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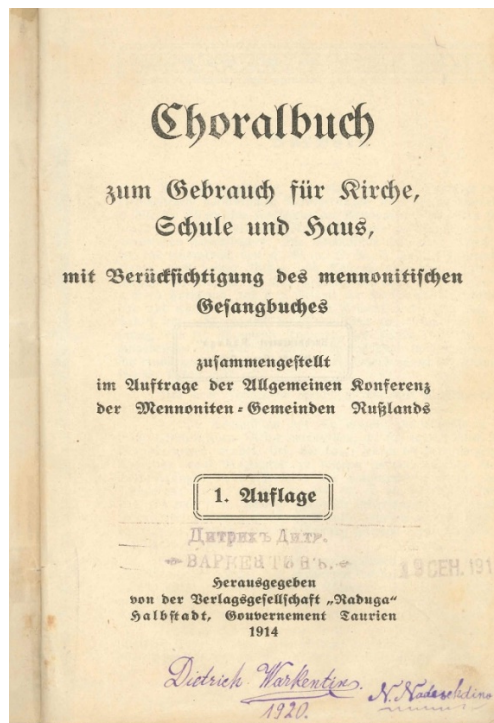
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The Story of the Ziffersystem and the Russian Mennonites: Counting Blessings

Emily Warkentin

A departmental senior thesis submitted to the Department of Music at
Trinity University in partial fulfillment of the requirements for graduation
with departmental honors.

29 April 2022



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Acknowledgments

Abundant thanks and gratitude to the Music Department Honors Committee for supporting me throughout my academic adventures this past year. Thank you to Dr. Leafstedt, my mentor and advisor throughout this project, whose guidance fosters continual growth; to Dr. Carolyn True, whose generous wisdom and advice keeps me centered daily; to my parents and sister, whose continual support encourages me daily; to my dear friends, whose kindness keeps me smiling; to my grandparents, Oma and Opa, whose music has given me an endless source of wonder.

Thank you to the Trinity University Music Department, who have instilled in me an unshakable appreciation for the community that is found in music—a community that I cherish daily.

Preface

Although I was unaware at the time, this thesis project began at the end of my sophomore year at Trinity University in the Spring of 2020. While taking a music history course, I chose to research the history behind a hymn book given to me by my grandmother. My work resulted in a short paper that attempted to summarize a chaotic scattering of sources gathered while working at home due to the Covid-19 pandemic. Somewhat satisfied with my work, I emptied my hands of the project at a mere 14 pages. I knew little of how I had barely scratched the surface on the wonderfully peculiar history behind this hymn book.

While deciding what to research for a senior honors thesis, I could not shake the idea that this hymn book carried much more of a story than I allowed it to tell. Armed with a vague sense of duty and enough curiosity to carry me to the moon, I dove back into my scattered research from two years prior. The result is this work before you.

I would like to take you, the reader, on an adventure similar to my own experience. The structure of this thesis is not particularly conventional, much like the structure of my hymn book. In all manners of presentation, I shall attempt to portray the ways in which this book slowly revealed its small, humble secrets to me. The hymn book is not a magnificent work of great genius, and neither is this thesis; it is merely a snapshot of how I have found remarkable wonder in simplicity. If anything comes of this thesis, I hope it is to encourage the reader to search for that same simple bliss around them—not to find meaning in it, but to exist with it, together with others. Music exists to facilitate a great many things, but I cannot understate how incredibly capable music seems to be of making us listen to each other. It is not the words that accomplish this, although they are certainly useful at many times. Rather, I think this is found in the *filling of space*—between

performers and their audience, between the singers in a choir, and between the notes in a chord. Music fills the space between our understanding of one another and opens up avenues of mutual agreement that cannot be found elsewhere. Regardless of how I analyze this experience—whether through music theory, musicology, psychology, sociology, philosophy—music is still just a lovely thing to behold. How comforting it is to know that no matter how much we think about it, or how little we think about it, or how big or small or right or wrong our ideas are, music never ceases to *be*—so long as there are willing makers.

Introduction

In the Summer of 2019, a peculiar book made its way into my possession. I was with my family on our biannual trip to Canada, during which we always visit as many relatives as possible and eat large amounts of *streusselkuchen* and *pierogies*. My Oma likes to give us books when we visit; some are novels that smell of bookstore memories, others are notebooks with pages ready to be sketched upon. But this book was different. It was a small hymnbook, barely as large as my hand, bound in thread and held together with blue tape along the spine. Its cover was faded past recognition and its pages yellowed and grey. Upon the title page lies a signature belonging to my great-grandfather, Dietrich Warkentin, signed in 1918. The title reads “*Choralbuch zum Gebrauch für Kirche, Schule, und Haus*” (Choralbuch for use in Church, School, and House). The entire book is in German, and the font is of a gothic style that makes it difficult to decipher. It was printed for the Russian Mennonite Conference in 1914 by the “*Raduga*” (Rainbow) publishing company found in the Halbstadt region of Taurida (a governorate of the Russian Empire near the Black Sea) in present day Ukraine. There are 158 hymns total within this book, including an appendix of 52 sacred songs attached at the back (Figure 1).

Altogether this hymn book might be wholly uninteresting, aside from the fact that it is over 100 years old and belonged to my great-grandfather. But it is not an ordinary hymn book at all. I was unaware at the time that my Grandmother had bestowed upon me not simply a hymn book but rather a curiously idiosyncratic work with a particularly fascinating history. The notation is not in the conventional four-part harmony on a treble and bass clef. In this hymn book the music is displayed in an unfamiliar numerical notation system, where each voice part is represented across a singular line with the numbers 1-7 (Figure 2).

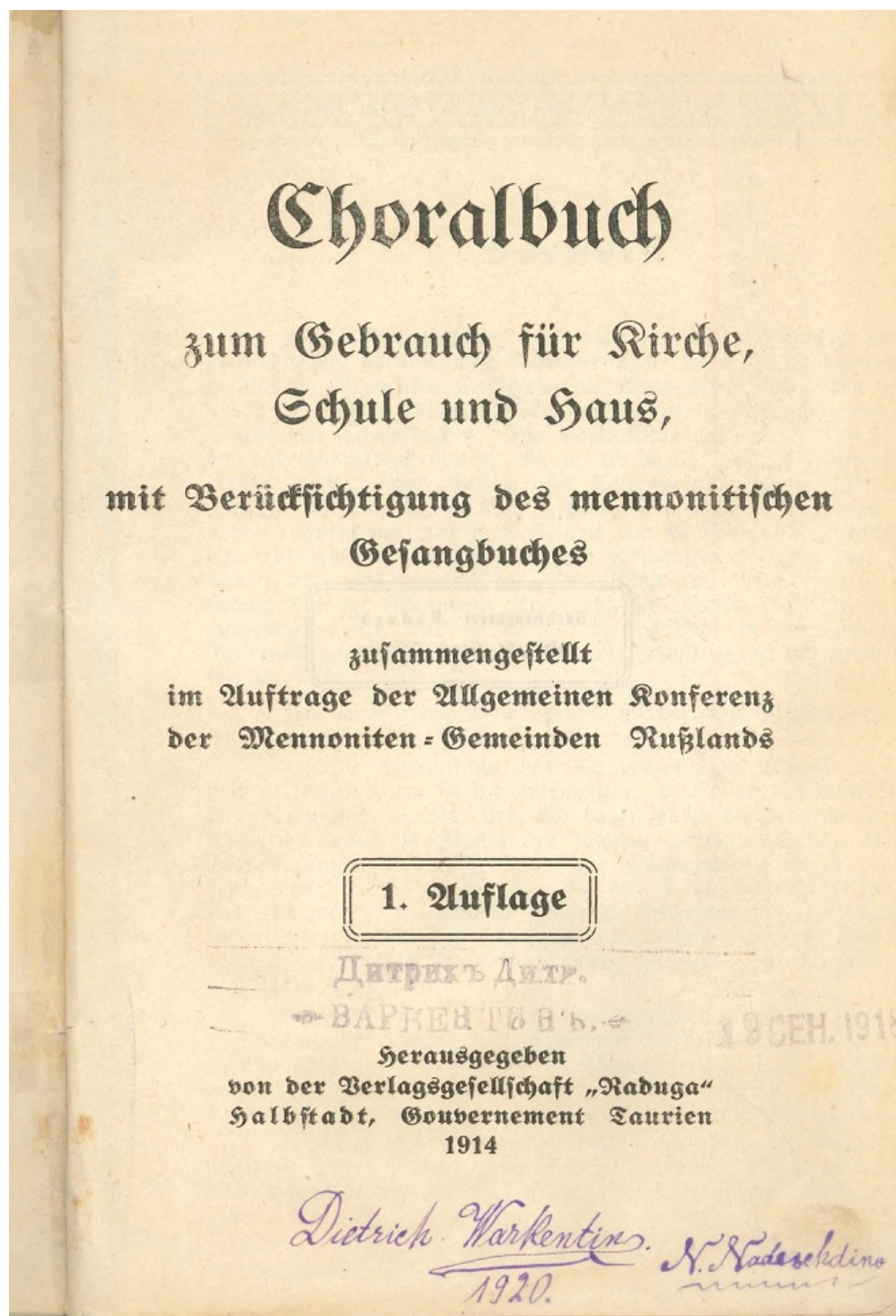
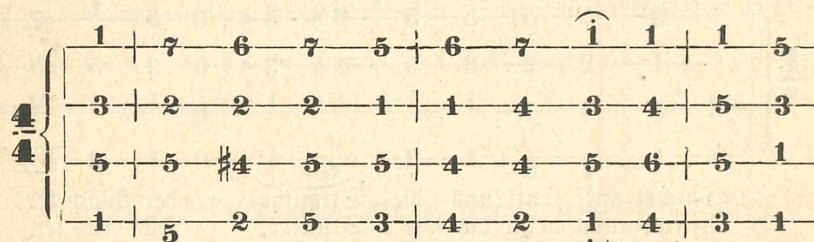


Figure 1. Choralbuch zum Gebrauch für Kirche, Schule und Haus. Halbstadt: Raduga, 1914. Title page. Signed by my great-grandfather, Dietrich Warkentin. Collection of the author.

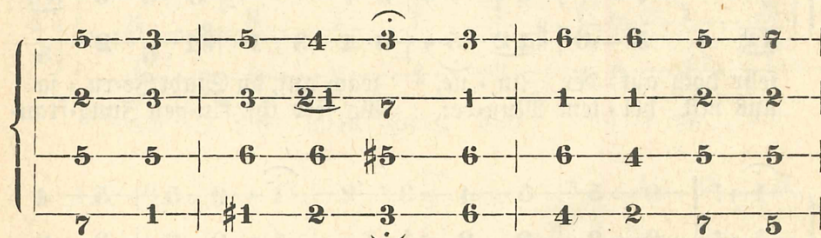
91. Vom Himmel hoch, da komm ich her.

C dur, a=6.

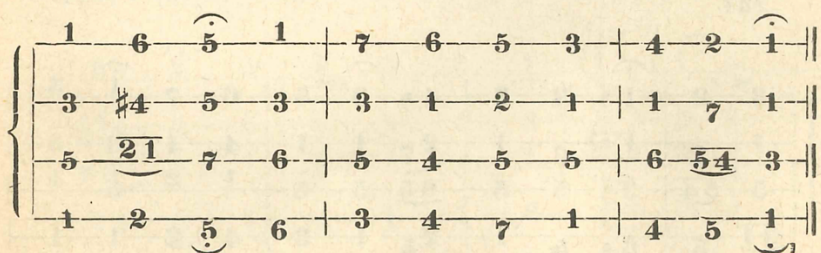
1539.



Vom him - mel hoch da komm ich her und bring euch

ganzz heimel ein ich her wünsch. den Tag den

gu - te neu - e Mär, der gu - ten Mär bring

früherstun Gebirg, in. faden ein ich

ich so - viel, da - von ich singu und sa - gen will.

früh singt, sing ich den faden ein unend. kind.

Figure 2. "Von Himmel Hoch." Hymn no. 91 from Choralbuch zum Gebrauch für Kirche, Schule und Haus. Halbstadt: Raduga, 1914. Annotations in unknown hand. Collection of the author.

None of my professors at Trinity University were familiar with this notation, and a quick Google search yielded disappointingly vague information about its origins. No one I spoke with, in fact, with had ever encountered anything like it before. While it shares some similarities with shape-note singing, it most clearly exists as an independent style of notation with separate origins.¹ Unfortunately, because it strays from conventional musical notation, there was little mention of anything closely related in the music history or anthology books I glanced through.² Such an ailment would prove to be a consistent vexation throughout my research. Venturing outside the confines of music books and databases and into an ocean of religious and historical accounts, I found solace between the margins of *The Mennonite Encyclopedia*, which I happened upon only by accident while perusing the library shelves for an entirely different book.³ This encyclopedia captures an incredible body of information through four volumes of collaborative work on the history and faith of the Mennonites. Entries for seemingly obscure and bizarre details, including my own last name, as well as the names of Canadian towns, teachers, prominent pastors, and publishing houses, all contribute to the Mennonite historical tapestry. Of most importance to me, however—nestled at the end of the fourth volume, taking up barely a quarter of a page—lies a singular entry that matches with the hymn book in my possession: *Ziffersystem* (directly translated,

¹ Harry Eskew and James C. Downey, “Shape-note hymnody,” *Oxford Music Online* (2001). Accessed 15 Apr. 2022.

