urge to break away from the old led to the Symbolism movement, cultivated by a French poet named Jean Moréas. His manifesto, *Le Figaro*, discusses the profound nature of subjectivity as well as how it is expressed.[22] Eventually, literature that portrayed the idea of nature became just as prominent as a detailed explanation of nature itself. This period challenged the "rationalism and materialism that had come to dominate Western European culture,"[23] and began to pave the way for synesthete patients' subjective experiences to be taken more seriously as a neurological condition.

The growing interest in synesthesia, supported by the symbolist movement, contributed to the eventual acceptance of the unexplained phenomenon. What was formerly considered a pretentious hallucinatory act slowly gained recognition as more writers, artists, and composers embraced the symbolist movement and/or conveyed synesthesia in their works. This fragmented nature of synesthesia's history should offer some context behind the continued controversy over

[20] Richard E Cytowic and David M. Eagleman, *Wednesday is Indigo Blue: Discovering the Brain of Synesthesia*. Cambridge: The MIT Press, 2011, 15.
[21] Cytowic and Eagleman, *Wednesday is Indigo Blue*, 15.
[22] Nicole Myers, "Symbolism," In *Heilbrunn Timeline of Art History,* The Metropolitan Museum of Art, Assessed May 18, 2022, http://www.metmuseum.org/toah/hd/symb/hd_symb.html, 1.
[23] Myers, "Symbolism," 1.

synesthesia, theories of which modern scientists continue to substantiate with improved technology and resources.

Diagnosis

As mentioned above, early synesthesia research heavily relied on personal surveys and thus was often met with ridicule, due to what was considered a lack of proof. Early researchers of the field naively neglected the synesthetes' personal accounts, but in recent years, as the ability to solidify diagnoses with the help of improved technology has fostered a growing interest in the study of synesthesia, researchers have become more receptive of patients' anecdotal evidence.

Cytowic and Eagleman assembled a chart to reveal the rise of synesthesia based on journal articles written in each decade. The first journal account dates to the 1850s and contains three articles on the subject. Approximately ten to twenty journals were published in the 1880s and 1890s, during the rise of the fin de siècle Symbolist movement. A sharp increase in the number of synesthesia journals occurs in the 2000s; compared to the 10–20 articles written in the decade prior, the 2000s saw 50–60 articles on synesthesia.[24]

So, how is one diagnosed with synesthesia? In modern practice, personal testimonies are an accepted means for diagnoses. To further strengthen a personal account, researchers also conduct a consistency test. Scientists hypothesize that a synesthete's experience rarely differs from one year to another. Therefore, when asked about it annually, the replies should remain the same. The study confirms that about 93% of color-related synesthetes' answers matched those

[24] Cytowic and Eagleman, *Wednesday is Indigo Blue*, 16.

from the previous year.[25] The consistency test remains the most commonly conducted test for diagnosing synesthetes.

Other diagnostic tests offer objective insights to try and validate the phenomenon. Diagnostic criteria examine synesthetes for the following qualifications: "involuntary (but elicited), projected, durable, memorable, and emotional."[26] This list sets objective standards for the patients; however, clinicians still rely heavily on personal reports to categorize the patients.

Lastly, brain imaging offers concrete evidence that demonstrates the stimuli–response neurologically. Brain imaging technology examines the blood flow in the cerebral cortex. The brain scans of synesthetic patients reveal an "abnormal pattern" in the brain,[27] a pattern that also applies to the visually impaired. Regardless of blindness or color blindness, the visually impaired experience color synesthesia because synesthesia sparks in a different part of the brain.

The V4 area in the brain is responsible for the color associations people make. The V4 was discovered in 1989, when research conducted in macaque monkeys concluded that the color recognition area is far more independent and physiologically separate from vision.[28] Visual impairments are caused by damage in retinal pigments. Bypassing physiological barriers, visually impaired people also experience different types of synesthesia, including the sound color hearing.[29] Cytowic emphasizes that the V4 is responsible for "the conscious experience of color," meaning that "color, like vision itself exists only in brains."[30] Sir Isaac Newton in 1704

[25] Van Crétien van Campen and Clara Froger, "Personal Profiles of Color Synesthesia: Developing a Testing Method for Artists and Scientists," Leonardo 36, No. 4 (2003), http://www.jstor.org/stable/1577324, 292.
[26] Van Campen and Froger, 291.
[27] Van Campen and Froger, 292.
[28] Cytowic, *Synesthesia,* 74.
[29] Cytowic, *Synesthesia*, 73.
[30] Cytowic, *Synesthesia*, 73.

concluded that the rainbow rays reflected off the prism have no color—rather, the rays trigger the V4 to associate the rainbow with colors unconsciously.[31]

Olivier Messiaen's Chromesthesia

Chromesthesia refers to the specific type of synesthesia known as color hearing. (In Messiaen's case, colors involuntarily appeared internally while he was listening to music.)[32] Messiaen's synesthetic awareness began when he encountered stained-glass windows in Paris at the age of ten.[33] His appreciation for colors began with the incident he describes here:

> What does a rose-window in a cathedral do? It teaches through imagery, through symbolism, through all the characters that inhabit it – but what most catches the eye are its thousand spots of colour which ultimately dissolve into a single, very pure shade, so that someone looking on says only, 'That window is blue,' or 'That window is violet.' I had nothing more than this in mind/ Olivier Messiaen.[34]

For the young boy in Paris, the cathedral stained glass held a broader meaning beyond the fables and tales it portrayed. The stained glass portrayed characters and imageries, all of which worked together with color and light to help the viewer grasp the beauty of the chapel. Messiaen was fascinated by the mosaic in which he saw a harmony between numerous colors but also a singular overarching color that dominated the grand stained glass. When looking at the Saint-Chapelle stained glass shown here,[35] for example, Messiaen saw a transparent purple.[36]

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[31] Cytowic, *Synesthesia*, 73.
[32] Solange Glasser, "Synesthesia and Prodigiousness: The Case of Olivier Messiaen," In *Musical Prodigies: Interpretations from Psychology, Education, Musicology, and Ethnomusicology,* ed. Gary E. McPherson (Oxford: Oxford University Press, Jan 2017), 14-15.
[33] Håkon Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," *Music and Practice* 2 (2015), https://doi.org/10.32063/0201, 1.
[34] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 3.
[35] Glasser, "Synesthesia and Prodigiousness: the case of Olivier Messiaen," 8.
[36] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 1.

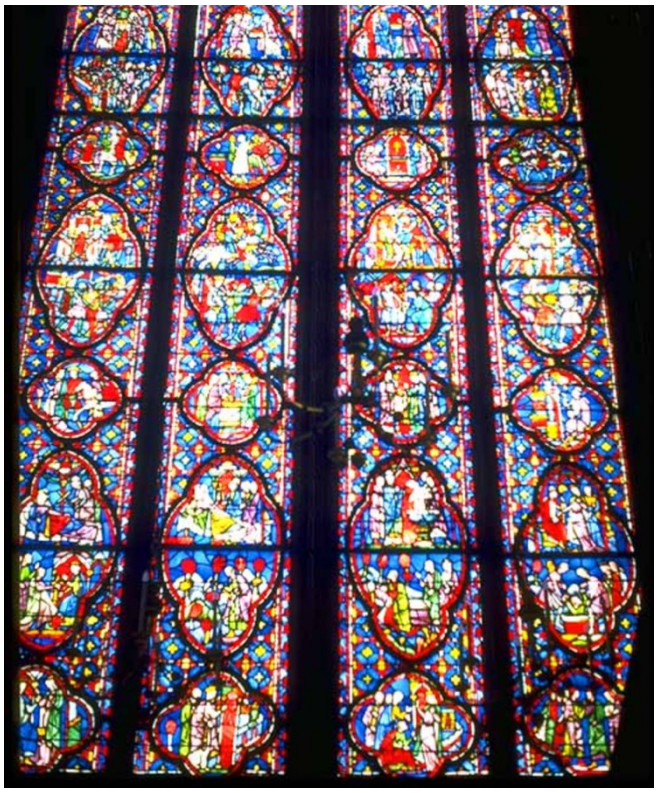

Figure 1: The stained-glass windows of Saint-Chapelle, Paris

Håkon Austbø, who collaborated with Messiaen, explains that the composer regarded the stained glass episode as "a somehow mystical experience which 'marked [him] for life.'"[37] As a practicing Catholic, Messiaen was drawn to the relationship between overarching color, the light reflection through the glass, and the holy space in which both were captured.[38] He applied the same principles in his music, using harmonic structures to transmit the overarching colors that he envisioned and to create a "shimmer and dazzle" effect.[39] Indeed, the stained-glass windows he encountered as a child steered his compositional direction towards incorporating color in his music, among many other innovations.[40]

[37] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 4.
[38]Olivier Messiaen, *Music and Color: Conversations with Claude Samuel,* Translated by E. Thomas Glasow, Reprint, Portland: Amadeus Press, 1994, 37.
[39] Glasser, "Synesthesia and Prodigiousness: the case of Olivier Messiaen," 8.
[40] Glasser, "Synesthesia and Prodigiousness: the case of Olivier Messiaen," 4.

Painter Charles Blanc-Gatti seems to have been the first figure to introduce color hearing to twenty-year old Messiaen, who in the same year published the modes of limited transposition. According to Austbø, Blanc-Gatti painted colors to the sounds of an organ.[41] Messiaen's color fascination, already inspired by the stained glass, deepened as his friend helped him discover a connection between the sound and color relationship. Secondary sources that traced the beginning of Messiaen's color hearing suggest that, in addition to the stained-glass windows, his friendship with Blanc-Gatti also played a role in inspiring the color-hearing phenomenon during his adolescence.[42]

In an interview with Claude Samuel, Messiaen described his own symptoms:

> It is extraordinary that, not having the wonderful disease of my painter friend, I am all the same affected by a sort of synaesthesia that is found more in my mind than in my body and that permits me, when I listen to or read music, to see interiorly by the mind's eye, colours that move with the music; and these colours, I feel them in an excessively vibrant manner and I have sometimes even indicated these correspondences in my scores with precision. Evidently, it must be possible to prove this connection scientifically, but I am not capable.[43]

It is clear that Messiaen saw complementary colors in response to hearing music, and in his later manuscripts, he even inserted color guides to inform both the synesthetic and non-synesthetic performers of those colors he saw. However, whether or not he was born with innate synesthesia is unclear, and from his interviews we see that even he was unconvinced of this. First of all, there is no documented account of him mentioning synesthesia prior to the stained-glass window encounter. Much of the research on synesthesia concludes that the phenomenon is an innate quality that only few retain.[44] Messiaen's fascination with colors began at the age of ten,

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[41] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 3.
[42] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 5.
[43] Solange Glasser, "Synesthesia and Prodigiousness: The Case of Olivier Messiaen," In *Musical Prodigies: Interpretations from Psychology, Education, Musicology, and Ethnomusicology,* ed. Gary E. McPherson (Oxford: Oxford University Press, Jan 2017), 16.
[44] Harrison, *Synesthesia: The Strangest Thing*, 13.

in front of Saint-Chapelle chapel; considering this relatively late realization it's plausible that his was a learned synesthesia.