² It is worth noting that many forms of musical notation exist, many of which I do not even know. Because my training as a musician is based on the Western European method of musical representation, when I use the phrase “conventional” or “standard” musical notation, I am referring to Western European musical notation as the system most common in this field of study.

³ A detailed reference for all things related to Mennonite and Russian Mennonite faith and history, which served as a general jumping-off point for any other information I gathered throughout this study, is found in *The Mennonite Encyclopedia*, ed. Harold S. Bender and C. H. Smith (Pennsylvania: The Mennonite Publishing House, 1959). This book is a wonderful collaborative feat that provides surprisingly descriptive insight into the history, traditions, and story of the Mennonites. It is a credit to the literary interests of the group at large that such a collection even exists, and a wonderful coincidence that I happened upon it in the shelves in Trinity University’s library, for I did not even know it existed when I was searching for sources in 2020.

“digit system”). It is a music notation system used in several communities across the world, championed most ardently by the Russian Mennonites.

Although it may at first appear confusing, the Ziffersystem acts as a simplification of conventional musical notation, using only the numbers 1 through 7 to indicate relative position on a diatonic scale. Omission of the standard 5-line staves allows the four-part harmonies to be stacked separately above one another on individual horizontal lines. Using a book such as the one pictured here, a singer might follow the top line while other members of a group follow the second, third, or bottom line. Technically, no absolute pitch corresponds with these numbers, so singers may perform the chorales in any chosen key (however some versions, such as the hymnal in my possession, do indicate keys as well as location of pitch class ‘a’ within the context of the scale, such as “a=6 in C major”). Even more peculiar is the fact that since there are no octaves indicated, any voice part may sing any line; it requires no transposition of any kind. One might assume (as it is highly likely) that voice parts were written according to the conventional four-part representation, with the bass part on the bottom line and soprano on the top line. Yet the page indicates no named voice parts. As an alto, I could sing any of the four given lines in the range most comfortable to my voice. However, the harmonic traditions of Western European hymnody (which dictate the bass most often provides the root of the chord) can still be observed in the four parts—with the top line most often providing the melody, the bottom providing the root, and the middle voices providing the harmonic color.

On the surface, this notation system appears to be an obscure anomaly. It presents no theoretical advancement to an already well-established notational system. Furthermore, it brings with it a plethora of technical and logistical complications that limit the system’s applications. Due

to the space requirements of the individual voice lines, space most frequently allows for only one line of text, so any additional verses would have to either be memorized or referenced from an additional source (at the current moment I am unable to confirm whether this was actual common practice or not). As soon as pitches outside the ionian or aeolian mode are incorporated, or rhythmic durations beyond an eighth note are used, the page becomes generally cluttered (Figure 3). The use of vertical space across the page, moreover, might arguably be seen as inefficient, taking up much more room than necessary and preventing more nuanced notational differences from being used (compared with standard sheet music, which enables the use of two 5-line staves, where this notation only allows for four lines spaced far apart). Splitting voice parts to add an extra note to a chord here and there is not really possible, and notation for ornaments is virtually nonexistent.

But a question arises: were any of the complaints which I have just raised even relevant to its creators in the first place? If not, are any of these limitations truly limitations? Is a system incomplete or imperfect if it is only imperfect according to standards which it was never intended to uphold? The answers to such questions must be found in an understanding of the intent behind the Ziffersystem. If it was intended to replace the conventional Western musical notation system we currently use, then one might easily argue that the Ziffersystem does nothing that conventional notation cannot do better.

2. Auferstehn, ja auferstehn wirst du.

C dur, a=6.

C. S. Graun, 1758.

$\frac{3}{4}$
 $\left\{ \begin{array}{l} \underline{5^1} \underline{6} \mid \underline{5^7} \underline{1} \mid \underline{2.} \underline{4} \mid \underline{3} \mid \underline{2} \mid \underline{1^7} \underline{1} \mid \\ \underline{3^5} \underline{4} \mid \underline{5^4} \underline{5} \mid \underline{5.} \underline{5} \mid \underline{5} \mid \underline{4} \mid \underline{3^2} \underline{1} \mid \\ \underline{1,} \underline{1} \mid \underline{1^2} \underline{3} \mid \underline{2.} \underline{2} \mid \underline{1} \mid \underline{6} \mid \underline{5,} \underline{5} \mid \\ \underline{1^3} \underline{4} \mid \underline{3^2} \underline{1} \mid \underline{7.} \underline{7} \mid \underline{1} \mid \underline{4} \mid \underline{5,} \underline{3} \mid \end{array} \right.$

Auf = er = stehn, ja auf = er = stehn wirst du, mein

$\left\{ \begin{array}{l} \underline{6^5} \underline{1} \mid \underline{6^5} \underline{4} \mid \underline{4^3} \underline{3} \mid \underline{1,} \underline{7^6} \mid \underline{5^4} \underline{5} \mid \\ \underline{1,} \underline{3} \mid \underline{4^3} \underline{2} \mid \underline{2^1} \underline{1} \mid \underline{3,} \underline{3} \mid \underline{2,} \underline{2} \mid \\ \underline{6^1} \underline{1} \mid \underline{1,} \underline{7} \mid \underline{5,} \underline{5} \mid \underline{6,} \underline{5^6} \mid \underline{7^1} \underline{7} \mid \\ \underline{4^3} \underline{1} \mid \underline{4^5} \underline{5} \mid \underline{1,} \underline{1} \mid \underline{6,} \underline{7^1} \mid \underline{2,} \underline{5} \mid \end{array} \right.$

Staub, nach fur = zer Ruh. Un = sterb = lich Ge = ben

$\left\{ \begin{array}{l} \underline{5} \underline{6} \underline{7} \mid \underline{1.7} \underline{1^2} \underline{1} \mid \underline{1.} \underline{7} \underline{0} \underline{1} \mid \underline{2^1} \underline{7} \mid \\ \underline{2} \underline{\sharp 4} \underline{5} \mid \underline{6,} \underline{6} \mid \underline{6} \underline{5} \underline{0} \underline{5} \mid \underline{4^3} \underline{2} \mid \\ \underline{2} \underline{1} \underline{2} \mid \underline{2,} \underline{2} \mid \underline{2} \underline{2} \underline{0} \underline{1} \mid \underline{6^5} \underline{5} \mid \\ \underline{7} \underline{6} \underline{5} \mid \underline{\sharp 4,} \underline{\sharp 4} \mid \underline{5} \underline{5} \underline{0} \underline{3} \mid \underline{4^5} \underline{5} \mid \end{array} \right.$

wird, der dich schuf, dir ge = ben. Hal = le = lu =

$\left\{ \begin{array}{l} \underline{1.2} \underline{3} \underline{0} \underline{1} \mid \underline{2^1} \underline{7} \mid \underline{1,} \mid \mid \\ \underline{3.4} \underline{5} \underline{0} \underline{5} \mid \underline{4^3} \underline{4} \mid \underline{3,} \mid \mid \\ \underline{5^1} \underline{0} \underline{1} \mid \underline{6^5} \underline{5} \mid \underline{5,} \mid \mid \\ \underline{1,} \underline{0} \underline{3} \mid \underline{4^5} \underline{5} \mid \underline{1,} \mid \mid \end{array} \right.$

jah! Hal = le = lu = jah!

Figure 3. "Auferstehn, ja auferstehn wirst du." Hymn no. 2 from *Choralbuch zum Gebrauch für Kirche, Schule und Haus*. Halbstadt: Raduga, 1914. Collection of the author.

However, if the Ziffersystem was intended for something else—perhaps something one such as myself cannot immediately see, having been trained to use standard Western musical notation system like it is the only one to have ever existed—then it may not be flawed at all. In fact, the Ziffersystem may even contain some of its own amiable qualities that are absent from standard notation. Those qualities are easily obscured by the restrictive nature of human perception; being taught to view things a certain way, it is easy to dismiss other perspectives as inefficient or useless before even attempting to understand them. Logically, the fact that the Ziffersystem became so popular among a specific population for a significant duration of time points to a motivation beyond mere luck and chance. The Ziffersystem became so important to the Russian Mennonites that entire choral works such as Handel’s *Messiah* were re-written using Ziffern so that choirs could perform the work. And even *if* the Ziffersystem is merely a product of chance, why should we not dive headfirst into a rediscovery of something so abruptly unordinary and wholly untouched by music history textbooks?

To understand the intent behind the Ziffersystem, in other words, I cannot merely look at it through my eyes alone. I might experience the music and observe the numbers on the page, but I cannot make any claims of analysis or understanding without establishing a deeper context from which I can draw further connections. Music as a whole is not simply an aural experience. It is rather silly to assert the meaning of a musical work without any historical or sociological background. Of course, one could argue that music *can* be experienced solely on the aural plane, but I do not know how much meaning can be truthfully stated without some attempt to comprehend its context. If experiencing music in an emotional and cultural vacuum *is* possible, it is surely a more fleeting form of musical interaction. Music without personal context (either from

the self or an external party) is no different from the cars on the highway or the monotony of voices at a party (and yet, even the most ordinary of sounds may become music to the listener who draws a personal connection with what they hear). In this case of this hymn book, then, the most logical context in which to insert myself is that of the Russian Mennonites.

I find I actively enjoy the musical experience much more deeply when I allow myself to connect to something beyond the literal sound. Whether I connect to an emotion, an idea, a person, a community, or a tradition, music catalyzes a unique synthesis between myself and something *more*. Even if one is not actively thinking about a composer's intent, or the history of a song, the mere act of participating in music (through performance or listening) enables the channeling of that synthesis. How much greater that synthesis is amongst a group of people who simultaneously partake in such music, I can only begin to describe. This topic is quite intriguing to musicians and scientists alike, and a multitude of studies demonstrate both the physical and psychological benefits of collective music-making.⁴ While science grants insight into the present wonders of our tonal landscape, history grants insight into the tonal worlds from which we have grown. Such an exploration of things beyond myself is strengthened when I open the doors to the past, allowing a collision of perspectives to inform the present. It is with this idea in mind that I explore the history of the 1914 Chorallbuch, in the hopes that its music will come alive in a form truer to its beginnings over 100 years ago.

⁴ Among many scientific articles on benefits of collaborative music-making, Vickhoff et al., (2013) "Music structure determines heart rate variability of singers" and Grape et al., (2003) "Does singing promote well-being?" present evidence in favor of the biological benefits of musical engagement. Such benefits include heart-rate regulation and support for cardiovascular health as well as general well-being and emotional regulation.

Chapter 1: Music and the Mennonite Faith

The history of the Russian Mennonites is a tapestry of intricate historical, political, and religious forces that tells the story of a people who, in the face of both prosperity and persecution, fostered an enduring community not just in a religious manner but in a way of every-day living as well. This vivid sense of community pervades the detailed records, writings, and traditions of the Russian Mennonites, dually evident in their words and music. In addition to historical literature, I have at my expense a memoir from my great-grandmother, Katie Warkentin. She grew up in the Crimea region of the Mennonite settlements before moving to Canada and marrying my great-grandfather Dietrich. Her memoir has allowed me to infuse my research with some very personal elements and first-hand accounts of the history which I will lay out here.

Mennonite theology is among the younger religious bodies to have emerged from Christianity. It blossomed from a radical branch of Zwinglianism in Zurich, Switzerland, in the early 1500s, building an identity both as a reaction to Catholicism and as an extension of certain Protestant ideas.⁵ The Swiss theologian Huldrych Zwingli made several monumental contributions to “Reformed Protestantism,” leading a life described by the Mennonite Encyclopedia as “[showing] more vitality than unity in his life and thought,” during which his own theological opinions and doctrine shifted significantly. Zwingli’s beliefs stemmed from a kind of “patriotic-humanistic pacifism” that combined his education in humanistic studies and a rediscovery of the “purer, simpler, more demanding faith” depicted in the New Testament.⁶ He spearheaded the

⁵ For a more detailed exploration of the Mennonite’s origins, see Henry Smith, *Smith’s Story of the Mennonites* (Kansas: Mennonite Publication Office, 1957).

⁶ “Zwingli, Huldrych,” from *The Mennonite Encyclopedia* v.4, 1052-1054.

reformation of the church in Zürich, building a following that would eventually cling neither to Lutheranism or Catholicism.

While Zwingli actively advocated for sermons given straight from the Gospels, for city school development, and eventually for the abolition of Mass, his younger followers determined he was making too many conservative compromises with political authorities at the time. The year 1523 marked a turning point for these young followers, as Zwingli supposedly contradicted his theological beliefs in a series of compromises made with the state on the timeline of reforms to be made within the church in the next few years. In 1525 a group of followers lead by Conrad Grebel and Felix Manz left Zwingli's church out of disapproval and unsatisfaction with the leadership. Rejecting particular Catholic conservatism, these "radical" Zwinglianists desired a simplification of the church service and a more personalized connection to their faith. This included similar modifications such as reading from the Bible directly, the abolition of mass, dissolution of monasteries, and the reduction of worship extravagance. But the additional rejection of infant baptism was what earned the group their name: the Anabaptists.

Even more radical, perhaps, was their notion that religion existed entirely separate from political authority and ecclesiastical hierarchy.⁷ The Anabaptists asserted that religion was a matter of individual choice. Congregations remained pure by ensuring the individual spiritual strength of each and every one of its members. This simultaneous weight placed upon both the individual and the aggregate would prove to be a pivotal factor in music development later on.

The ongoing influence of the Protestant Reformation brought with it the development of several more groups of Anabaptists across Europe during the 16th century. Anabaptist ideas

⁷ Smith, *Smith's Story of the Mennonites*, 4.

particularly flourished in regions where political persecution instigated unrest. Their message of peace and belonging amidst deep persecution spread like wildfire, catalyzed, rather than quenched, by pain and suffering (Figure 4). It was not until the 1530s, when Menno Simons took up the mantle of leadership during a period of instability, that two major groups of Anabaptists in Switzerland and the Netherlands became known as the Mennonites. While violent oppression and religious persecution pushed the Swiss Mennonites to the Palatinate, a region of southwestern Germany, Mennonites from the Netherlands fled to Prussia. Centuries later around 1786, some groups of Mennonites were established in North America. While I discuss Russian Mennonite immigration to North America later on in this chapter, it is important to note that this earlier wave of migration to North America was not connected to the Russian Mennonite settlements, but rather developed in parallel with the groups which are detailed below.⁸

⁸ Frank H. Epp, *Mennonites in Canada*, (Toronto: Macmillan 1974), 47.

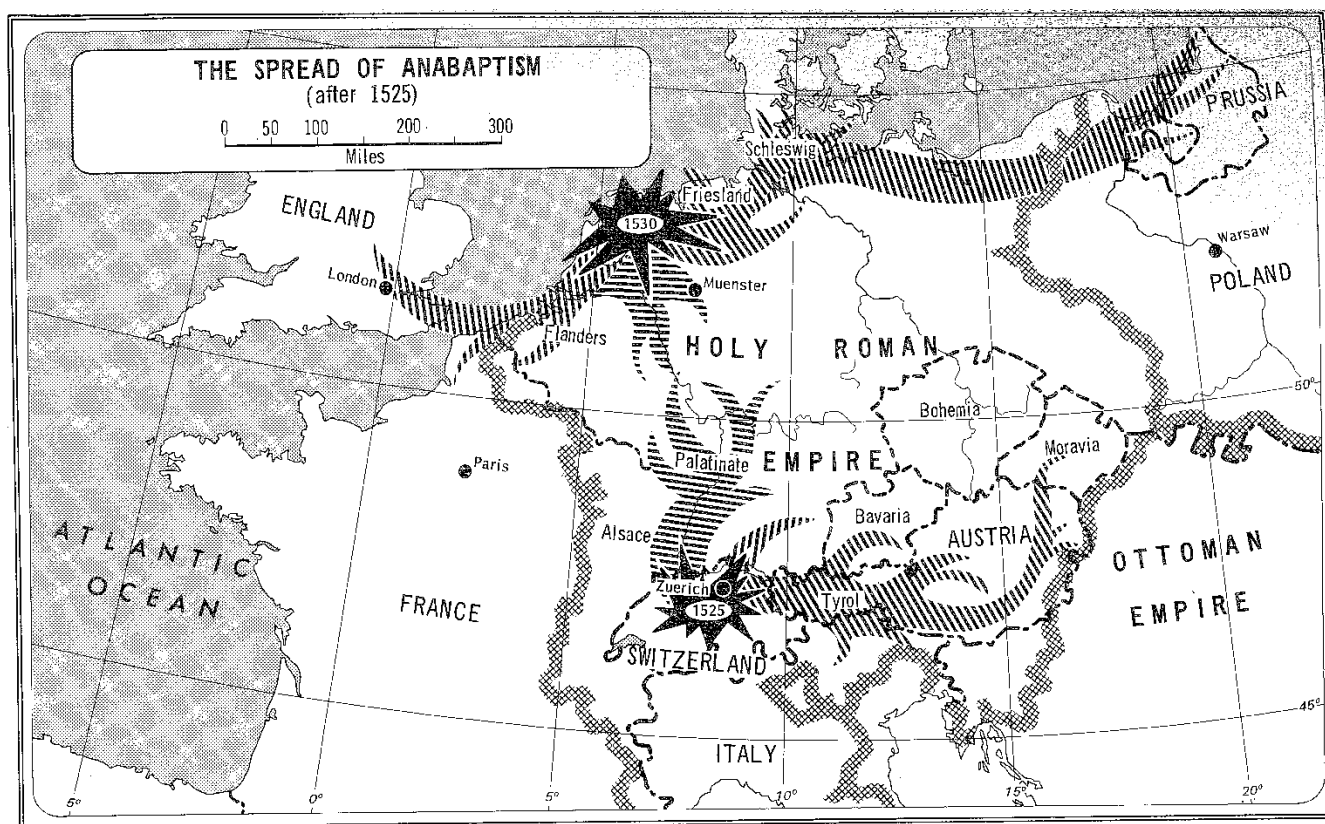


Figure 4. Map of the Spread of Anabaptism. As reproduced in Epp's *Mennonites in Canada*. Toronto: Macmillan, 1974.

The pacifism that defined these Mennonite groups would prove to be a major cause for migration across Europe in subsequent centuries, as many political and religious leaders found such pacifism to be treasonous.⁹ Unfortunately, as is the case across history for pacifist groups, governments in power frequently view lack of military participation as lack of support or alliance with one's government. For the Mennonites, German and Prussian governments viewed their military absence with skepticism, often limiting their resources and liberties in an attempt to control a prosperous people who were perceived as a political threat.

⁹ Smith, *Smith's Story of the Mennonites*, 12-15.

Mennonites living in Prussia faced distinct political unrest during the military reign of Frederick the Great (1740-1786), who found it difficult to justify the support of a people who were so rapidly growing and yet did not supply any military assistance.¹⁰ Taxations and land limitations made it difficult for the farming community to grow, and further militarization of the Lutheran church made it difficult to practice their faith. The Mennonites of the Danzig region grew particularly discontent and restless. In 1783 the Crimea was annexed into Russia. The ruling power of Russia, Catherine the Great, began looking for farmers to settle the newly acquired land. In 1786 she extended her 1762 manifesto inviting immigrants to settle the farmland in exchange for relative religious and political freedom. Here, in this far away region of Europe, exemption from military involvement and relatively relaxed government regulations promised an opportunity for Russian Mennonites to establish a closely-knit society centered around the church and separated from the influence of neighboring peoples.¹¹ An edict in 1789 in Danzig which prohibited Mennonites only fortified the conclusion that a great migration would be needed to sustain

While the Prussian government did not want the Danzig Mennonites to grow any larger than they already were, it also did not want to lose such a valuable resource. By now the Mennonites had formed flourishing farming communities, a desirable asset for both the vast lands of a newly expanded Russia as well as for their current Prussian homelands (and something both Canada and the United States would compete for later on). Because of this, only the poorest members of the Mennonite community were first granted permission leave Danzig, while those

¹⁰ More details about military and religious powers at play can be found in Epp, *Mennonites in Canada*, 47-63.

¹¹ Further historical information on the Mennonites found extensively in *The Mennonite Encyclopedia* and *Smith's Story of the Mennonites*.

higher in socioeconomic status were denied passports. For this reason, Chortitza—or “Old Colony”, the first Russian Mennonite colony to be established during the wave of immigration in 1788—suffered greatly for the first few years (Figure 5, No. 1). The land was difficult to farm by a people who had such limited resources that even marriage and funeral rites were difficult due to a lack of pastors (as was tradition at the time, pastors typically came from families of high socioeconomic status because the position was unpaid).

In 1804, Alexander I of Russia issued yet another manifesto, prompting a second wave of Mennonites to immigrate to the surrounding region known as Taurida along the Molotschnaya river. It was in the Governorate of Taurida that the hymnal in my possession was printed. The largest and most successful colony in this entire area became known as Molotschna (sometimes referred to as Halbstadt, especially in German texts) (Figure 5, No. 2). This group made much swifter progress economically, as they settled on lands more fertile than the Chortitza region. The members of this group were also much more well-to-do than the first wave of immigrants, bringing more wealth and farming skills to the region. Before long, the Mennonites established a flourishing group of colonies in the southern region of Russia, aided in part by the relaxed permission of the government and the strength of their own people in skills of farming and communal living. Colonies in the Crimea region also became well established—my great grandmother made a note of selling butter in Simferopol (Figure 5, No. 3).



Figure 5. Map of Russian and Ukraine regions of Mennonite settlements. As reproduced in *The Mennonite Encyclopedia*. Annotations by the author.

Following the pattern of many political-religious relationships, the prosperity and freedom found in the earlier Russia of the 1700s began to change in tandem with changes in government.¹² By 1872, the Russian Mennonites grew wary of losing their military exemption privileges. They attempted to secure assurance by meeting with the tsar to discuss alternative forms of contribution to the government such as working in hospitals. Such assurance could not be found. By the 1870s, then, groups of Russian Mennonites began moving across the Atlantic in search of similar freedoms they had once found in Russia. Such a large migration, however, proved difficult; colonies such as Molotschna and Chortitza had grown quite prosperous and established under previous Russian privileges. It is never easy to uproot an entire community, and it was no easier for the Russian Mennonites who had come to call this land their home.

Together these Russian settlements had become a “Mennonite Commonwealth,” comprised of self-contained “cultural islands” which were highly prosperous both due to the hard work of the Mennonite people as well as the reasonably amiable conditions under which they originally prospered. Large family estates often supported entire schools and micro-societies, such as that of my great-grandmother’s family. In her memoir, she describes how “many Mennonite families had become quite wealthy... and could afford to hire their own private tutors and thus operate their own schools...[which] usually were located right on the farmsteads.”¹³

The tight-knit nature of Russian Mennonite society became a highly key characteristic of daily life. While this made it easier for the group to survive hardships during difficult seasons, it also made it difficult to consider migrating again. So, while discontent drove a wave of Mennonites to Canada in the late 1800s, some elected to stay behind. Those that remained found decreasingly

¹² Epp, *Mennonites in Canada*, 161-184.

¹³ Katie Warkentin, autobiography. Collection of the author.

favorable odds, receiving little favor in their homeland during World War I due to the conflict between Germany and Russia. My great-grandmother wrote of the frequent harassment her family received when someone heard them speaking in German, once being chased out of a flower field by a group of men and their angry dogs. The turmoil that followed during the Russian Revolution deeply impacted the economic stability of the colonies. Groups of traveling soldiers and bandits were known to take supplies, livestock, and food. Of the scarcity and uncertainty that followed, my great-grandmother wrote: "We were never sure what would be taken next...The tense situation in Russia became worse, first political unrest and then the food shortage everywhere...Everything we used or needed became scarce."¹⁴ The country households with more resources opened their doors to refugees and travelers, and folks from bigger cities travelled to more rural areas to trade. But those resources became scarce even for the well-established farms. Coffee was given up for a substitute drink made from washed and roasted wheat kernels. My great-grandmother wrote of a crocheted bedspread that was unraveled to recycle into men's socks.

Eventually, those who had stayed behind in Russia also prepared to leave for North America, as "the once peaceful homeland was no longer peaceful."¹⁵ The motivation behind my great-grandparent's move from Russia to Canada is similar to that of many Russian Mennonites of the early 1900s. Groups of families immigrated in the hopes of gaining back the freedom to express their religion and to escape the growing turmoil of their homeland.

The vast lands of Manitoba and Saskatchewan proved quite suitable for such establishments. Unfortunately, due to the dangerous political climate at home, many families were given no choice but to leave behind much of their wealth and completely start over in the new

¹⁴ Katie Warkentin, autobiography. Collection of author.