Secondly, the composer explicitly says in the interview with Samuel that he was not "suffering from" synesthesia.[45] He goes on to explain: "Not having the wonderful disease of my painter friend, I am all the same affected by a sort of synesthesia, more in my mind than in my body."[46] Regardless of these anecdotes that point to a learned synesthesia, based on the combination of Messiaen's personal testimonies, consistency testing, and extensive writings, treatises, and interviews, researchers have diagnosed Messiaen as a color hearing type of synesthete.

[45] Messiaen, *Music and Color: Conversations with Claude Samuel,* 37.
[46] Glasser, "Synesthesia and Prodigiousness: the case of Olivier Messiaen," 16.

CHAPTER 2:

COLORS IN MESSIAEN'S LIMITED MODES OF TRANSPOSITION

The charm of impossibilities was prominent in Messiaen's career, as he found increasing charm the more limitations a theory faced.[47] He told Claude Samuel: "I always thought a technical process had all the more power when it came up, in its very essence, against an insuperable obstacle."[48] With his new method, the modes of limited transposition, Messiaen systemized the pitch collection symmetrically and then transposed it to exhaust all possibilities.

Although the limited modes of transposition have been credited to Messiaen, Richard Taruskin notes that this system had already been widely used before Messiaen was writing music and provides samples of composers using it in their works. Franz Liszt for one had incorporated modes into his music, as had many others by that time; Messiaen's coining of the term merely made it more acceptable in scholarly circles.[49]

In his writing, Messiaen highlights that the limited transposition modes should be analyzed vertically rather than horizontally.[50] For him, the synesthetic sensation mostly occurred when he heard the modes in chords, and less so when he heard melodies. The composer elaborates that the function of the chords is meant to be "coloristic," neither total nor atonal.[51] Also, in Messiaen's world of color hearing, the range at which the modes are played made a difference in the color brightness: a higher pitch range projected brighter colors and vice versa.[52]

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[47] Richard Taruskin, "Chapter 4 Extinguishing the "Petty 'I'" (Transcendentalism, I)," In *Music in the Early Twentieth Century*, Oxford University Press, Accessed May 28, 2022, https://www.oxfordwesternmusic.com/view/Volume4/actrade-9780195384840-div1004010.xml.
[48] Messiaen, *Music and Color: Conversations with Claude Samuel,* 47.
[49] Taruskin, "Chapter 4 Extinguishing the "Petty 'I'" (Transcendentalism, I), 10.
[50] Joseph Edward Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," Ph.D. dissertation, University of Iowa, Iowa City, 2004, Proquest 3129298, 49.
[51] Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," 49.
[52] Messiaen, *Music and Color: Conversations with Claude Samuel,* 64.

The composers whom Messiaen held in high regard as masterful writers of color in music are the following, listed in chronological order: Claudio Monteverdi, Wolfgang Amadeus Mozart, Frédéric Chopin, Claude Debussy, Richard Wagner, Modest Mussorgsky, and Igor Stravinsky.[53] Not only were they a master of colors but also great musical dramatists. The listed composers, except Chopin, wrote operas in which the music complements the drama.[54] Brigid Brophy, an English writer, praises Mozart as the greatest musical dramatist. She compares Mozart to Shakespeare; Mozart as a musical-dramatist to Shakespeare as a poetry-dramatist.[55] At an early age, Messiaen visualized and created the stages to Shakespeare drama using cellophane from boxes and wrappers, which had a similar effect of a stained-glass window reflecting the light to accentuate the colors.[56] Messiaen connects composers from different periods and with varying compositional techniques, to convey that the idiomatic musical styles mattered less than the umbrella of colors and dramas under which the different composers are all connected.

So, how are the limited modes of transposition laid out? The modes categorize the twelve semitones into seven modes, each composed of symmetric intervallic intervals, then the first set of each mode is transposed accordingly until the notes return to their prime mode. The charm of impossibility lies in that the probable transpositions would already have been introduced such that no further transpositions occur. Messiaen then complemented each transposition with the colors that involuntarily popped into his mind.

[53] Messiaen, *Music and Color: Conversations with Claude Samuel,* 62–63.
[54] Brigid Brophy, *Mozart the Dramatist,* New York: Harcourt, Brace & World, 1964, 30.
[55] Brophy, *Mozart the Dramatist,* 34.
[56] Messiaen, *Music and Color: Conversations with Claude Samuel,* 41.

Mode 1:

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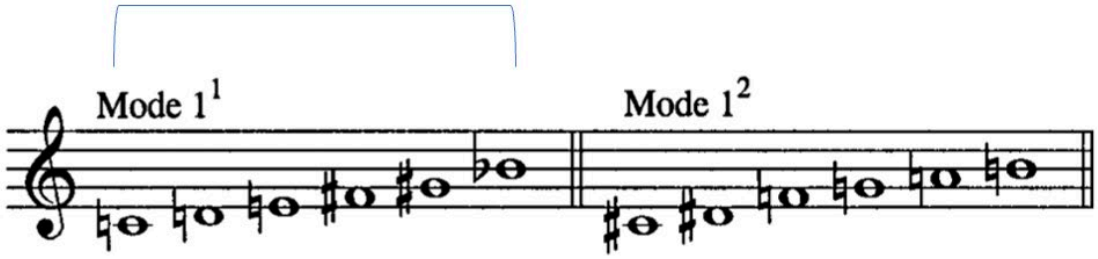

Figure 2: Modes of Limited Transpositions, Mode 1.[57]

Mode 1 consists of six notes in whole-step symmetrical intervals. This mode undergoes only two transpositions; if mode 1^2 (C#, D#, F, G, A, B) were to transpose up a half step (D, E, F#, G#, A#, B#), the scalar repeats the notes in Mode 1^1 including enharmonic notes. Therefore, Mode 1 is limited to only two transpositions. I have added the bracket to the example above to show the grouping of notes. There is only one group in the first mode due to the symmetric outline of the whole-step intervallic values. This can also be referred to as a whole tone collection. Messiaen writes only four sentences about the first mode in *The Technique of My Musical Language.*[58] He states that Claude Debussy and Paul Dukas "have made such remarkable use of it that there is nothing more to add."[59] Not surprisingly, then, Messiaen also does not assign colors that complement Mode 1.[60]

[57] Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," 51.
[58] Olivier Messiaen, *The Technique of My Musical Language*, trans. by John Satterfield, (Paris: Alphonse Leduc, 1956), 59.
[59] Messiaen, *The Technique of My Musical Language,* 59.
[60] Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," 50.

Mode 2:

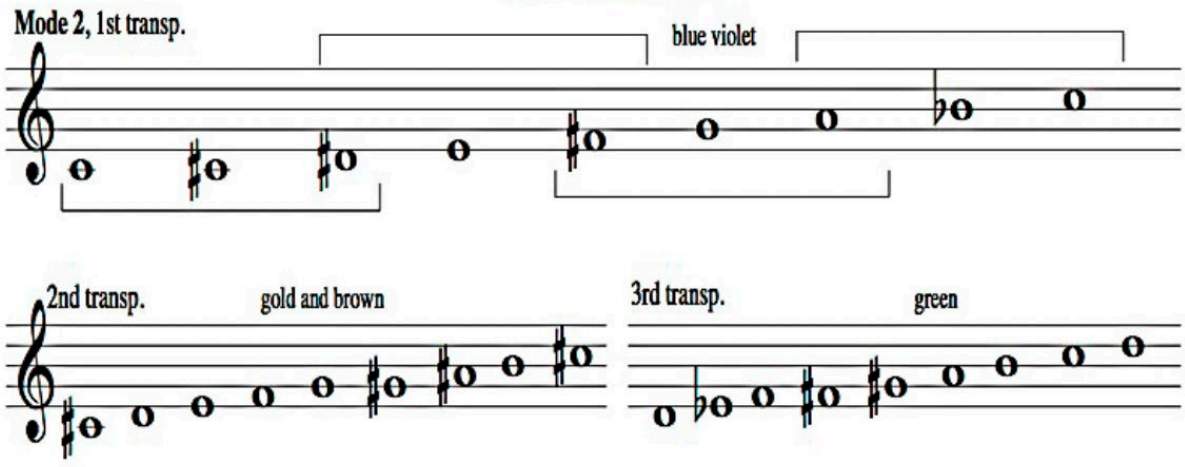

Figure 3: Modes of Limited Transpositions, Mode 2.[61]

Mode 2 is a collection of nine notes, a three-note set that repeats four times. The bracket marks the symmetry with the following intervallic pattern: a half step followed by a whole step, also known as an octatonic scale. The first transposition is the octatonic scale (0,1). The second mode can be transposed three times, each time illuminating different colors. Messiaen acknowledges Nikolai Rimsky-Korsakov and Scriabin's music as well as Ravel and Stravinsky's; he groups the composers in this order because Mode 2 is very apparent in the music of the first two composers, whereas the latter two incorporate it only briefly.[62]

[61] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 10.
[62] Messiaen, *The Technique of My Musical Language,* 59.