¹⁵ Katie Warkentin, autobiography. Collection of author.

lands. My great-grandmother wrote about the first year in Manitoba after emigrating from Molotschna in the early 1920s: “Wages were meager in those days, barely covering the expenses for food and feed for the cattle. There was no crop the first summer, the rain had spoiled everything we had hoped for. Father had seeded grain by hand since we didn’t have any equipment for seeding yet.”¹⁶

Based on family records such as my great-grandmother’s memoir, as well as other historical sources, I know that my relatives had a substantial amount of farmland in the Crimea region before moving to Canada in the 1920s. They were among the more well-to-do families, as my great-grandmother wrote of a schoolhouse on their property. But by the time they made it to Canada, very few resources remained in my family’s possession. In spite of all the losses that happened over those years—the traveling between homes, several cases of lost or stolen luggage, and the general loss that comes with passing of time—the Choralbuch in my possession remained intact.

I am constantly in awe of these small pages that I hold in my hands. The pages I analyze now, sitting at my desk in a small apartment in Texas, are pages that have been touched by the soil of Molotschna, the ocean air of the Atlantic, and the gentle hands of those before me who have taken such good care to preserve the songs held within.

¹⁶ Katie Warkentin, autobiography. Collection of the author.

Music in Mennonite Traditions

Given that the general history of the Russian Mennonites begins only in the last few hundred years (1500-present), it is peculiar that such a strong identity emerged from an environment that fought against the preservation of this group. Then again, perhaps it is not so surprising at all, for it may be that the very forces at work to dismantle the group were simply fuel for a greater allegiance to one another. One of the most pronounced results of this allegiance is the depth of musical tradition formed amidst the social, political, and economic pressures of the time. The choral arts were and continue to be a defining characteristic of Mennonite communities across Russia and Canada alike.

The hymns found in the 1914 Choralbuch appear to be a collection of works written between the 15th and 19th centuries. Some are attributed to specific composers, but many remain anonymous. Some of the hymns are similar to those found in other books published in the 19th century by neighboring denominations. While many of the hymns do overlap with other denominations due to their shared origins in Western Europe, the tradition of hymnody within the Mennonite church is richly independent from other faiths. The often-strenuous conditions in which the Russian Mennonites first came to Russia made it difficult to maintain music in any physical form. During this time, many singers turned to oral traditions to preserve their musical heritage. Mennonite congregational singing most likely extends much farther than currently circulating records indicate, as most music was thus passed down orally prior to the beginning of the 19th century.¹⁷

¹⁷ Cornelius Krahn, "Hymnology of the Mennonites of West and East Prussia, Danzig, and Russia," in *Global Anabaptist Mennonite Encyclopedia Online*, 1956. Accessed 18 Apr 2022.

To understand the kinds of singing which took place and still occurs in some Mennonite churches, it is necessary to understand that there are different branches of Mennonite faith, and that some have particularly different styles of worship within their congregations (Figure 6). Among these branches are the General Conference Mennonites, the Mennonite Brethren in Christ, the Old Colony Mennonites (or Old Order Mennonites) and the Reformed Mennonites. The music from the 1914 Choralbuch was adopted and favored by the General Conference of Mennonites and Mennonite Brethren in Christ. Though the singing traditions of the Old Colony Mennonites do not typically include the type of choral singing I am examining, it is worth understanding the background of their music because many of their traditions influenced the development of and motivation behind the Ziffersystem.¹⁸

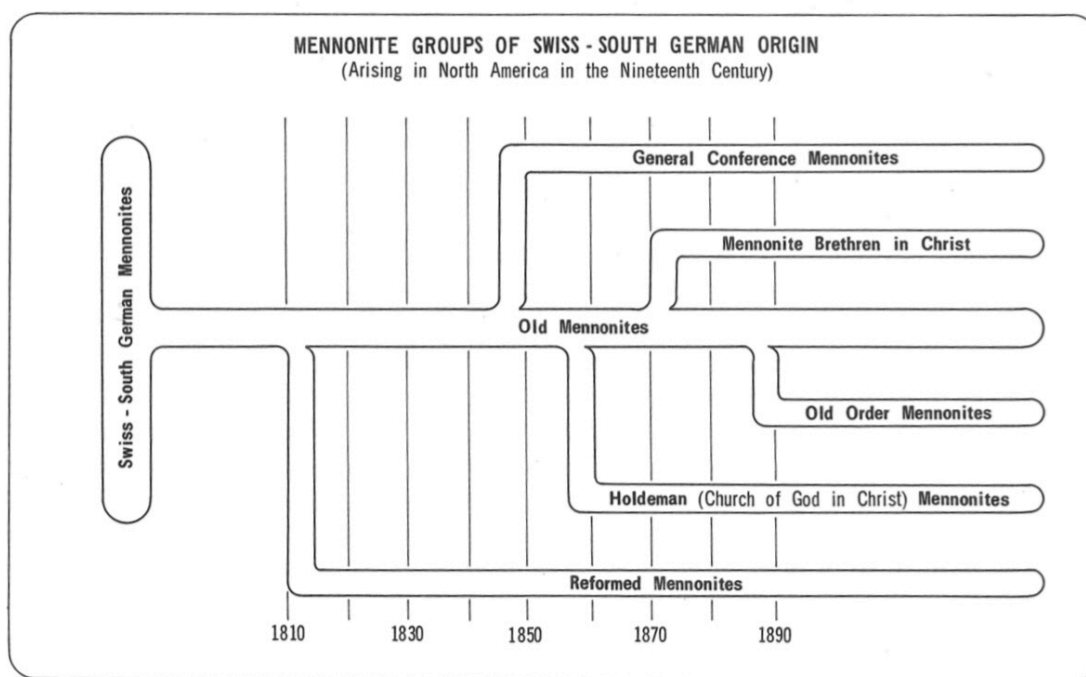


Figure 6. Mennonite Groups of Swiss-South German Origin. As reproduced in Epp's *Mennonites in Canada*.

¹⁸ For more information about the development of different branches of the Mennonite faith, see Epp, *Mennonites in Canada*.

The Old Colony Mennonites represent a branch of Mennonite faith that was revived during one of the mass emigrations from Russia to Manitoba in the late 1800s.¹⁹ Till at least as late as the 1990s, these Old Colony Mennonites still actively practiced the tradition of passing down tunes by ear. The style of singing used in such churches is possibly more representative of what Mennonite music may have sounded like prior to the shift to written music and choral singing. The Old Colony Mennonites practiced a style of music—the “Old Way of Singing”—that preceded and most likely motivated the revision of hymnody in the form of the Ziffersystem in the 19th century.

The Old Way of Singing centered around one to six *Vorsänger* (song leaders) who led the congregation in worship, announcing hymn numbers and singing interludes that helped the congregation transition to their next song. These vorsängers used a high laryngeal position and closed throats to produce a nasal, straight tone with limited vibrato and brassy timbre. This vocal style is so powerful that one researcher described hearing two vorsängers in a small room together as having “produced interference patterns and overtone clashes [he] had previously associated with trumpet duets.”²⁰

A vorsänger’s role was not only to lead the congregation in a spiritually accurate way of worship, but to also uphold the oral hymn traditions of the church. Curiously, though the vorsängers were extremely proficient in aural skills and memorization, they maintained limited vocabulary to describe the history or theory behind the music they were performing. This limitation emphasizes a trait common throughout Mennonite music: there is often a much larger

¹⁹ For a detailed account of Old Colony Mennonites and their musical history see Wesley Berg, “Hymns of the Old Colony Mennonites and the Old Way of Singing,” *The Musical Quarterly* 80, no. 1 (Spring 1996), 77-117.

²⁰ Berg, “Hymns of the Old Colony,” 84.

emphasis on the actual performance and reception of the music, not on the theory or technicalities of the music itself.²¹ The state in which singers *create* music remains more important than the state in which music is analyzed or discussed, because the creation of such music, not the discussion of it, facilitates the worshipful state desired by the Mennonites.

One must not mistake this priority of musical creation for a lack of theoretical or technical accuracy; I have in fact observed a great deal of painstaking effort by many Mennonite writers and musicians to maintain accurate records of traditions and cultural practices within the Mennonite community (the *Mennonite Encyclopedia* alone is testament to that). Rather, this favoring of performance over theory may be due to a general agreement that if the sources for musical production were already accurate (via the protection of that culture through external means such as record keeping and training), then energy during an actual performance should be spent engaging with the material on a spiritual level. This assumption depends, of course, on a knowledgeable entity which does the actual record keeping and training to ensure that such musical practices are in fact accurate and genuine.

The limited economic resources of more rural Russian Mennonite communities meant that the vorsänger maintained a crucial role in music programs for a significant length of time. Gradually, a gap grew between the musical traditions of Russian Mennonites and those in other parts of Europe. While the Classical Period was flourishing in Central and Western Europe, Russian Mennonites became quite removed from the mainstream musical culture. Little access to printing materials, low musical literacy, and difficulties of rural agricultural life in Russia restricted initial efforts to record and reproduce musical materials. While a mid-18th-century, text-only

²¹ Wesley Berg, "Gesangbuch, Ziffern, and the Deutschtum: A Study of the Life and Work of J. P. Claszen, Mennonite Hymnologist," *Journal of Mennonite Studies* 4 (1986), 8.

hymnal, the *Gesangbuch*, was often used in church services, such limitations in resources produced a common reliance on the vorsänger's memory and leadership.

A lack of theoretical emphasis in the vorsänger's training did not make technical accuracy impossible, but as has been observed by many scholars on the historical role of the vorsänger in Mennonite churches, it was quite easy for melodies to become altered after being passed down solely through oral tradition. This phenomenon has been observed in other congregations as well, in which the absence of any strict musical direction can lead to the development of slower, heavily ornamented, and melodically obscured singing.²²

Over time the vorsänger developed a specific style of musical presentation, frequently using embellishments throughout the hymns, making it difficult for congregations to follow along melodically or to memorize tunes. The combination of little theoretical understanding, confusing written records, and frequent inconsistencies within the actual hymns left some frustrated with the quality of musical worship. Some speculated that “even the angels [turned] away in offense” at the sound of the congregation slowly making their way through a complicated hymn.²³ Chorale melodies, once simple and lovely, became “gradually obscured and corrupted” by the grand embellishments that grew to be a central part of what is now labeled the “Old Colony” style of Mennonite singing.

One reason it is so difficult to obtain an accurate picture of the origins of Mennonite hymnology is that a large majority of the surviving descriptive records are negative critiques. Teachers such as Heinrich Heese, who taught in the colonies around 1818, voiced discontent against the “present-day disharmony” and “distorted singing” of the churches. A record from a

²² Berg, “Hymns of the Old Colony,” 80.

²³ Berg, “Hymns of the Old Colony,” 80.

man named Jacob Abraham Klassen recalls “endlessly long hymns from the Gesangbuch [that] were begun by the vorsänger of the congregation... with so many flourishes and embellishments that the melody became unrecognizeable.” And, during a visit to the colonies in the 1820s, someone wrote that “the singing is forced out of their throats and is shrill and loud beyond measure.”²⁴

While it is important to understand that many developments in Mennonite music stemmed from unrest or discontent with methodology, it is also important to recognize that my analysis today is somewhat biased towards the perspective of those who wished for change. My descriptions should not be applied holistically to the entire history of Mennonite music, but should rather be seen through a lens of cause and effect. It is not that the Old Colony way of singing was inherently unmusical or incomplete, but rather that those who disagreed with that style of singing were the quite vocal about the need for reform. Thus, the historical records which are most accessible are simultaneously the most critical of the Old Colony style of singing.

Oral traditions like that of the vorsänger allowed sustainable amounts of hymns to be passed on from generation to generation amongst the Russian Mennonites. However, when interest in reproducing these hymns at home or with a choir grew larger during the 1800s, it became necessary to print actual hymnals. At this point, a peculiar diversion from traditional musical notation occurred, and the Ziffersystem began to make appearances in some Russian Mennonite prints. From then on, it was quite common for a book (or books) of hymns to circulate for several years before revisions were deemed necessary and another commission was made. Sometimes new hymn books were made in order to replace or consolidate a wider assortment of

²⁴ Quotations from Berg, “Hymns of the Old Colony,” 79-81.

hymns. This pattern is seen earlier on with the Prussian Mennonites, who published a preface with a 1724 hymnal stating that its purpose was to make lighter the load which people were carrying with them to church, since “it was inconvenient to carry [various books] in a pocket.”²⁵

The hymns which were chosen for my ancestors’ 1914 Choralbuch were most likely selected for a number of similar reasons. The foreword at the beginning of the collection suggests a similar discontent with other circulating versions of hymnals and a desire for something more consolidated and accurate. For those reasons, the General Conference of the Mennonite Congregations of Russia commissioned a new publication in 1912. According to the foreword, much effort was taken to restore the chorales to a more “original” form (*ursprünglichen Form wieder herzustellen*). Notes about harmonic alterations and title changes are also included, with a note mentioning alternative titles that are printed below primary titles in the event that more than one hymn title was commonly used.

The subtitle on the opening page alludes to at least a partial motivation for the particular selections: “For Church, School, and House”. None of the hymns therefore are overly complicated, as they were intended for a wide range of use across a wide range of musical ability. It is worth noting that while the Ziffersystem has been used to represent a range of musical technicality, this particular Choralbuch was clearly not intended for extravagant musical demonstrations. Therefore, it is expected that most of the hymns contain moderately straightforward vocal lines which could be sight-read with a fair amount of ease by the average congregational singer or music student.

²⁵ Cornelius Krahn, “Hymnology of the Mennonites of West and East Prussia, Danzig, and Russia,” in *Global Anabaptist Mennonite Encyclopedia Online* (1956). Accessed 15 Apr. 2022.

The 1914 Choralbuch contains both lyrics and music, but it does not have any form of instructional material either at the beginning or the end of the book. This omission implies that the Convention assumed singers would obtain their education elsewhere or had already done so. While it is not entirely impossible to understand the Ziffersystem without any instructions, it is much easier to approach with some form of explanation first. But for those who grew up using the Ziffersystem, reading the numbers most likely became second nature. I myself have grown more accustomed to the notation after working with it over the past several years.

The musical traditions of the Russian Mennonites are infused with their political and religious history. In this way, the Ziffersystem is intricately bound to theological motivations that explain, in part, its prevalence in the Russian Mennonite community. However, the Ziffersystem also has its own history, one that is equally as necessary for understanding how such a notation came to find favor in this community.

Chapter 2: Historical Origins of the Ziffersystem

The Ziffersystem appears to have blossomed and faded in several pockets of Europe over a couple hundred years before taking root in the Russian Mennonite settlements of the 1800s. The exact origins of this method are difficult to trace, as there is no complete set of information that faithfully follows its use throughout history. Doing what I can to connect the dots, I cannot claim that what follows is the entirety of the Ziffersystem's history. To add to the confusion, some sources use "Ziffernsystem" and others use "Ziffersystem", while some refer to it only as Ziffern, cipher, or even *Zahlssystem*.²⁶

The history gathered here is incapable of being fully comprehensive, but it is as close an approximation as possible given the resources available to me. Both the Mennonite Heritage Centre in Winnipeg, Manitoba, and the Canadian Mennonite Bible College hold collections of artifacts containing Ziffern. There are many dots to be connected from these sources, and it is possible that many more will be revealed in years to come.

Sources inconsistently name different contributors to the number notation, but it is most commonly attributed to 18th- century philosopher Jean-Jacques Rousseau. However, some scholars mention an earlier form of number notation used by Jean-Jacques Souhaitty, a 17th century Franciscan monk living in Paris.²⁷ Souhaitty published two works in 1677 and 1679 that suggested the use of a number notation (*Nouveaux Elemens de Chant* and *Essai du Chant de l'Église par la Nouvelle Methode des Nombres*), describing its functionality for simple hymns and psalms that could

²⁶ For the purposes of this analysis, I will refer to the number notation as the Ziffersystem and the actual ciphers that make up the Ziffersystem as Ziffern, because those are the terms used by the primary sources I reference most frequently.

²⁷ Albert Cohen, "Souhaitty, Jean-Jacques," in *Oxford Music Online* (2001). Accessed 15 Apr. 2022.

easily be depicted with numbers 1-7 as well as the number system's applications to a wide variety of liturgical uses (Figures 7, 8, and 9).

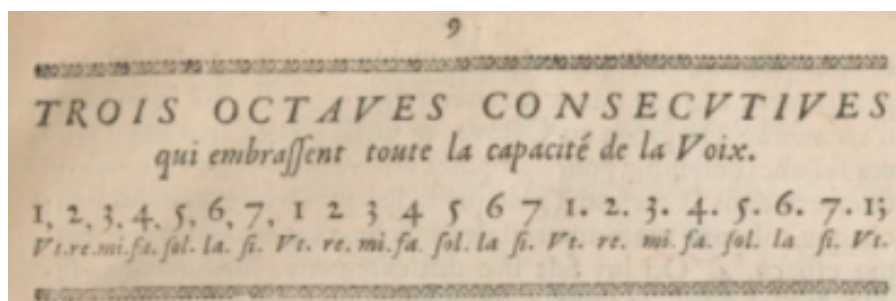
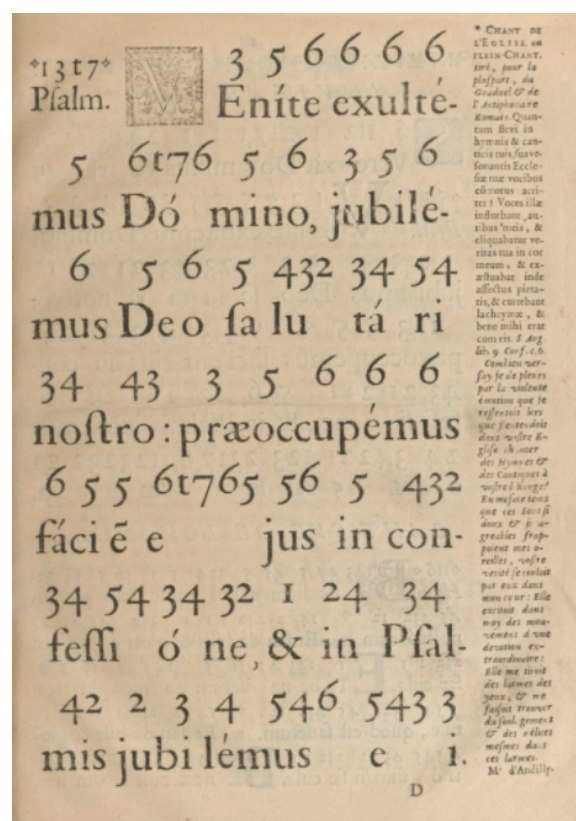
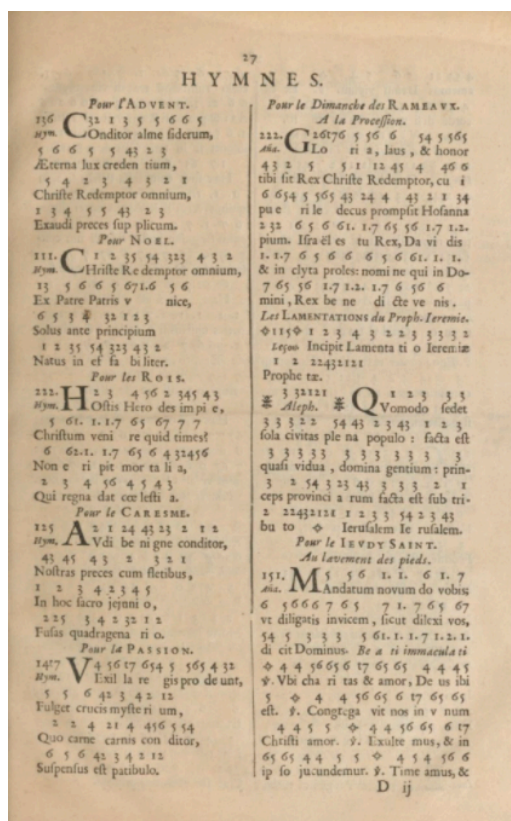


Figure 7. Souhaitty, Jean-Jacques. *Nouveaux Elemens de Chant* (1677). Digital scan from openlibrary.org.



Figures 8 & 9. Souhaitty, Jean-Jacques. *Nouveaux Elemens de Chant* (1677). Digital scan from openlibrary.org.

It is unclear whether Souhaitty found any true followers in this new method. While the fact that he published a second work two years after the first implies that it was not an entirely catastrophic idea, there is no indication that his number system developed beyond his own writings. Souhaitty's system incorporates notation for up to three octave displacements and accommodates one melodic line, which is placed directly above the text (Figure 9). While the system is not notably efficient for anything beyond one line, it is a fairly effective use of space if one desires to notate hymns that are generally well known by a group of people.

The more common name attached to the Ziffersystem's history is Rousseau, a name most often recognized in the realm of philosophy (and sometimes recalled in the realm of music). While many know Jean-Jacques Rousseau today for his philosophical contributions, he was well known in Paris for his understanding of musical mechanisms.²⁸ In 1742 he presented a 'new' notation system to the Academy of Sciences in Paris. This system included numbers 1-7 in a solfege-based relationship. This was a tool with which students could more easily learn their music, keeping them from getting distracted by the unnecessary lines and markings on sheet music and enabling faster estimation of intervals during sight singing.

Rousseau's grand idea was rejected by the Academy. However, he went on to publish both *Project concernant de nouveaux signes pour la musique* in 1742 and *Dissertation sur la musique modern* in 1743, both which described a number notation system and its applications (Figures 10 and 11). He had strikingly specific opinions about how music should be conducted and argued that music originated as a form of heightened speech. Perhaps this is why his proposed number system did not extend very well to instrumentalists; his focus was primarily vocal, the goal being to enable

²⁸ Eric Taylor, "Rousseau's Conception of Music," *Music & Letters* 30, no. 3 (July 1949): 231-242.

students to sight-read efficiently and accurately.²⁹ But alas—in spite of Rousseau's lofty and righteous motivations, the system did not find favor among many at the time, and the numbers were left to rest for the time being.



Figure 10. Rousseau, Jean-Jacques. *Projet concernant de Nouveaux Signes pour la Musique* (1742; later Geneva printing, 1781). Digital scan from openlibrary.org.

²⁹ Catherine Kintzler, "Rousseau, Jean-Jacques," in *Grove Music Online*, (2001), accessed 23 Feb. 2022

SUR LA MUSIQUE MODERNE. 211

ré ----- gne cans mon

c $\underline{1\ 7\ 6}, 5\ 6\ 4\ 5 \mid \underline{3\ 2}, 1\ 2\ 3\ 4 \mid 5, 6\ 4\ 5 \mid \underline{6\ 7}\ \dot{1}\ \underline{6}$

b $5\ 5, 7\ 5 \mid \dot{1}\ 1, 1\ 1 \mid 7\ 7, 7\ 7 \mid 6\ 6, 6\ 6 \mid$

ame des mortels & des Dieux doit être le vain-

b $\dot{2}, 2\ 1\ \underline{7} \mid \dot{1}, 1\ \underline{2} \mid 3, 1 \mid 6, 6\ 6\ \underline{7}$

a $5, 4 \mid 3, 2 \mid 1, 3 \mid 2, 2 \mid$

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c $\underline{5\ 1}\ \dot{1}, \underline{5\ 3} \mid 6\ 6, \underline{7\ 1} \mid 2\ 1, \underline{7\ 6} \mid 7\ 6, 5\ 5\ 2\ 4 \mid$

a $1, 0\ 3 \mid 4\ 4, 4\ 4 \mid 4\ 4, 4\ 4 \mid 5\ 5, 7\ 5 \mid$

d $3\ 5\ 1\ 3, 2\ 5\ 7\ 2 \mid 3\ 5\ 1\ 2, 2\ \underline{1} \mid 3\ 5\ 1\ 2, 2\ \underline{1\ 2} \mid$

b $\dot{1}\ 1, 7\ 5 \mid \dot{1}, 7\ 5 \mid \dot{1}\ \dot{1}, 7\ 5 \mid$

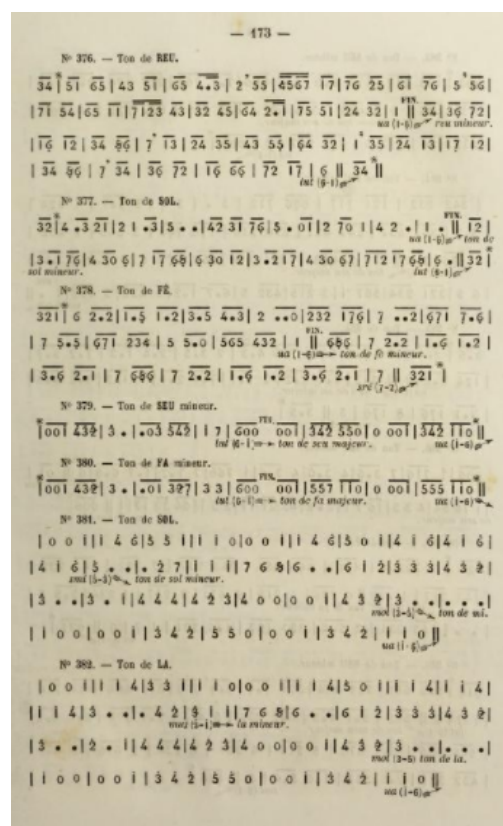
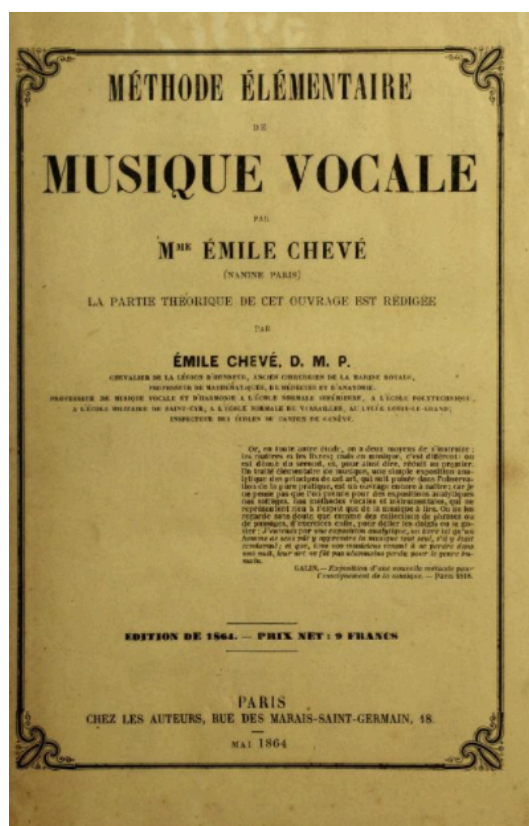
L'objet qui

d $3\ 5\ 1\ 2, 2\ \underline{1\ 2} \mid 1\ 3\ 1, 5\ \dot{1}\ 3\ 5 \mid 1 \parallel b, 0\ 5 \mid 5, \dot{1} \mid$

b $\dot{1}, 4\ 5 \mid 1\ 3\ 1, 5\ \dot{1}\ 3\ 5 \mid 1, 0 \mid 0\ 1, 3\ 1 \mid$

Figure 11. Rousseau, Jean-Jacques. *Project concernant de nouveaux signes pour la musique* (1742).
Digital scan from openlibrary.org.