Mode 3:

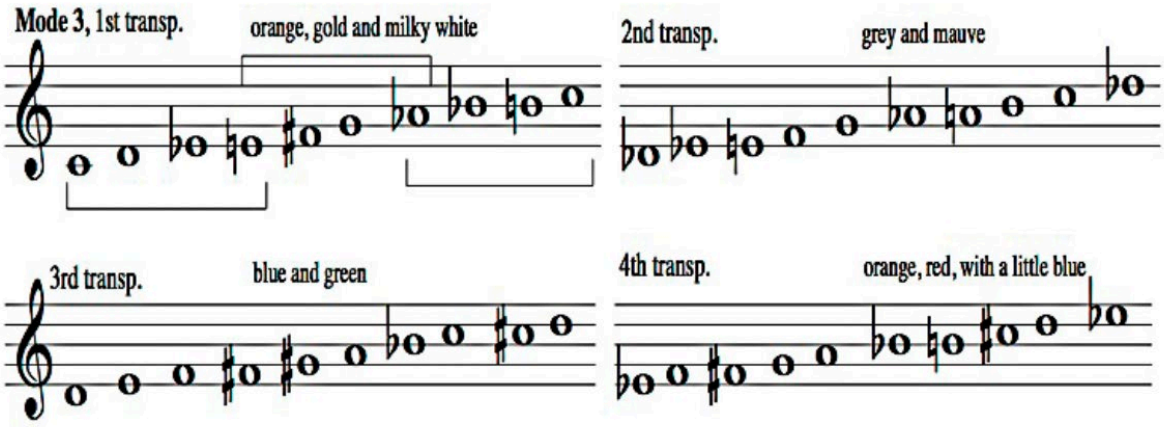

Figure 4: Modes of Limited Transpositions, Mode 3.[63]

Mode 3 consists of a four-note group with a repeating interval pattern that repeats three times. The intervallic pattern outlines a whole step, a half step, followed by another half step (C, D, Eb, E). The mode is transposable four times, and it is noteworthy that the first and the fourth transposition color associations evoke the same color, orange. The third mode is used more frequently than others in Messiaen's music, especially in his early works. The next chapter contains further discussion on the frequency of Mode 3.

[63] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 10.

Mode 4:

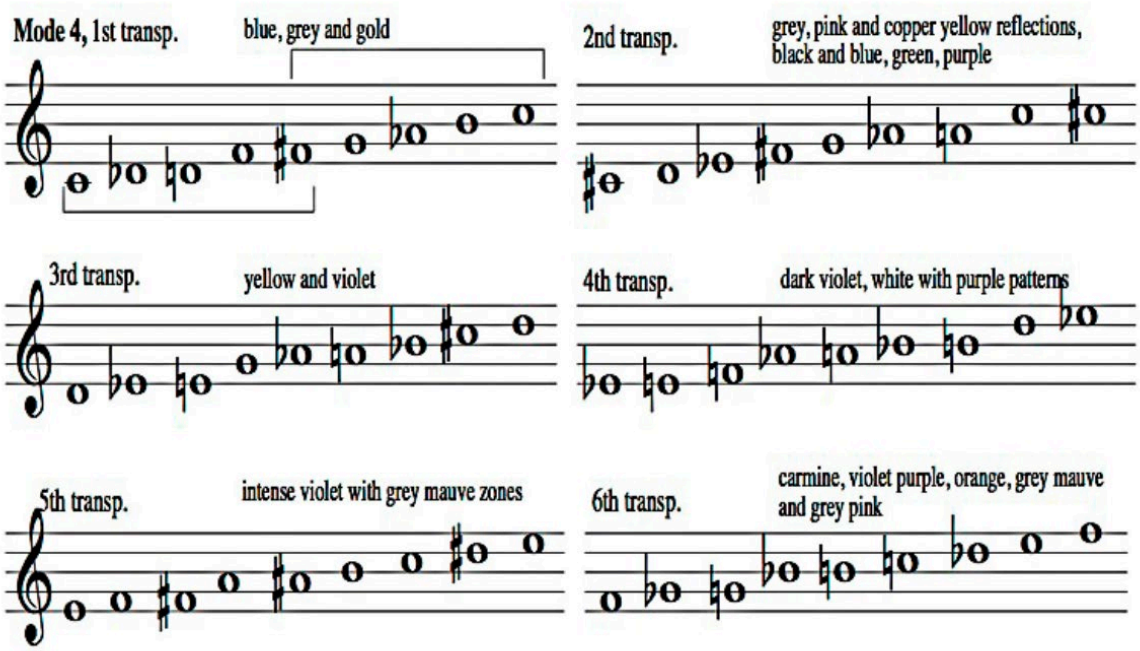

Figure 5: Modes of Limited Transpositions, Mode 4.[64]

Mode 4 divides the nine notes into two symmetrical groups: two semitones, either a minor third or an augmented second, followed by a semitone. The first cluster suggests a minor third (D, F), and the second outlines augmented second interval (Ab, B). This mode is transposable six times before it returns to its prime transposition. In an oddly concise choice, Messiaen combines the fourth, fifth, sixth, and seventh modes into one single subset of the chapter in his treatise.[65]

[64] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 10.
[65] Messiaen, *The Technique of My Musical Language,* 61.

Mode 5:

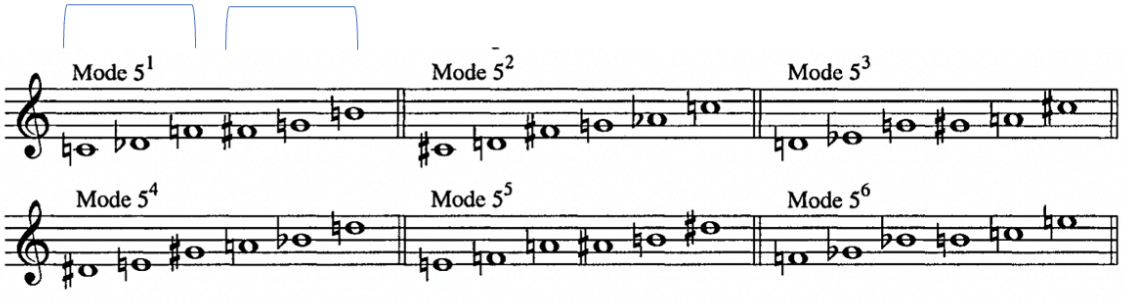

Figure 6: Modes of Limited Transpositions, Mode 5.[66]

Mode 5 is a shorter version of Mode 4, and each transposition matches the notes in the fourth mode. It consists of two sets among six notes with the intervallic pattern of a semitone to a major third. Messiaen does not indicate complement colors for the fifth mode.[67]

Mode 6:

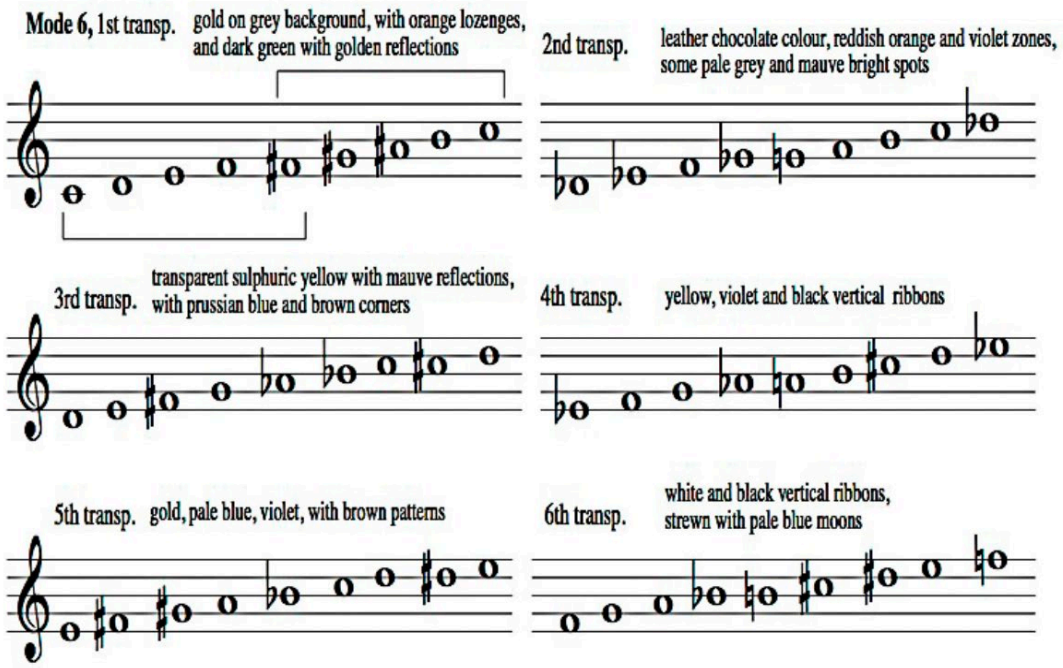

Figure 7: Modes of Limited Transpositions, Mode 6.[68]

[66] Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," 53.
[67] Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," 53.
[68] Austbø, "Visualizing Visions, the Significance of Messiaen's Colours," 11.

Mode 6 presents a nine-note collection in a group of two. The set intervallic pattern displays two whole tones followed by two semitones. Although Messiaen writes detailed, compact colorations for each transposition of Mode 6, this mode is not one he uses frequently.[69]

Mode 7:

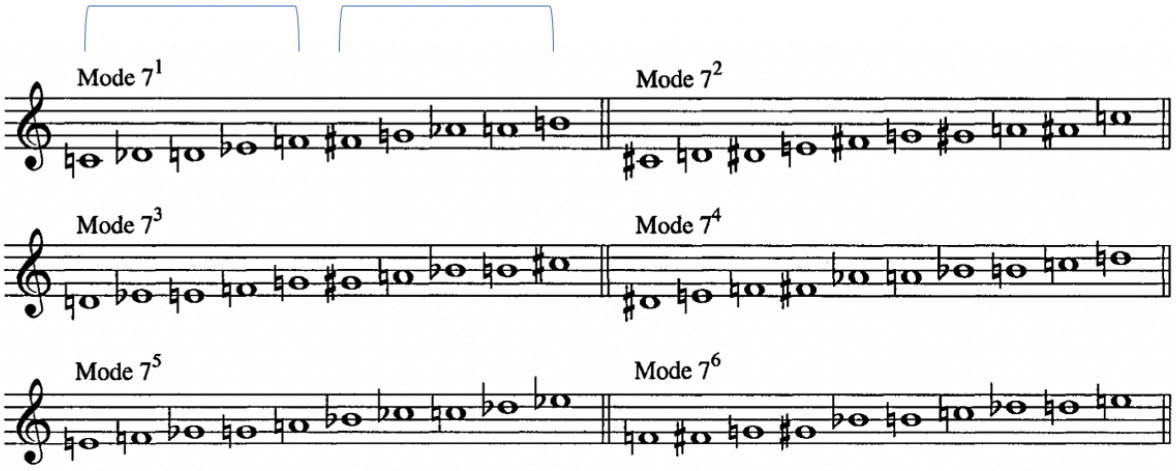

Figure 8: Modes of Limited Transpositions, Mode 7.[70]

Mode 7 contains two symmetrical groups adding up to ten notes. The repeated intervallic pattern outlines three semitones followed by a whole step. It can be transposed six times. The last mode has no associative colors.[71] Messiaen neglects to associate complementary colors for Modes 1, 5, and 7. Inversely, Modes 2, 3, 4, and 6 are packed with detailed colorations for each transposition.

Why are the first, fifth, and seventh modes missing colorations? As discussed in the analysis of *Themes et Variations for Violin and Piano* in Chapter 3, the frequent use of triadic chords suggests a probable answer to the question. Messiaen's early composition relies heavily

[69] Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," 54.
[70] Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," 54.
[71] Harris, "Musique Colorée: Synesthetic Correspondence in the Works of Olivier Messiaen," 54.

on chordal planning, a compositional tool he used to convey the colors that he saw. The whole tone pitch collection in Mode 1 restricts Messiaen from writing in triads. Mode 5 is a subset of Mode 4 and Mode 6 and not a common mode. Messiaen averts composing in the full set of pitch collection in Modes 4 and 6.[72]

What about Mode 7? It offers a full pitch collection set with six possibilities for triadic chordal writing. Mode 7 is a superset of all the modes except Mode 3; the pitch collection in the modes 1, 2, 4, 5 and 6 are present here.[73] Scholars raise two possibilities about the missing coloration in Mode 7. Some advocate that the superset compacts too many pitches and thus fails to invoke a color vivid enough to spot on his manuscript upon composition. Secondly, total chromaticism stimulated grey (possibly even black) color associations for Messiaen.[74] Seven semitones and chromaticism in Mode 7 may have led Messiaen to see an absence of color across his manuscripts.[75]

[72] Jonathan W. Bernard, "Messiaen's Synesthesia: The Correspondence between Color and Sound Structure in His Music," *Music Perception: An Interdisciplinary Journal* 4, no. 1(1986): 46.
[73] Bernard, "Messiaen's Synesthesia: The Correspondence between Color and Sound Structure in His Music," 46.
[74] Bernard, "Messiaen's Synesthesia: The Correspondence between Color and Sound Structure in His Music," 46.
[75] Bernard, "Messiaen's Synesthesia: The Correspondence between Color and Sound Structure in His Music," 46.

CHAPTER 3:

COLOR ANALYSIS OF *THEME ET VARIATIONS FOR VIOLIN AND PIANO*

Background

Olivier Messiaen composed *Theme et Variations for Violin and Piano* early on in his development as a composer. In a letter to his friend, Claude Arrieu, Messiaen writes that he had just completed the work and asks Arrieu to turn pages in the piano manuscript for its premier.[76] The original concert program included only Messiaen and Arrieu's chamber works, but five days before the concert, Messiaen decided to add the *Theme and Variations* upon its completion on November 17, 1932.[77] Claire Delbos, a violinist and Messiaen's spouse, performed the piece at the premiere (the composition was written as a wedding gift to Delbos earlier that year).[78] Messiaen also encouraged his friends to "come along and make lots of noise" to usher in an encore.[79]

Because the piece had been written early in Messiaen's younger creative period, fragments of the Medieval, Baroque, and Classical idiosyncratic styles are reflected in his music. The title of the work is the first hint at this, as the First Viennese School very much concentrated on developing a given theme. The work also incorporates the antecedent and consequent periods that he labels as a song-sentence,[80] examples of which will be laid out in a later section. He also adapts the fugue in the second variation, introducing the episode and the stretto.[81]

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[76] Nigel Simeon, "Messiaen in the 1930s: Offrandes Oubliées" *The Musical Times* 141, no. 1873 (2000): 33–41, https://doi.org/10.2307/1004732, 34.
[77] Simeon, "Messiaen in the 1930s: Offrandes Oubliées," 34.
[78] Andrew Goldstein, "Olivier Messiaen," Program Notes for Music at Menlo, Carte Blanche Concert, July 28, 2013, The Center for Performing Arts at Menlo-Atherton, Accessed May 28, 2022, https://musicatmenlo.org/files/2013-notes-CB4.pdf, 3–4.
[79] Simeon, "Messiaen in the 1930s: Offrandes Oubliées," 34.
[80] Messiaen, *The Technique of My Musical Language,* 37.
[81] Messiaen, *The Technique of My Musical Language,* 40.

For purposes of this thesis, the following section focuses on analyzing Messiaen's *Theme et Variations for Violin and Piano*, in particular matching the modes of limited transposition with their coloration and in relation to Messiaen's anecdotes. Ideally, this study will serve as a stepping stone that may be further developed into an examination of the special chords that Messiaen favored in his early compositional stage. My analysis aims to approach the work from a new perspective, offer a guide to music appreciation, provide a collection of details for the listener to pay attention to, and suggest ways that aspiring performers can think beyond the technicalities of performance and achieve a higher level of musicality.

Theme

The theme can be divided into three sections: 1–14, 15–20, 21–28.[82] Sections are separated based on thematic materials, rhythms, dynamics, and timbre changes. The first seven measures serve as an antecedent followed by the consequent in the next seven measures.[83] The phrase at measure 8–14 is an exact repetition of the previous seven bars. The period (antecedent and consequent) in the First Viennese School divides the phrase into even numbers, 4+4 or 8+8. Messiaen chooses to split the period into odd numbers to add a special element of his compositional technique on top of borrowing from the Classical period. Repetition is often used to stabilize the modes; while breaking free from classical tonalities, he repeats phrases to establish some element of stability. The fourteen bars in the beginning are written in Mode 3^1.

The second section is the climax of the piece, given the loudest dynamic and diminution in the rhythms. The notes match the Mode 2^1 collection with the exception of B in the violin part at measure 20; the exception seems arguable as a neighboring tone bridging A and A#. Messiaen

[82] Messiaen, *The Technique of My Musical Language,* 37.
[83] Messiaen, *The Technique of My Musical Language,* 37.

repeats in two-bar phrases (mm.15+16, 17+18) to stabilize the new mode, then returns to Mode 3^1 towards the end of the movement. Mode 2^1 and Mode 3^1 share six notes, allowing a smooth transition to the second mode before returning to the original mode.

Complementary mode and coloration:

mm. 1–14: Mode 3^1; orange, gold, and milky white

mm. 15–20: Mode 2^1; blue, violet

mm. 21–28: Mode 3^1; orange, gold, and milky white

1st Variation

The first variation is made up of three sections: 1–14, 15–20, 21–30. Similar to the theme, the first section includes an antecedent followed by the consequent. The antecedent in measure 1–7 is repeated in the consequent starting in measure 8–14. The piano plays the melody in the antecedent, transferring the exact melody to the violin part in the consequent measures. The melody mostly moves in a stepwise motion. In his treatise, Messiaen provides this excerpt as an example of Mode 3^1 to exemplify its usage. The figure below outlines the first chord with a non-pitch collection note, B. It does not seem like a compositional or printing mistake because he stacks the chord on the same note (B) in the consequent measures. Ironically, Messiaen states that the consequent exemplifies his use of mode 3^1.[84] Using a note that does not belong to the mode's pitch collection–on the very first chord of the variation– suggests that the work does not follow a strict system of modes, which makes sense given that the work had been composed in his early compositional stage.

[84] Messiaen, *The Technique of My Musical Language,* 61.

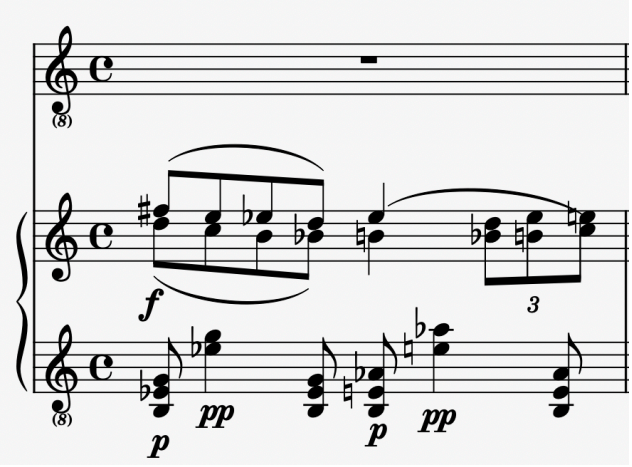

Figure 9: Theme et variations, 1st variation, mm. 1.[85]

The consequent measures establish a sense of pedal tone in the upper stave in the piano part. For the seven consecutive measures, the right-hand repeats eight "clusters of chords" in eighth notes that Messiaen refers to as a pedal group.[86] We see here the compositional technique known as layered texture, where the upper stave in the piano part functions as a pedal while the lower stave symmetrically repeats the rhythmic value. The left-hand rhythm in measure 1 repeats for the entire first section. The first section alternates between Mode 3^1 and 3^3.

Messiaen's use of dynamics makes each line seem independent. A pattern can be found simply in terms of the melody versus the rest. Messiaen writes the melodies in *forte*, whereas the pedal clusters and the rhythmic repetitions are written in *piano* and *pianissimo*. Balance seems like the main reason for his use of dynamics; he wanted the melodies to be heard among the dense piano part. It seems likely that he assigned two different functions to each instrument—the chordal clusters (vertical) versus the melody (horizontal) coloristic modes.

[85] Olivier Messiaen, *Theme and Variations for Violin and Piano*, Rue Saint-Honoré, Paris: Alphonse Leduc, 1934, 2.
[86] Messiaen, *The Technique of My Musical Language,* 61.