Almost a hundred years later, the French music educators Pierre Galin, Aimé Paris, and Emile Chevé popularized Rousseau's system with slight modifications. While it did not reach the same popularity as standard notation, the Galin-Paris-Chevé method gained support within certain circles of music educators, finding faithful followers by spreading through the teacher-training colleges and the École Polytechnique.³⁰ This version of the number notation was described by Emile Chevé and his wife Nanine in *Méthode élémentaire de musique vocale*, first published in 1844 (Figures 12 and 13).



Figures 12 and 13. Chevé, Émilie. *Méthode élémentaire de musique vocale* (1864). Digital scan from openlibrary.org.

³⁰ For more details on the French development of number notation, see Bernarr Rainbow, "Galin-Paris-Chevé method," in *Grove Music Online* (2001). Accessed 25 Mar. 2022.

Several East Asian alternative musical notation systems also exist, such as Jianpu, which was most likely borrowed from the Galin-Paris-Chev  method.³¹ Intricacies in the way these systems are connected may be of some interest for future research, as there appears to be a pattern in alternative notation development and its utilization around the globe. It does not appear to be simply chance in that other alternative notation systems use methods similar to the Ziffersystem.

I cannot argue whether the Ziffersystem is the most well-known of the number systems because it is the most efficient of alternative notation styles or because it is the most documented alternative system (aside from shape-notes). Ultimately, however, regardless of where and when the number notation originated, it was not championed anywhere else quite like it was by the Russian Mennonites. They adopted and adapted the system to their particular needs and propelled it into popularity within their community for nearly 100 years. Perhaps Rousseau would have been generally excited to know how valuable his number notation suggestion became to this particular group of people.

Introduction of the number system to the Russian Mennonites is typically attributed to Heinrich Franz, although a man named Bernhard Natorp introduced a similar system in Germany in the early 1800s.³² Franz was a largely influential teacher in the Russian Mennonite community for 50 years, teaching actively from 1832-1880. Born in 1812 in West Prussia, he moved to southern Russia in 1832 to teach in the Chortitza Zentralschule, where he became known for his “draconian severity” in school. Highly influential in the school system, Franz particularly excelled

³¹ Jonathen P. J. Stock, “Since 1911,” from “China, People’s Republic of,” in *Oxford Music Online* (2001). Accessed 15 Apr. 2022.

³² “Ziffersystem,” from *The Mennonite Encyclopedia v.4*, 1027-1028.

at teaching German and arithmetic subjects such as elementary algebra and geometry.³³ While he was known in the Russian Mennonite community for developing arithmetic tables, his affinity for numbers impacted the music community as well.

Franz felt generally dissatisfied with the musical practices of the Russian Mennonite community. At the time, musical traditions were mostly oral, like the aforementioned Old Way of Singing. The harsh conditions of migration had left the music of the Russian Mennonite church in a state of limbo, caught between the necessity of strict adherence to tradition and the inevitable shifts and changes that occur when a group is so often on the move. So, Franz took it upon himself to publish a new Choralbuch that could remedy the severe musical ailments of inconsistency, inaccuracy, and musical illiteracy he observed. In the preface to his first Choralbuch, published in 1860, he wrote: “experience shows...that the holy art of singing has lost much of its beauty, clarity, correctness, preserved and propagated as it is solely by ear.”³⁴ He went on to speak of the changes necessary for a musical reform long overdue that would restore the “purity and consistency” of the music sung in colony schools and churches. But a rather large obstacle stood in the way of these goals.

Franz recognized that, if his teachings were to create any change at all, this Choralbuch needed to be quite different from previous versions of Mennonite hymnals. The Russian Mennonite community, however, was not in a place to abruptly pick up musical literacy. And he certainly could not teach about consistency and technical accuracy using the oral traditions that

³³ Benjamin H Unruh and Richard D. Thiessen, "Franz, Heinrich (1812-1889)," in *Global Anabaptist Mennonite Encyclopedia Online* (2010), accessed April 10, 2022.

³⁴ Berg, “Hymns of the Old Colony,” 81.

had, in his opinion, lead to the very faults he was attempting to address. The solution, it seemed, was in numbers.

And so was born the *Ziffersystem*.

Joining the ranks of number system enthusiasts from over the years, Heinrich Franz began implementing his *Ziffersystem* into his teaching. It was a system that could accommodate both the young minds of schoolchildren and the adults who were not accustomed to reading sheet music. His number system appears to use a combination of Bernhard Natorp's pitch representation, several of the French elements mentioned earlier, and some original additions as well.³⁵ Rather than requiring an understanding of key signatures and note literacy, the number system only required a general knowledge of half and whole steps. The *Ziffersystem* succeeded tremendously. It was the perfect solution for a community eager to engage in musical practices but equally limited by resources and time. Even the more conservative members of the community who remained proponents of oral traditions adopted elements of the *Ziffersystem* for categorization purposes.

As mentioned, Franz compiled his first Choralbuch in 1860 using the *Ziffersystem*, published as *Choralbuch Zunächst zum Gebrauch in den mennonitischen Schulen Südrusslands* (Choralbuch, the first for use in the Mennonite Schools of Southern Russia). The system used within its pages would become the foundation for Russian Mennonite choral traditions for years to come. The book itself lived on through several cycles of further modification and republications, including a second publication by Franz in 1880 (which happened to be published by the prominent publishing company Breitkopf & Härtel). The 1914 Choralbuch in my possession is a distant relative of Franz's original publication. The fact that Heinrich Franz was a

³⁵Berg, "Hymns of the Old Colony," 81.

teacher proved highly beneficial for the facilitation of this new musical number system, and it was actually in the school, not in the church, that his hymnal was first used. Russian Mennonite schools gradually adopted the number system as a form of teaching music to students; with the songs being based on the hymns from the Choralbuch, however, most of the singing in schools focused on religious music rather than German and Russian folk songs. Singing these hymns in school was only a few steps away from choral singing—which slowly but surely worked its way into the church. After the breakaway Mennonite Brethren Church was founded in 1860, music and singing received a surge of encouragement amongst churches and Mennonite choral singing began to truly flourish. Choral festivities promoted musicianship and spirituality while providing a way for German-speaking Mennonites to connect with one another amongst their Russian surroundings. With a surge of support for choral development, the use of Franz’s number system blossomed.

Education was not largely prioritized in the early Russian Mennonite settlements, mostly due to the fact that the primary source of income for the community was through farming. However, even in the smallest of schools—where little math was used, and reading comprehension was the ultimate goal—there are records that singing was included in the education program. Even when extensive education was not acutely necessary for the survival or economic gain of the settlements, people took the time to ensure the musical traditions of their community were sustained through the teaching of children.³⁶

For nearly 100 years, number music functioned as the primary method of musical notation within southern Russian Mennonite communities. The number system became so

³⁶ Smith, *The Story of the Mennonites*, 414-417.

important to Russian Mennonite choirs that choral writers began to transcribe entire works from standard musical notation to the number system, which were then published in collections such as *Liederperlen*. In total, nine volumes of *Liederperlen* were printed between the 1890s and 1920s. Volumes 7-9 were published under the name H.J. Braun by Raduga publishers in Taurida, the same Mennonite publishing company that printed the 1914 Choralbuch. Collections of these volumes are held in the Canadian Mennonite University Library and the University of Winnipeg Library. The second volume, published in 1889 by G. J. Braun in Neuhalbstadt, Russia, included works such as Handel's "Hallelujah Chorus" written entirely in the number system (Figure 14).

Title	Author	Publisher	Year
<i>Choralbuch</i>	Heinrich Franz	*****	1860
<i>Choralbuch</i> (2 nd edition)	Heinrich Franz	Breitkopf und Härtel	1880
<i>Liederperlen</i> v. 1, 2	Isaak Born	G. J. Braun	1895-1896
<i>Liederperlen</i> v. 3, 4	Heinrich Braun	G. J. Braun, P. Neufeld	1897, 1900
<i>Liederperlen</i> v. 5	Isaak Born	P. Neufeld	1903
<i>Liederperlen</i> v. 6, 7	Heinrich Braun	G. J. Braun, Raduga	1906, 1909
<i>Liederperlen</i> v. 8	Kornelius Neufeld	Raduga	1912
<i>Choralbuch</i>	*****	Raduga	1914
<i>Liederperlen</i> v. 9	J. Janzen	Raduga	1915
<i>Liederborn</i>	Johann Peter Claszen	Conference of Mennonites in Canada	1932
<i>Choralbuch in Ziffern</i>	Johann Peter Claszen	*****	1934-1935
<i>Choralbuch (in Kanada)</i>	Heinrich Franz	D. W. Friesen & Sons	1978, 1981

Table 1. Compilation of Russian Mennonite hymnals that use Ziffersystem notation. Unavailable information on authors and publishers denoted with asterisks.

D dur a=5. **90. Hallelujah.** Händel.

f 1. 5̣ 5̣ 5̣ 0 | 1. 5̣ 5̣ 5̣ 0 *mf* 1̣ 1̣ | 1̣ 1̣ 0̣ 1̣ 1̣ 1̣ 1̣ 0̣ 1̣ | 7̣ 1̣ 7̣ 1̣ 0̣

a 5̣ 5̣ 4̣ 3̣ 0 | 5̣ 5̣ 4̣ 3̣ 0̣ 5̣ 5̣ | 6̣ 5̣ 0̣ 5̣ 5̣ 6̣ 5̣ 0̣ 5̣ | 4̣ 3̣ 2̣ 2̣ 3̣ 0̣

4 3̣ 1̣ 1̣ 1̣ 0 | 3̣ 1̣ 1̣ 1̣ 0̣ 1̣ 1̣ | 4̣ 3̣ 0̣ 1̣ 1̣ 4̣ 3̣ 0̣ 1̣ | 2̣ 5̣ 5̣ 5̣ 5̣ 0̣

1̣ 3̣ 4̣ 1̣ 0 | 1̣ 3̣ 4̣ 1̣ 0̣ 3̣ 3̣ | 4̣ 1̣ 0̣ 3̣ 3̣ 4̣ 1̣ 0̣ 3̣ | 2̣ 1̣ 5̣ 5̣ 1̣ 0̣

Hal = le = lu = jah, Hal = le = lu = jah, Hal = le = lu = jah, Hal = le = lu = jah, Hal = le = lu = jah!

f 2. 5̣ 3̣ 2̣ 0 | 2. 5̣ 3̣ 2̣ 0 *mf* 2̣ 2̣ | 3̣ 2̣ 0̣ 2̣ 2̣ 3̣ 2̣ 0̣ 2̣ | 3̣ 2̣ 1̣ 7̣ 0̣

5̣ 5̣ 5̣ 5̣ 0 | 5̣ 5̣ 5̣ 5̣ 0̣ 5̣ 5̣ | 5̣ 5̣ 0̣ 5̣ 5̣ 5̣ 5̣ 0̣ 5̣ | 5̣ 4̣ 5̣ 0̣

7̣ 2̣ 1̣ 7̣ 0 | 7̣ 2̣ 1̣ 7̣ 0̣ 2̣ 2̣ | 1̣ 7̣ 0̣ 2̣ 2̣ 1̣ 7̣ 0̣ 2̣ | 1̣ 2̣ 3̣ 1̣ 2̣ 0̣