The middle section, 15–20, continues to display the importance Messiaen placed on dynamic contrasts. The violin first plays the melody in measure 15–16, then the melody transfers over to the left hand in the piano part marked *forte*. The following figure is one example:

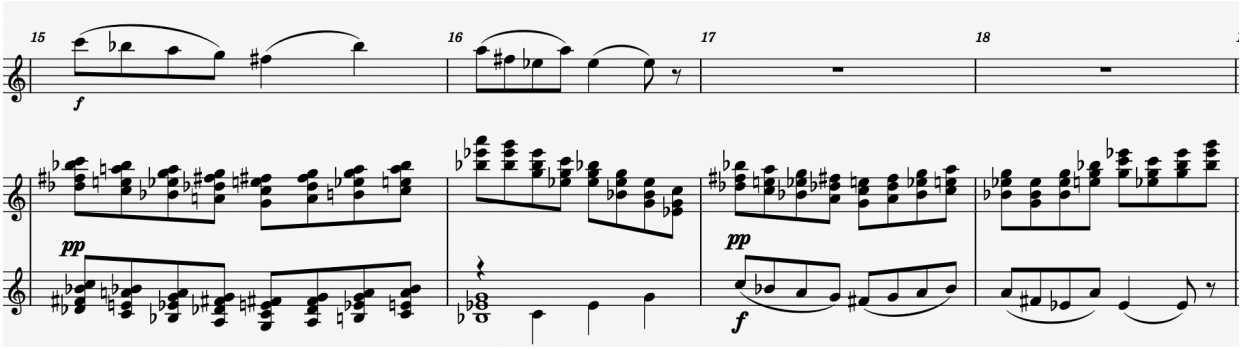

Figure 10: Theme et variations, 1st variation, mm. 15–18.[87]

The middle section starts in Mode 2^1 and ends in Mode 3^1.

The final section repeats the eighth note pedal chords used in the consequent, to be accompanied with four-note chords in the left hand. As the melody in the violin part displays a descending contour towards the end, the dynamics also gradually decrease in volume. Underneath the melody, the cluster chords remain *pianissimo*. The mode of limited transposition stays in the third mode, first transposition. The complementary modes and coloration are as follows:

mm.1–14: Mode 3^1; orange, gold, milky white

mm. 15–19: Mode 2^1; violet, blue

mm. 20–30: Mode 3^1; orange, gold, milky white

[87] Messiaen, *Theme and Variations for Violin and Piano*. Rue Saint-Honoré, Paris: Alphonse Leduc, 1934, 2–3.

2nd Variation

The second variation is divided into four sections: 1–6, 7–12, 13–21, 22–24. Messiaen incorporates a fugal style into each section, explaining: "Without constraining ourselves to making regular fugues, we shall keep the most essential parts of them: the episode and the stretto.[88] We see both fugal compositional techniques included in this variation.

The first section delves into the subject and answer. Messiaen–a composer progressing towards hyperindividualism in the twentieth century– develops the idea of fugal writing. The subject in measure 1 leads to the answer in measure 3, a diminished fifth above the subject. The example below clarifies the subject followed by the answer in brackets. Typical fugal writing abides by the rule that the answer be transposed up by a fifth from the subject. Messiaen alters the technique by raising it not a perfect fifth but a diminished fifth interval: F# to C.

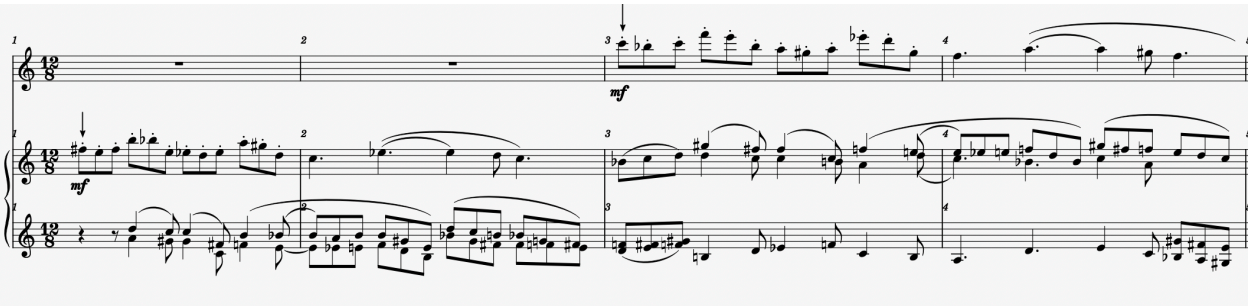

Figure 11: Theme et variations, 2nd variation, mm. 1–4.[89]

Messiaen infuses episodes into the second section. According to *The Technique of My Musical Language,* the episode is defined as "a progression of harmony, concealed by entrances in canonic imitation being reproduced at symmetrical intervals, generally from fifth to fifth."[90] The composer's use of episodes in the variation showcases characteristics of hyperindividualism.

[88] Messiaen, *The Technique of My Musical Language,* 40.
[89] Messiaen, *Theme and Variations for Violin and Piano,* 4.
[90] Messiaen, *The Technique of My Musical Language,* 40.

The example below reflects two episodes: the piano against the violin part. The piano part consists of four episodes, starting in measure 7. He introduces the episodes with "symmetrical intervals" yet disregards the "fifth to fifth" rule in traditional fugal writing.[91] The episodes are repeated in perfect fourth intervals. The violin passage presents a downward motion stemming from the countersubject (piano part, left hand) in measure 1.[92]

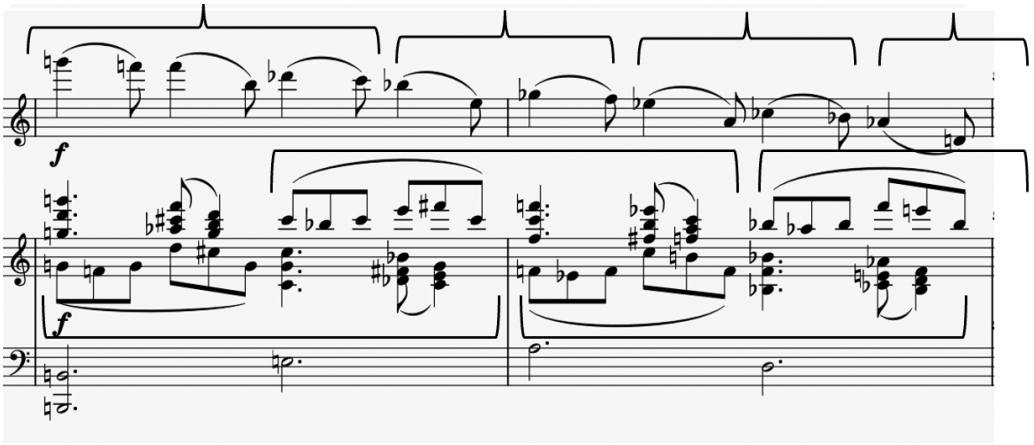

Figure 12: Theme et variations, 2nd variation, mm. 7–8.[93]

Lastly, the figure below presents an example of stretto; three voices enter in the order of upper, middle, and lower staff.[94] Messiaen classifies this excerpt as a "triple canon."[95] Each entrance is delayed by an eighth note. The canonic effect builds tension as well as a thickness in texture even at a softer dynamic. The complex timbre makes it complicated for the untrained ear to identify the frequently elaborated mode, the third limited mode of transposition. The brackets indicate the beginning and the end of strettos followed by fragments.

[91] Messiaen, *The Technique of My Musical Language,* 40.
[92] Messiaen, *The Technique of My Musical Language,* 40.
[93] Messiaen, *Theme and Variations for Violin and Piano*, 4.
[94] Messiaen, *The Technique of My Musical Language,* 40.
[95] Messiaen, *The Technique of My Musical Language,* 40.

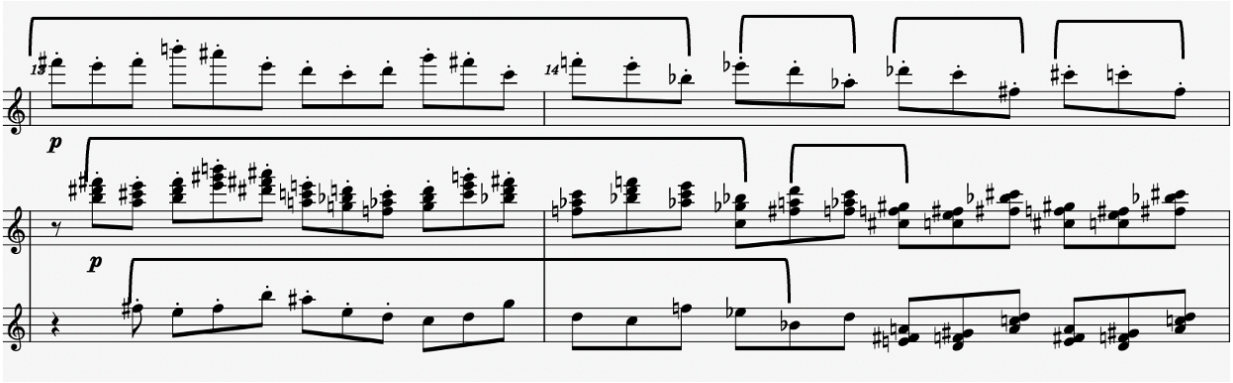

Figure 13: Theme et variations, 2nd variation, mm. 13–14.[96]

The canonic entrances also take place in the last section, mm. 22–24. The figure below exemplifies three canonic entrances, marked by downward arrows. Messiaen places each entrance identically. The pitch collection, E-F#-B-A#-E-F-G-F-Eb-D-C-B, is repeated three times in different registers in the order of the highest to the lowest. The timbre thins out as the register moves downward. Dynamic markings also decrease from *forte* to *pianissimo*.

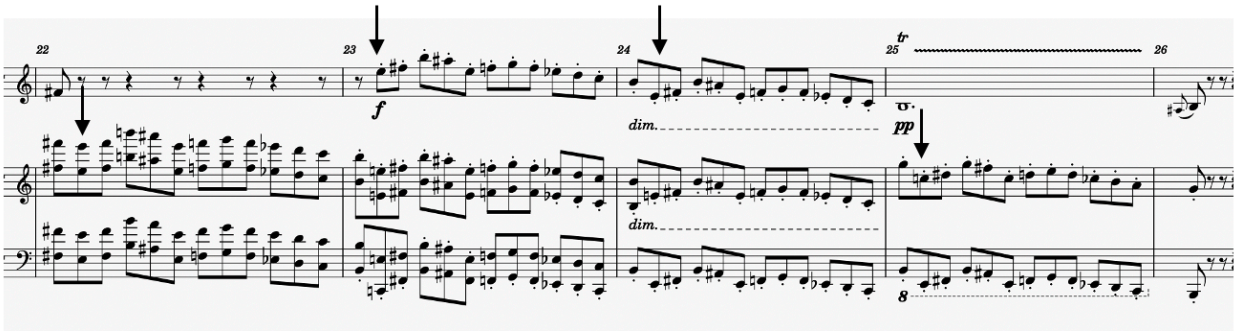

Figure 14: Theme et variations, 2nd variation, mm. 22–26.[97]

The figure above can be analyzed in two ways: Mode 3^1 and Mode 7^4. This last section matches both modes substantially with the exception of one note. If one were to analyze the pitch collection in Mode 3^1, F-natural yields to a passing note. If one were to choose Mode 7^4, G-natural suggests a neighboring tone. Both modes seem plausible because Messiaen pairs the two modes simultaneously in the later variations. His treatise offers further explanation on

[96] Messiaen, *Theme and Variations for Violin and Piano*, 5.
[97] Messiaen, *Theme and Variations for Violin and Piano*, 6.

concluding the variation in the third mode. The one and only place in a variation where Messiaen documents a specific mode occurs in measure 14. *The Technique of My Musical Language* treatise records that the fragments onward affirm Mode 3^3.[98]

However, discrepancy lies in the addition of an extra note outside of its mode of limited transposition. Mode 3^3 excludes E-flat, the first note of the fragment in the violin part (mm. 14, the second beat). Hence, the color association analysis fits with the added notes. The dense idiomatic fugal elements beg the question whether Messiaen had removed the color response to highlight a reference to earlier periods. The second variation begins in the seventh mode of limited transposition which has no complementary colors.

[98] Messiaen, *The Technique of My Musical Language,* 40.

Complementary mode and coloration:

mm. 1– 7 (beat 1 and 2): Mode 7^4; no color association for Mode 7

mm. 7 (beat 3 and 4): Mode 7^2

mm. 8 (beat 1 and 2): Mode 7^1

mm. 8 (beat 3 and 4): Mode 7^4

mm. 13–14 (beat 1): Mode 3^1; orange, gold, milky white

mm. 14–15 (beat 3): Mode 3^3; blue, green

mm. 15 (beat 4)–18 (beat 2): Mode 3^1; orange, gold, milky white

mm. 18 (beat 3 and 4): Mode 3^3; blue, green

mm. 19 (beat 1 and 2, first note): Mode 3^2; gray, mauve, a bit of gold

mm. 19 (beat 2, second and third note): Mode 3^3; blue, green

mm. 19 (beat 3)– 20 (beat 2): Mode 3^1; orange, gold, milky white

mm. 20 (beat 3 and 4): Chord on Dominance, first inversion; no color association

mm. 21 (beat 1 and 2): Mode 3^1; orange, gold, milky white

mm. 21 (beat 3 and 4): Chord on Dominance, first inversion; no color association

mm. 22–26: Mode 3^1; orange, gold, milky white

3rd Variation

The third variation divides into the following sections: 1–12, 13–16, 17–25, 26-30. Placed in the center of five variations, it represents the climax of the work. Messiaen generates the climax with mixed meters, aggressive dynamic markings, and chordal and intervallic leaps.

Sections 1 and 3 are almost identical. Both passages unveil isorhythmic qualities. Repetition of the rhythmic patterns helps the audience become familiar with the opening material, and perhaps invites the listener to focus on the mode. Section 3 seems as if Messiaen

introduces a new mode. However, Messiaen writes in a canon to begin reiterating the opening melodic and harmonic gestures.

The third section begins with the melodic line (violin) raised by a semitone, accompanied by new chord clusters. Then he sketches the exact piano part; the pick-up to measure 3 reappears in the pick-up to measure 19. The piano part remains identical until the end of the section. The violin part in the third section syncs to the opening in measure 20. Messiaen treats measures 17-19 as transitional bars to ease into re-establishing the modes at the beginning of the variation.

The second section also serves as transitional bars, bridging the first and the third sections. Messiaen instructs the performers to play their softest in the section mentioned above. The coda also has a similar role; the vigorous passage marked with *forte* and *fortissimo* in section 3 diminishes from *fortissimo* to *piano* in the final measure.

Messiaen, who was a passionate teacher of harmony and analysis at the Paris Conservatoire, also emphasizes the use of rhythm in his music.[99] He advocated that "a truly rhythmic music" conveys spontaneity that should oppose "equal divisions and square repetitions of classical music."[100] Hence, he varies the length of the repeated material. The opening material expands in the latter section. Simply put, Messiaen changes it up upon repetition.

The middle variations (the second and third) manifest "a truly rhythmic music."[101] While the second variation alerts the audience with canonic entrances and layers of episodes in triplets, the third challenges the performer to maintain a sense of steady eighth notes throughout the mixed meter. Messiaen features the following meters: 2/4, 5/8, 3/4, and 3/8. The frequent

[99] Benitez, Vincent. "A Creative Legacy: Messiaen as Teacher of Analysis." *College Music Symposium*, vol. 40 (2000): 129. http://www.jstor.org/stable/40374403.
[100]Benitez, "A Creative Legacy: Messiaen as Teacher of Analysis,"117.
[101] Benitez, "A Creative Legacy: Messiaen as Teacher of Analysis," 129.

changes in meter stimulate keen rhythmic pulse in sixteenth notes, the subdivision of eighth notes, embellished by triplets.

Difficulties arise in applying Messiaen's use of the limited modes of transposition in this variation. He frequently inserts neighboring tones as well as passing tones, and the added notes challenge one to contemplate which mode best fits the passage. The violin part includes one of each: C-sharp neighboring tone and A passing tone. Messiaen inserts added notes not only melodically but harmonically as well. Triadic planning and neighboring chords make it difficult to understand the mode. Amid the triadic clusters, Messiaen provides clues to suggest a Mode of Limited Transposition.

The example below illustrates the importance of the pedal chord, C#–E–F#. The chordal harmony suggests that the mode changes its transposition. Two reasons behind the analysis: enharmonic and appoggiatura. The pedal notes can be found enharmonically in Mode 7^6; however, Mode 7^2 comprises of the notes with exact accidentals. Secondly, Messiaen writes appoggiaturas in measure 3, then "resolves" them in the following note. (Messiaen firmly believed in the independent quality of the added notes that such should neither be prepared nor resolved).[102] The base of the resolution chord (A–C#–G#–D#) is excluded from Mode 7^6– implying that Mode 7^2 serves as a better candidate. Lastly, Messiaen writes an added augmented fourth (E#) in measure 3, the appoggiatura chord. His frequent use of added augmented fourths explains the note missing from the mode. It almost works as a pivot measure, transitioning from Mode 7^6 to Mode 7^2, especially when viewed from the standpoint of the classical period. *The Technique of My Musical Language* defines this type of pivot as polymodal modulation.[103]

[102] Messiaen, *The Technique of My Musical Language,* 47.
[103] Messiaen, *The Technique of My Musical Language,* 68.

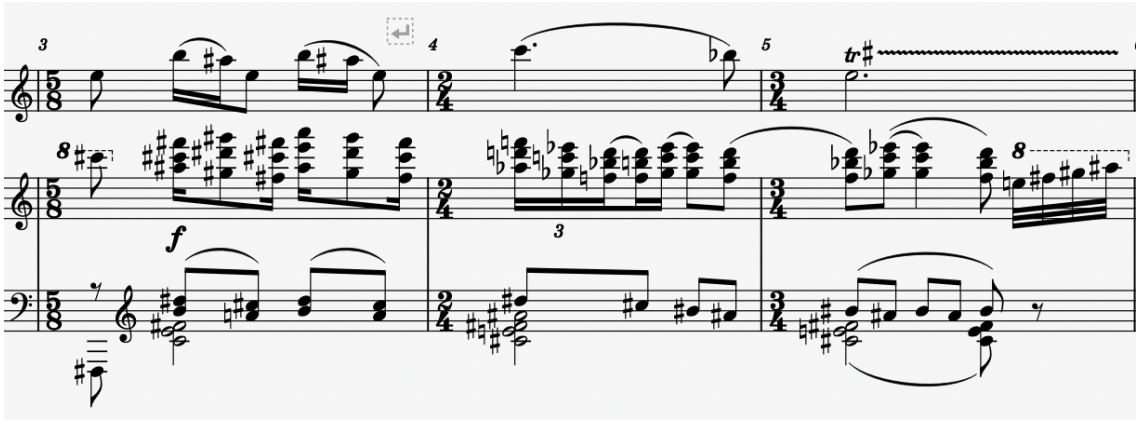

Figure 15: Theme et variations, 3rd variation, mm. 3–5.[104]

The two variations also share a similarity in that Messiaen writes the third variation in Mode 7. An argument can be made that this is a poly-mode, like a polytonality, in the current variation, underlining the use of two modes simultaneously. The violin part matches Mode 3^1 with a brief transition to Mode 7^1 in the transitional bars. The accompaniment follows Mode 7 in various transpositions. Pairing Modes 3 and 7 together creates coherence because the combination was already elaborated on in the previous variation. Messiaen tags this compositional technique as "polymodality."[105] Two or more modes of limited transposition occur simultaneously.[106] The complementary mode chart below delves into the polymodality. Messiaen writes in Mode 3 for the violin part, accompanied by Mode 7. Similar to how polytonality was employed in the Baroque and Classical periods, Messiaen borrows from earlier periods and then develops it to construct a new method.

Complementary modes and colorations:

Violin mm. 1–12: Mode 3^1; orange, gold, milky white

mm. 13–16: Mode 7^1; no color association

mm. 17–30: Mode 3^1; orange, gold, milky white

[104] Messiaen, *Theme and Variations for Violin and Piano*, 7.
[105] Messiaen, *The Technique of My Musical Language,* 68.
[106] Messiaen, *The Technique of My Musical Language,* 68.