5̣ 7̣ 1̣ 5̣ 0 | 5̣ 7̣ 1̣ 5̣ 0̣ 7̣ 7̣ | 1̣ 5̣ 0̣ 7̣ 7̣ 1̣ 5̣ 0̣ 7̣ | 1̣ 7̣ 6̣ 5̣ 0̣

Hal = le = lu = jah, Hal = le = lu = jah, Hal = le = lu = jah, Hal = le = lu = jah, Hal = le = lu = jah;

mf 5̣ 6̣ 7̣ | 1̣ 1̣ 1̣ 7̣ | 6̣ 5̣ 0̣ 2̣ 2̣ | 1̣ 7̣ 0̣ 2̣ 2̣ | 1̣ 7̣ 0̣ 2̣ 2̣

5̣ 6̣ 7̣ | 1̣ 1̣ 1̣ 7̣ | 6̣ 5̣ 0̣ 5̣ 5̣ | 5̣ 5̣ 0̣ 5̣ 5̣ | 5̣ 5̣ 0̣ 5̣ 5̣

5̣ 6̣ 7̣ | 1̣ 1̣ 1̣ 7̣ | 6̣ 5̣ 0̣ 2̣ 2̣ | 3̣ 2̣ 0̣ 2̣ 2̣ | 3̣ 2̣ 0̣ 2̣ 2̣

5̣ 6̣ 7̣ | 1̣ 1̣ 1̣ 7̣ | 6̣ 5̣ 0̣ 7̣ 7̣ | 1̣ 5̣ 0̣ 7̣ 7̣ | 1̣ 5̣ 0̣ 7̣ 7̣

denn Gott der Herr re = gie = ret all = mäch = tig. *mf* Hal = le = lu = jah, Hal = le = lu = jah, Hal = le =

mf 3̣ 2̣ 0̣ 2̣ 2̣ 3̣ 2̣ 0 | 0̣ | 0̣ | 0̣ | 0̣ *mf* 1̣ 1̣

5̣ 5̣ 0̣ 5̣ 5̣ 5̣ 0̣ | 1̣ 2̣ 3̣ | 4̣ 4̣ 4̣ 4̣ 3̣ | 2̣ 1̣ 0̣ 5̣ 5̣

1̣ 7̣ 0̣ 2̣ 2̣ 1̣ 7̣ 0̣ | 1̣ 2̣ 2̣ 3̣ | 4̣ 4̣ 4̣ 4̣ 3̣ | 2̣ 1̣ 0̣ 1̣ 1̣

1̣ 5̣ 0̣ 7̣ 7̣ 1̣ 5̣ 0̣ | 1̣ 2̣ 2̣ 3̣ | 4̣ 4̣ 4̣ 4̣ 3̣ | 2̣ 1̣ 0̣ 3̣ 3̣

lu = jah, Hal = le = lu = jah! Denn Gott der Herr re = gie = ret all = mäch = tig. *mf* Hal = le =

Braun, Liederperlen. II. 96. 32

Figure 14. "Hallelujah." From *Liederperlen*, vol. 2. Russia: G. J. Braun, 1896.

Village choral programs were propelled into popularity by a number of dedicated conductors such as Franz C. Thiessen.³⁷ Born in 1881 and surrounded by a household and village that actively encouraged music, Thiessen developed a passion for spreading musical awareness and engaging communities through choral participation. The conductor worked closely with church and school choirs and established several choirs himself throughout his lifetime. In an effort to “introduce [singers] to music of a higher quality”, Thiessen frequently encouraged learning works by major composers, even transcribing the entirety of Felix Mendelssohn’s *St. Paul* oratorio into the number system. However, as choirs grew, so did frustration with the number notation. In a way, it was an echo of the frustration that originated with the *Vorsänger*. Once directors such as Thiessen began encouraging performances of more detailed and complicated works, it became more and more evident that the *Ziffersystem* was destined to remain in a liminal space between the old oral traditions and standard musical practices. As choral singing grew to be a defining characteristic of the Russian Mennonites, the *Ziffersystem* fell to the wayside. By the 1900s, the Russian Mennonites who moved to Canada had to choose between learning standard notation or being left behind, as choral traditions there had already been established using standard notation. The *Ziffersystem*, created out of a desire to refine and perfect choral singing but limited by its own simplicity, could not compete with the much broader capabilities of standard notation. And so, it remains on the precipice of history, known by only a few, but cherished greatly nonetheless.

³⁷ Wesley Berg, *From Russia with Music: A Study of the Mennonite Choral Singing Tradition in Canada*. Winnipeg: Hyperion, 1985.

Hymn Analysis

Comparing different iterations of the same hymn between publications of Choralsbüch grants insight into the kinds of changes that took place whenever a new hymnal was commissioned by a Russian Mennonite group or church. The Ziffersystem lends itself fairly easily to the revision process, and thus many of the differences between older versions of Choralsbüch relate to harmonic and melodic differences, not notational differences of the system itself. For further analysis, one could compare Heinrich Franz's 2nd edition Choralsbuch of 1880 to the 1914 Choralsbuch. While the books do not list all of the hymns in the same order, their symbols and page layout are virtually identical. The Ziffersystem appears fairly consistently across publications, including notational aspects such as "0" denoting rests and horizontal lines denoting rhythmic variations. Interestingly, however, the text and harmonization vary quite distinctly from the 1880 to the 1914 prints. While beyond the scope of this analysis, it would be worthwhile to analyze where such variations stem from. I have no answers beyond mere conjecture, but the act of ongoing hymnal reform is nothing new and would not be unfamiliar to the Russian Mennonites.

O Haupt Voll Blut und Wunden originally caught my attention because it is underlined in pencil in my 1914 Choralsbuch. Perhaps my great grandfather particularly appreciated this hymn. And for whatever reason, it too stuck out to me. Analysis of this beloved Passion hymn itself would yield fascinating information, but for the purposes of this thesis the discussion must remain brief. A simple comparison of the hymn found in Heinrich Franz's 1880 Choralsbuch and the 1914 Choralsbuch serves as a general example of similarities and differences found between the two books in many of the other hymns as well.

Figures 15, 16, and 17 show two different harmonizations of *O Haupt Voll Blut und Wunden*. Some of the chords are quite different, possibly owing to differences in conventional harmonizations at the time of publication. Notably, the first and last chords are different between the two books, with the 1914 version beginning with a major I chord and the 1880 version beginning with a minor vi chord (relative to D major, the given tonic). The last chords of the 1914 version are reharmonized to include the 5th of the tonic major chord, which was omitted from the 1880 version in favor of a triple tonic and singular third voicing. Curiously, both systems actually use a type of “la” based minor—wherein the designated tonic is the relative major (in this case, pitch class ‘d’). The 1914 Choralbuch describes this by listing the song in D major with pitch class ‘a’ as the 5th of the scale. Franz’s book, on the other hand, lists the song in B minor—and yet pitch ‘a’ is still the 5th of the scale. This implies that, numerically, the song is still in D major (as the 1914 Choralbuch states), but it is conceptualized relative to ‘d’ being number 1. Why this was the case in the 1880 publication and not the 1914 version is unknown. It is evidence of the slight modifications which took place the following years after Franz’s publications that made reading the notation slightly easier.

O Haupt Voll Blut und Wunden has many lines of text, some perhaps more well-known than others. The text was clearly important to the committee in charge of the 1914 Choralbuch, because it differs from Franz’s version, undoubtedly the result of efforts to restore some form of historical or theological accuracy. In spite of all these changes, the Ziffersystem itself really does not change at all. The fact that the system withstood so many revisions

78. O Haupt voll Blut und Wunden.

(Ach Herr, mich armen Sünder).

(Herzlich tut mich verlangen).

D dur, a—5.

Nach H. E. Haßler, 1601

4/4

3	6	5	4	3	2	3	7	1	7	6	5
1	1	7	12	1	1	7	1	3	3	4	3
5	4	2	65	5	65	5	5	6	6	1	7
1	4	5	67	1	45	1	3	6	2	3	3

O Haupt, voll Blut und Wunden, voll Schmerz und voller
O Haupt, zum Spott ge-bunden, mit ei-ner Dor-ren

6, 0	:	7	1	5	6	7	1	1	5	6	5
1, 0	:	4	3	3	4	4	3	4	3	4	3
6, 0	:	5	5	1	1	5	5	6	5	1	1
6, 0	:	2	1	1	4	2	1	1	1	4	1

Hohn! O Haupt, sonst schön ge-frö-net mit höch-ster
fron!

4	4	3	0	1	7	2	1	7	6	7	3
21	7	1	0	3	3	2	3	2	3	2	1
6	5	5	0	6	5	5	5	5	5	4	5
2	5	1	0	6	3	7	1	5	1	2	5

Ehr und Fier, Setzt a-ber tief ver-höh-nel, ge-

4	3	2	5	3	0	:	:
2	1	1	7	1	0	:	:
5	5	6	5	5	0	:	:
7	1	4	5	1	0	:	:

grü-ßet feist du mir!

Choralbuch.

Figure 15. "O Haupt voll Blut und Wunden." Hymn no. 78 from *Choralbuch zum Gebrauch für Kirche, Schule und Haus*. Halbstadt: Raduga, 1914. Collection of the author.

3u 7, 6 :.; 7, 6, 7, 6 Silben.

99. O Haupt, voll Blut und Wunden.

H moll, a = 5.
Wehmützig.

Ich dan=ke Dir von Her=zen, O Je=su, lieb=ster Freund,
Für Dei=ne To=des=schmerzen, Da Du's so gut ge=meint.

Franz, Choralbuch. 5

66

Ach, gieb, dass ich mich hal=te Zu Dir und Dei=ner Treu', Und
wenn ich einst er=kal=te, In Dir mein En=de sei!

Figures 16 and 17. "O Haupt voll Blut und Wunden." Hymn no. 99 from *Choralbuch*. Leipzig: Heinrich Franz, 1880. Digital scan from openlibrary.org.

Chapter 3: The Ziffersystem Now

The Ziffersystem fills a liminal space between what we know of standard notation and alternative notation. It is a system of doing rather than preserving, a system of connection rather than virtuosic performance, and a system that cannot be disconnected from its historical roots. It represents the efforts of a community to preserve the accuracy, emotional viability, contextual and theological soundness, and spiritual potential found in musical practice. The Ziffersystem was never intended to replace standard notation. It first grew in tandem with standard notational practices, branching off from common practices not due to efforts to eliminate standard notation itself but rather because of external forces that allowed the Ziffersystem to thrive. The reasons for which this system was able to withstand such pressures are, ultimately, of both historical and pedagogical interest to the music theorist, performer, and listener alike. After all, I do not believe just any alternative system would have found such favor in a community such as this one. The Ziffersystem contains a particular cognitive familiarity that makes it particularly flexible and applicable.

My experience with studying the Ziffersystem was much like that of looking up into the night sky after stepping out of a brightly lit house. At first my eyes only see the brightest of stars, and I count only a handful. But as my eyes begin to open to the night, I realize that there are actually a great deal more stars in the sky than I believed there to be. They have not actually “appeared” out of nowhere, for they were there the entire time—it is my eyes that have to adjust. And as they do so, I take in the entire sky and find that I am in fact surrounded by thousands upon thousands of lights. I experienced that same revelation with the Ziffersystem. People all over the world have used notational components such as the one in my hymn book for hundreds of

years. My personal discovery of this hymn book does not change the fact that to some, the notation system is as common as butter is on toast. I had only to take a step back and allow my eyes to adjust before I could see that using numbers in music is really not all that rare at all.

Even our current musical practices today are not lacking in numerical influence. Numbers pervade our music in the way we ourselves learn, teach, and perform. For musicians trained in classical Western-European music theory, the difference between number values of 1 to 2 and 1 to 3 is similar to our conceptualization of the difference in half and whole steps. Therefore, it is not difficult to ask musicians to superimpose their understanding of the number system upon their singing habits. As a choral singer, I experience the exercise of singing with the numbers 1-8 on a scale quite frequently myself. As a pianist, I use numbers to visualize intervallic relationships during improvisation and memorization. This is further seen in the way myself and my peers were able to learn 12-tone serialism in college despite having never grown up with anything remotely representing that kind of music (although it presented an initial learning curve for me, because I already conceptualized notes along a different number system and essentially had to “re-learn” music notation according to pitch-class numbers instead of the numbers I had established according to scales). The Ziffersystem is, in all actuality, a visualization of what many musicians may conceptualize in their heads anyways.