Piano mm. 1–2: Mode 7^6; no color association for Mode 7

mm.3–5: Mode 7^2

mm. 6–9: Mode 7^6

mm.10–12: Mode 3^1; orange, gold, milky white

mm. 17: Mode 7^2

mm. 18: Mode 7^4

mm. 19: Mode 7^6

mm. 20–21: Mode 7^2

mm. 22–30: Mode 7^6

4th Variation

The fourth variation divides into the following sections: 1–26, 27–33, 34–42, 43–50. The rhythmic repetition of the duple versus the triplets builds the perpetual tension. The piano establishes a rhythmic drone as shown below. Messiaen writes triplets throughout the whole variation. In the second half of the piece, starting in measure 27, the violin joins the piano with the triplets until the coda (46–50).

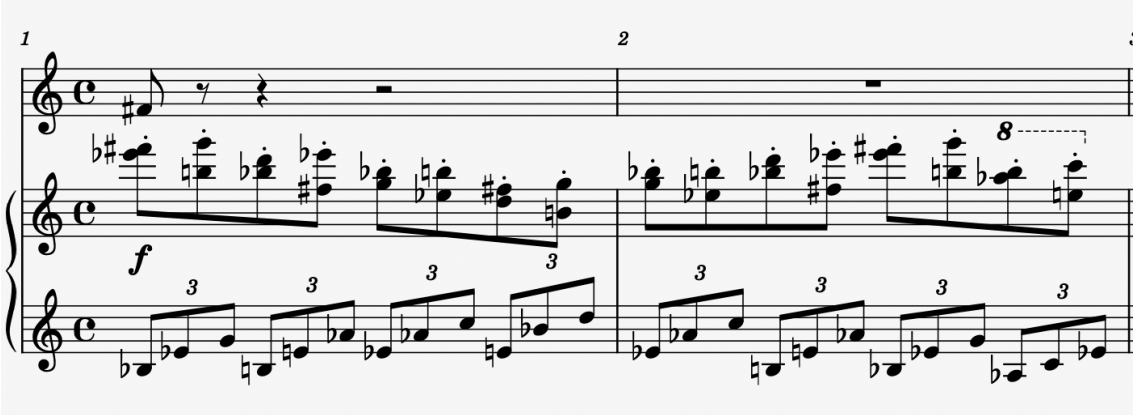

Figure 16: Theme et variations, 4th variation, mm. 1–2.[107]

[107] Messiaen, *Theme and Variations for Violin and Piano*, 9.

The exact repetition of the figure above can be found throughout the variation: 5–6, 7–8, 13–14, 15–16, and 17–18. The role of the repetition is to stabilize the clusters of chords with symmetrical rhythmic values. The antecedent and consequent can be observed in the first section; the antecedent occurs in measures 3–12 followed by the consequent in measures 13–26. Measure 1 and 2 serve as an introduction. Messiaen varies the second half of the antecedent by introducing a new rhythm (shown below). The lower staff begins a chromatic descent from D# to C, over a span of four measures. The chromatic descending line matches the mode 3^1 pitch collection except for the two notes C# and A.

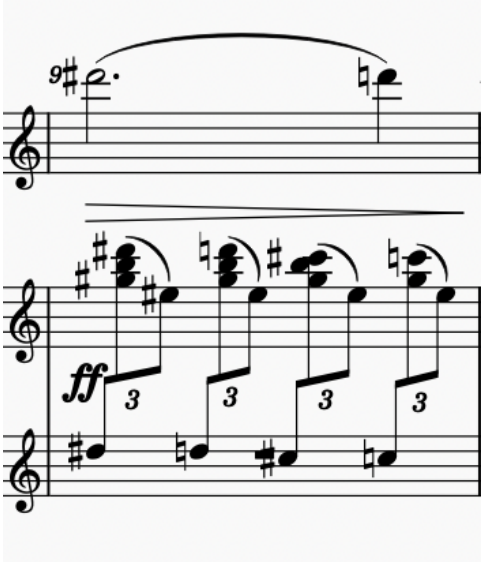

Figure 17: Theme et variations, 4th variation, mm. 9.[108]

In measure 13, the return of the chord progression from measures 1–2 signifies the beginning of the consequent. The exact and melodic voices from the antecedent are written in the first six measures of the consequent. Measure 13 is transposed up a minor third compared to measure 9. The same chromatic descending line can be found beginning on F# and ending two octaves below on F#. The chromaticism aligns with the Mode 3^1 pitch collection, with the addition of

[108] Messiaen, *Theme and Variations for Violin and Piano*, 9.

C#, F, and A. The additional notes can be regarded as passing tones. Messiaen uses a pedal note starting in measure 34 (F#) for the next ten measures. The pedal note falling on the beat reminds one of a metronome keeping a sense of the downbeats amid continuous triplets.

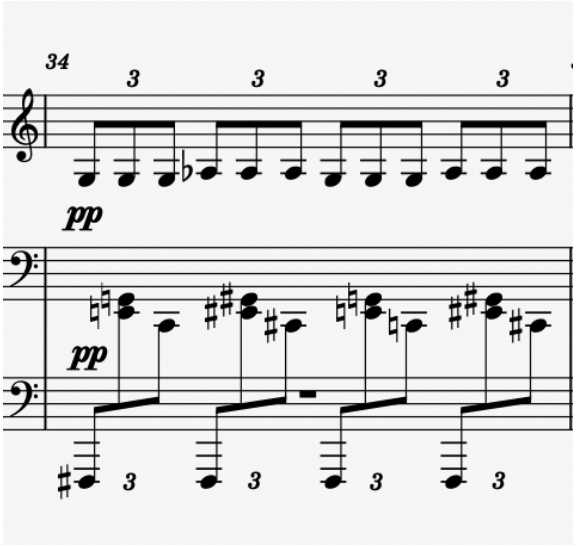

Figure 18: Theme et variations, 4th variation, mm. 34.[109]

Prior to the last section, Messiaen alternates between the compound meter 6/4 and the simple meter 4/4. Measures 34–36 show the music transitioning from a simple meter to the compound meter. The perpetual drive stays consistent throughout, such that the meter changes are seamless. Once again, the exact repetition occurs in succession, with the piano at an octave higher in measure 34–36. Messiaen repeats it the third and final time in measure 39–42, elongating the number of bars by staying in the simple meter.

The last five measures may feel stagnant as the violin holds a long trill throughout while the piano repeats the same measure five times (see below). This prepares the audience for the grand finale of the piece beginning at quadruple *forte* with the theme transposed up an octave.

[109] Messiaen, *Theme and Variations for Violin and Piano*, 11.

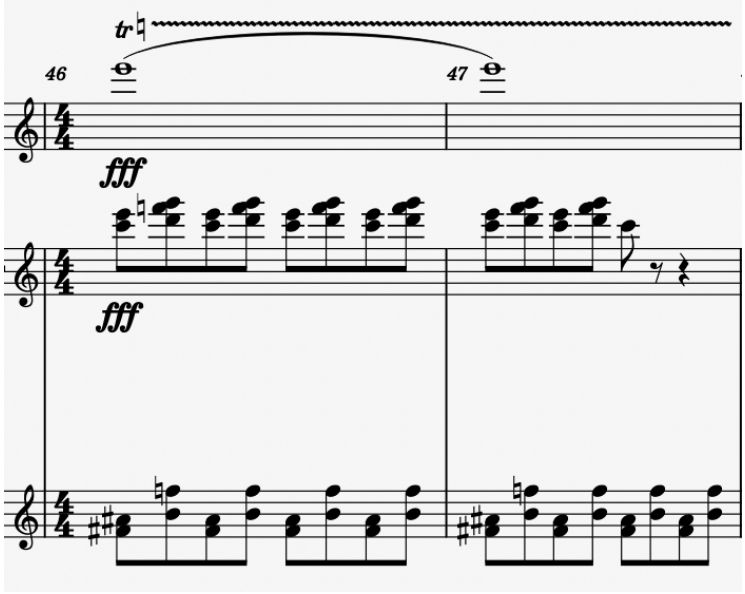

Figure 19: Theme et variations, 4th variation, mm. 46–47.[110]

Complementary mode and coloration:

mm. 1–50: Mode 3^1; orange, gold, milky white

5th Variation

The final variation divides into the following sections: 1–14, 15–20, 21–38. Messiaen concludes the piece with a return to the theme. The same melody in the violin part is written an octave higher than the theme. Messiaen writes a dense piano accompaniment with octave doublings; the quadruple notes in the left hand are the same as the right hand, an octave higher. The first section (mm. 1–14) matches the note collection in Mode 3^1 except for measures 13–14. It seems fitting to classify the two measures as Mode 3^4, as transition bars to the second section that he writes in Mode 6^2. The violin part in the middle section (mm. 15–20) is transposed up a semitone in comparison to the theme. Measure 18 and 20 include a single note outside of the pitch collection: A#. It seems reasonable to label A# as a passing note, as the note falls either in

[110] Messiaen, *Theme and Variations for Violin and Piano*, 12.

the middle of a phrase (mm. 16–17) or on a weak beat for a short duration (mm. 20). The two modes share six notes, allowing for an easier return to Mode 3 in the final section.

The final section (mm. 21–38) begins in Mode 3^1. Messiaen removes the octave doublings and lightens the piano part. The left hand consists of a whole note pedal tone in addition to the consecutive quarter note pedals in each measure. The pattern continues for seven measures (mm. 21–27). The whole tone pedal note descends in measures 21 to 26, matching the reverse order of note collection in Mode 3^1 (E, D, C, B, Bb, Ab, G). The four consecutive quarter note pedal notes accompanied by the whole note pedal on B remain until the penultimate measure. The piece ends on B, the last note of Mode 3^1. The compositional techniques described above provide a guideline for deciding the appropriate modes of limited transposition.

Ambiguity arises in measures 29, 30, and 35. The third beat of the notated measures match the two transpositions in Mode 3. Measure 29 begins in Mode 3^3 leading to either Mode 3^1 or Mode 3^2 in the third beat. The two transpositions share six notes in common, allowing two possible analyses. A similar thing happens in the third beat of measure 30, where the chord also matches the note collections in Modes 3^3 and 3^4. Apart from these two incidents, the final variation's pitches match the modes of limited transposition for its entirety, with the exception of passing tones.

Complementary modes and colorations:

mm. 1–12: Mode 3^1; orange, gold, milky white

mm. 13–14: Mode 3^4; orange, red, a bit of blue

mm. 15–20: Mode 6^2; brown, russet, orange, violet

mm. 21–27: Mode 3^1; orange, gold milky white

mm. 28 (beat 3 and 4): Mode 3^3; blue, green

mm. 29 (beat 3 and 4): either Mode 3^1; orange, gold, milky white

or Mode 3^2; gray, mauve, a bit of gold

mm. 30 (beat 3 and 4): either Mode 3^3; blue, green

or Mode 3^4; orange, red, a bit of blue

mm. 31: Mode 3^2; gray, mauve, a bit of gold

mm. 32 (beat 3 and 4): Mode 3^3; blue, green

mm. 33: Mode 3^4; orange, red, a bit of blue

mm. 34 (beat 1 and 2): Mode 3^1; orange, gold, milky white

(beat 3 and 4): Mode 3^3; blue, green

mm. 35 (beat 1 and 2): Mode 3^1; orange, gold, milky white

(beat 3 and 4): Mode 3^3; blue, green

mm. 36: Mode 3^2; gray, mauve, a bit of gold

mm. 37–38: Mode 3^1; orange, gold, milky white

Final considerations

The following chart provides the layout of Messiaen's *Theme et variations pour violon and piano* in a concise manner, disregarding the transpositions.

Theme: Modes 3–2–3
1st variation: Modes 3–2–3
2nd variation: Modes 7–3
3rd variation: Modes 3–7–3
4th variation: Mode 3
5th variation: Modes 3–6–3

The pattern exists in the chart above; Messiaen almost always starts with Mode 3 or ends the variations in Mode 3. Messiaen continuously repeats the third mode to familiarize it to the audience's ears. It's as if Mode 3 can be understood as a tonic mode, in the Classical period

terminology, to provide a sense of beginning and an ending in the music. The exception occurs in the second variation; it starts with Mode 7. Messiaen could not visualize vibrant colors for Mode 7 due to its chromaticism; hues of white or gray appeared instead. Therefore, he introduces new compositional techniques to compensate for its lack of colors: rhythms. The second variation presents continuous triplets, passed on from the violin to the piano and vice versa. Messiaen writes continual sixteenth notes in the third variation to accompany its lack of colors. It also features mixed meters to add a layer to the colorlessness. The melodic contour also expands in these two variations. Stepwise motion written in the previous variation now leads to a frequent interval leaps and jumps in the second and the third variations.

Messiaen's compositional techniques keep the performers and the listeners on alert to examine its modes, rhythms, and melodic contours that he compartmentalizes in his music. The layers of his techniques embroider the details to listen for. His love for the stained-glass window is laid out in his music– the layers and light reflections on the window guide the viewers to appreciate it from different angles. Similarly, the audience is welcome to further analyze the layers of compositional techniques laminated in his music with multiple perspectives.

CHAPTER 4:

NOTES FOR THE PERFORMER

Professional performance recordings can be enormously helpful guides on how to approach a new work. Through recordings, a performer can be exposed to various musical interpretations and reference bowing suggestions and tempos. In the case of Messiaen's *Theme and Variations for Violin and Piano*, however, recordings can result in unhelpful confusion, due to the wide variation in tempos.

The tempos differ drastically between the older recordings versus the new. David Oistrakh performed the piece with Frida Bauer at the Great Hall of Moscow Conservatory in 1972.[111] The video length amounts to 6 minutes and 57 seconds. Later on, Gidon Kremer's version lasts 7 minutes and 30 seconds.[112] Janine Jansen's recording, published in 2010, runs for 10 minutes and 35 seconds. Contemporary violinist Alexi Kenney's performance lasts 11 minutes and 9 seconds! How can we explain this difference between performances by the older generation performers compared to those of modern violinists?

One reason might be that while recent manuscript editions include the metronome markings for each variation, the original manuscript published by Alphonse Leduc had no metronome markings. Even when metronome markings are present, many performers still take liberties in choosing their own tempos. However, in my opinion, if Messiaen went to the trouble of indicating tempos at the beginning of each variation, then respecting those markings is a performer's logical first step toward achieving Messiaen's intended musical aesthetic.

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[111] ClassicalVault1, "David Oistrakh–Messiaen–Theme and Variations (1932)," *YouTube* video,6:57, April 4, 2013, https://youtu.be/PY7d1B4Y80o.

[112] Gidon Kremer, "Messiaen: Theme and Variations for Violin and Piano," Track 85–90 on *Beethoven - Schumann - Brahms: Complete Violin Sonatas,* Deutsche Grammophon, 2003, YouTube Music.

In the Theme, he writes "*modéré*." The first variation stays *modéré*. Therefore, it makes sense that the theme and the first variation tempo should remain the same. Playing in a moderate tempo allows the listener to possibly envision the color hues Messiaen had experienced by following the color analysis via program notes. The second variation is marked "*Un peu moins modéré*" at the top, which translates to "little less than moderate."[113] Performing the variation at a faster tempo than moderate may better guide the audience toward recognizing the compositional techniques Messiaen incorporates.

While Messiaen achieves modal stability with the repeated chordal planning in the first variation, the second variation offers new listening focal points. Fugal elements accompany the modes beginning in Mode 7 to Mode 3 at the end. As mentioned above, his choice in Mode 7 is full of chromaticism with the canonic entrances of episodes, fragments, and strettos. Then the variation shifts its mode in the second half to return to Mode 3 colorations that may be familiar to the audience's ears after having heard the theme and first variation.

Messiaen marks *modéré avec éclat*, "moderate with brilliance" for the third variation. Marking the climax of the five variations, the total chromaticism written in Mode 7 illustrates dullness in terms of coloration; however, the constant rhythmic drive offers the climactic qualities that are readily audible without background information. The fourth variation offers two markings that are helpful as tempo guides: "lively and passionate" followed by the indication that an eighth note equals a sixteenth note in the previous variation.[114] Full of chromatic chordal planning, Messiaen superimposes polymodality in the violin part against the piano part.

The fifth variation tempo marking indicates *trés modéré*, very moderate. The theme returns in Mode 3, an octave higher. The full vivid colorations paired with the high register and

[113] Messiaen, *Theme and Variations for Violin and Piano*, 1–4.
[114]Messiaen, *Theme and Variations for Violin and Piano*, 9.

blaring dynamics in the variation represent the finale of the piece. To accommodate Messiaen's suggestion, the performer should play this variation at a slower tempo than the theme. Lastly, the very moderate tempo may guide the audience to now establish Mode 3 in their ears, as it had been reiterated in the theme followed by its variations.

According to Messiaen's tempo specifications, the tempo should remain the same between the theme and the first variation. The second variation should be played faster in relation to the previous music. In order to bring the brilliant qualities that Messiaen writes, achieving a tempo faster than the theme seems appropriate for the third variation. The rhythmic marking in the fourth variation should be respected, that is, the eighth note pulse in the current variation should match the sixteenth note from the third variation. Lastly, he writes "very moderate" which seems to endorse taking a slower tempo than the theme.

The performer should study the composer's markings to make educated choices in tempo that align with Messiaen's own intentions for the music. The simple step of following Messiaen's detailed instructions and allows modern performers and audiences alike to dip a toe in historical performance and experience some of the musical qualities Messiaen and Delbos emphasized at the premiere.

The tempo suggestions serve as a guide the performers to gear towards to the historical performance practice that the audience at the premier may have experienced. Messiaen and Delbos may or may not have pondered upon the tempo markings; like Baroque musicians, it may have been just natural for them. However, the current performers should feel obliged to deliver Messiaen's details to assist the audience beyond the notes. Both the second and the third variations are instructed to play faster than the moderate tempo in the theme; these two variations introduce Mode 7, which has no color associations, for the first time. Therefore, he layers

rhythmic and melodic compositional techniques to emphasize the climax of the work. Tempo seems to be another technique that Messiaen inserts to compensate for its lack of colors. The variations mentioned above present a whirlwind of notes to shift the focus from colors .

Providing a complementary color guide in concert program notes can serve the dual purpose of helping synesthetes compare their own involuntary color hearing to Messiaen's while also introducing non-synesthetes to Messiaen's sound world by giving them colors to think about for each mode. Messiaen later includes color indications in the score, written in his middle and late stages. It may be helpful for the performers to publish an edition with colors written under the tempo markings. Acknowledging the complementary colors may help the performer with phrasing decisions, and it should offer the audience another layer of the music to contemplate beyond the pitches, dynamics, timbres, and textures that their ears are accustomed to processing in a performance. The analysis provided here might also inform aspects of performance such as on-stage visual aids or multimedia installments such as lighting for multi-media events.

CONCLUSION

Why does one need to study the personal, subjective experiences of Messiaen? Is it absolutely necessary that the audience be immersed in his compositional technique and the reasons it developed the way it did? The answer is no. Still, the Modes of Limited Transposition that Messiaen systemized invite the audience to take a closer look at how he perceived music and perhaps even try to experience a version of color-hearing themselves. Thus, in-depth color analysis can provide valuable insight into Messiaen's music and his systematic ordering therein.

The audience's own subjective experience is of value as well—possibly even higher value than Messiaen's own. If one were to have a synesthetic experience of his or her own while listening to Messiaen's music, that experience has aesthetic and artistic value, regardless of whether the colors seen matched exactly what Messiaen saw. In fact, a compare-and-contrast study of different synesthetes' reactions to Messiaen's music may well serve as a style guide in and of itself. Even as a non-synesthete, the suggested color association intrigued me, and the interest that sparked in a violin lesson ended up broadening my perspective on musicality far beyond the pedagogical tasks at hand on the violin.

The close link between music, literature, and art has amplified the growing interest in synesthesia. Synesthesia research has seen enhancement over in recent decades, however, due to the sheer number of synesthesia types, the research is a somewhat slow, tedious, and ongoing process. With this thesis, I urge readers to be aware of the phenomenon and to acknowledge that the synesthetic experience is an involuntary crossover of the human senses—one which synesthetes are neither faking nor acting. The experiences of visually impaired synesthetes should be given equal acknowledgement as well.

By examining the close relationship between synesthesia and Messiaen's compositional technique, this thesis offers a reference guide both for musicians studying Messiaen's works and/or non-musicians interested in learning about how the two fields are related. For those interested in developing the analysis further, I would challenge the reader to listen to the recording of Messiaen's *Theme and Variations for Violin and Piano* with his color associations to determine if, and to what degree, one might relate.

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