American barbershop singers are especially familiar with a form of number singing, a technique deeply embedded in aural traditions where numbers are sung along with hand signs to teach and memorize specific vocal lines (often without the use of any sheet music whatsoever). In fact, an entire database of 557 crowdsourced barbershop tags displays the notes of each vocal part as a number from 1-7 (Figures 18 and 19). A quick glance at this database shows a similar

notational approach to the Choralbuch, with the exception that there are no rhythmic notations. Although flexibility around rhythmic notation exists, the database implies that rhythms should be learned elsewhere. The nature of the database is much more relaxed, as many barbershop traditions are largely aural. Here we see the difference in a tool that is mostly preserving an active, living aural tradition (barbershop number singing) and a tool that was intended to replace aural singing in the effort to increase musical literacy (the Ziffersystem).

```
Where Is Love? - Frank Bloebaum, VM, Dealer's Choice [#87] (edited by Don Barnick)

      * *           #
Where is; love_____?
Where is_ ;   where is love, oh, where is love?
Where is_ ;   where is love, oh, where is love?
Where is; love_____?

      * *           #
T: | 5 3 4 2 3 1 2| 7; 1 (- - - - -)
L: | 1 - - - 6 -| - ; - 5 4 3 - 4 - 3
Br: | 3 5 4 b5 5 3 4| - ; 4 3 2 5 v7 6 b6 5
Bs: | b7 - 6 b6 5 #3 5| -; 1 (- - - - -)

* Optional 4-part breath OR no tenor/bass breath & lead/bari breathe @ post
# Don's edit; alt edit: lead 5, bari 3; original: lead 3, bari 1 (triple root)
```

```
When I Leave The World Behind - Four Renegades (Eb)

I'll leave the night time to the dreamer; I'll leave the songbirds to the blind;

T:      2 (-) - #1 - 3 2;      1 - - - | 4 2 - - -|;
L: 3 4 5 b7 (-) - 6 3 5 4; - #4 5 6 - #4 2 |^7 b7 6 b6 5|;
Br: 3/ 5 - - - 6 -;      #4 - 2 #4 | 2 4 - - -|;
Bs: 5/ 4 3 - v6 #1 2;      - - 6 - | 5 b6 6 b7 7|;

I'll leave the moon above to those in love; when I leave the world behind;

T: 4 #4 4 3 - - 2 - 1 -; - - #1 - 1 7 1/ 2 / #1 (-);
L: 5 6 7 1 - - #5 7 6 4; 2 3 5 4 3 2 5 (-)/ 7\ 6 ;
Br: 7 1 2 v5 - #5 3 - - b6; 4 5 3 5 #4 4 3 (-)/ 5 (-);
Bs: 2 - 5 v1 - 3 7 #5 6 2; vb6 5 6 - - 5 1\ b7 / 3 (-);

when I leave the world behind (; leave the world behind)!

T: - #4 4 #4 -\ 4 ; 5 - b5 4 3 ;
L: - 1 7 6 1/ 2 1 - (- - - -);
Br: - 6 #5 1 6/ 7 ; b7 - 6 b6 5 ;
Bs: - 2 #1 2 -/ 5 ; 3 - b3 2 1 ;
```

Figures 18 and 19. *Where is Love* and *When I Leave the World Behind*. From “Scholar Tags” database. Francesco Logozzo, creator. Accessed April 11, 2022.

The traditions referenced above illuminate the curious presence of numbers throughout many areas of music. Something about the conceptualization of numbers makes the relationship between integers and pitches quite congruous. This makes even more sense when considering how people tend to map abstract concepts onto more concrete experiences when attempting to make sense of them.³⁸ In the case of music, many people exhibit a preference for numerical mapping systems when conceptualizing pitch relationships (whether intentional or subconscious).

The Ziffersystem captures that numerical representation and displays it on a page for everyone to utilize. While it seems fairly intuitive to make the jump between numbers and music, skipping that internal translation step by having it visually printed may lend itself to assisting new singers in finding pitches more easily and accurately. There are many psychological explanations for this, but I believe a large factor that may have contributed to the Ziffersystem's success was its ability to accommodate a large number of skill levels. Something I commonly hear amongst my peers is the lament that they were not trained to read music from a young age.

Linguistically, this is a valid complaint, as languages taught past the sensitive period of childhood are much more difficult to become proficient in. If music literacy is to be treated as a language (and by all means, it most certainly is, because it is an agreed-upon set of symbols that communicate a common goal), then it makes sense that the same psychological systems at play in language acquisition are at play in music acquisition. I know many musicians who play beautifully

³⁸ See Andrea J. Sell and Michael P. Kaschak, "Processing time shifts affects the execution of motor responses," in *Brain and language*, 117(1), 39–44, for more information on research regarding cognitive mapping of abstract concepts onto concrete experiences. It may be of some interest to investigate how neural activation that mimics physical experiences might also relate to the mapping of music, a very abstract concept, to a more fundamentally concrete understanding of numerical relationships.

by ear, but cannot read a single note of music. This creates a boundary between them and some forms of musical participation simply because a majority of Western music depends so heavily upon written notation. The musician trained by ear who cannot read music is often confined to areas of music that embrace aural training, such as jazz, other forms of improvisation, and barbershop. What then of the classical musician who craves to participate in other forms of music but cannot read, either due to late training or simply a different perceptual process that inhibits that particularly kind of notation from being processed properly? Singers do not need sheet music to sing in numbers. However, some singers need sheet music to sing a song if they have not been trained to listen to things aurally. On the other hand, some singers can sing aurally but not read sheet music. The number notation system attempts to bridge the gap between these two groups, creating both an aural connection – the very visceral and literal understanding of the number system – and a visual connection, which is the actual print on the page. The Ziffersystem combines a unique understanding of those visual and aural planes so peculiarly intertwined with one another.

Evidence favors the argument that the Ziffersystem was not developed to replace standard notation, but rather to fulfill a need that was not being met by standard notation. When comparing the two notation systems, then, one must not act as though they are competing for supremacy. The Ziffersystem provided a secondary option of musical literacy for those who could not read music but still wished to participate, stemming from a system created with the hopes of increasing sight-singing accuracy and aiding in a faster learning process. Thus, the Ziffersystem is not a lesser form of musical notation, but rather a different one that meets different needs.

While the Ziffersystem was not developed to compete with standard notation, it evolved into the primary notational method for the Russian Mennonites due to external influences. This evolution is understood not only through a musical lens but through a cross-cultural historical perspective as well. The distinct cultural and religious values of the Russian Mennonites provide insight into the emphasis placed on choral singing, a practice which ultimately created a prime environment in which the Ziffersystem could flourish. Infused with political motivations between governing powers at the time of the Ziffersystem's development and tied particularly to German and Russian immigration policies, patterns of cross-cultural identity formation link the Ziffersystem's success to core beliefs of the Russian Mennonites. The system is a crystallization of their values, preserving not only the musical notes on its page, but also the stories of a community eager to build an identity amidst political and religious forces that threatened the survival of the group itself. In this way, the Ziffersystem was extended past its original use as a teaching tool, becoming a central trait of Russian Mennonite music.

I cannot stress enough the importance of this intricate identity relationship between the Ziffersystem and Russian Mennonite history. When dealing with musical interpretation, it is of the utmost importance that one carefully constructs the framework around which that interpretation takes place. Music is a complex system through which much is communicated: notation does not indicate pitch alone. Just as the letters written on this page must be extended past their literal alphabetical names in order to convey linguistic meaning, so must the notes on a page be extended past their inherent qualities to convey musical meaning. If a note is to a song what a letter is to a book, then a chord is a word and a phrase is a sentence. Music's latent 'syntactical structures' influence the way a musical phrase is heard by the listener, along with the musical 'dialect' of the

performer, the emotional inflection imbued into the phrase, its relevance to the larger work as a whole, and the emotional state in which the listener is currently receiving such sounds. All of these things and more must be taken into account when asserting the ‘meaning’, or multiple meanings, of a work. For example, Row Your Boat has a very practical interpretation: it is a story of someone rowing their boat down the stream. But it also has an applied meaning, which is connected to the song’s use as a common children’s tune to teach melody and, quite frequently, the art of singing in a round.

If I examined Row Your Boat purely as a song about someone going down the stream, I might conclude that it is altogether not a very interesting musical work. A chordal analysis would further support that argument, and I could very easily assert that Row Your Boat is generally unimportant. When stripped of any context other than the purely aural or theoretical aspects of the song, that conclusion is not entirely false. And yet this cannot be true, because it is drawn in a framework void of any musical purpose or cultural value. And music is rarely, if ever, devoid of purpose or cultural value (whether or not the interpreter is capable of seeing it). Were someone to make the conclusion that Row Your Boat is musically unimportant in all aspects, it would be quite confusing to observe how frequently Row Your Boat is sung in the United States alone, as well as how many people seem know the song in spite of the fact that they cannot remember when they learned it.

To more accurately understand the ‘meaning’ of Row Your Boat, then, a greater expansion of reasoning must take place. Row Your Boat is not important to American culture because it is a work of incredible musical genius, but rather because of its inherent simplicity. The simple tune lends itself to an incredible array of pedagogical avenues. The song lives not in the walls of great

performance halls or the bows of virtuoso violinists, but in the lungs of children singing out of key and exasperated teachers trying to prove a point. To strip a song of its historical and cultural context and still demand a deeper meaning is to take away the very thing that makes those notes more than random sounds in the first place—what makes them more than the traffic on a highway.

In the case of this peculiar Mennonite hymn book, then, I have arrived at a dilemma. The hymns within its pages are not musically complex, and they do not lend anything particularly exciting to the already abundant database of chorale-style writing, counterpoint, and Baroque-influenced Christian hymnody. There is little meaning in its pages when I look solely at the notes, which is further confounded by the fact that they are not even *notes*. I could dismiss the interesting notation as a simple anomaly that just happened to survive a little longer than it should have. While the Ziffersystem provides some aspect of musical accommodation in its simplification, it creates too many technical hurdles to ever be *more* efficient than standard notation. So why did the number notation become so popular that it warranted several editions of printed hymnals and a complete re-writing of Handel's Hallelujah chorus?

The endurance and vitality of the number system within the Russian Mennonite community can be attributed to numerous circumstantial factors. Firstly, the need for musical education that Heinrich Franz recognized was primarily a gap that needed to be filled. It is quite possible that, had he not been a math teacher, number notation would never have crossed Franz's mind; perhaps his revised hymnal would have used some form of simplified standard notation. However, given the other examples in which number notation has appeared throughout history, it is logical to conclude that Franz's idea was a largely practical one, not originating out of chance or luck but rather a keen instinct for simplicity in musical education. Secondly, the hymns in need of

revision were primarily short and homophonic, rarely using rhythms past the eighth or sixteenth value (and even then, only as passing or neighbor tones); thus, there was little need for a more sophisticated standard notation.

Were instruments any more commonly used amongst the Russian Mennonites (and they were not, although the organ and some stringed instruments occasionally made their way into the musical traditions of the churches), the number system may have been abandoned for its inability to accommodate more technical instrumental notations. Thirdly, a lack of necessary resources in most rural Russian Mennonite communities created an atmosphere that encouraged simplicity in anything that required reproduction. In this case, writing or printing four lines of numbers is a much simpler task than writing or printing sheet music with full staves. Lastly, the number system presented a simpler method of teaching musical literacy that enabled those with little to no understanding of music to participate on a more active level in congregational and choral singing.

It is difficult to tell, based on the limited records, whether Franz developed a very similar system to Rousseau's out of coincidence, or whether he was influenced by an encounter with Rousseau's, or another's, number notation. Regardless of where the initial idea occurred, Franz began incorporating the Ziffersystem into education in an effort to reform congregational singing. It is worth noting that, for professional musicians trained with standard notation, there is a direct and physical link between a note on the page and a key on their instrument. With singing, no such thing exists apart from perfect pitch. There is nothing within my vocal chords to tell me that the note I sing is an F rather than a G. Of course, I may feel the physical difference between a note high in my range and a note low in my range. But unless I have perfect pitch, I can only rely on my relative pitch accuracy and trust that the note my brain signals my voice to sing is actually the one

represented on the page. Instrumentalists have an exact link between the page and the instrument. While one may have to think about hand placement and listen to make sure the note is correct, there is not the same internal calculation required.

Regardless of whether I start on the correct pitch, if I sing the correct notes in relation to one another (based off intervallic spacing), then by all reasoning I should have sung the correct tune. Thus one of the most important component for a vocalist's music is the understanding of intervallic relationships. Whether one can actually name the intervals does not matter, so long as the singer understands the concept of space between the notes. For instrumentalists using standard notation, the calculation of intervallic relationships can often be avoided. The note C4 will always be C4 on the piano, regardless of its intervallic relationship to any other key on the piano. However, the Ziffersystem functions off a constant awareness of intervallic relationships. For the vocalist, this is often already being done—so if the number system does not make audiation faster, it most likely would not hinder it to any great extent. The instrumentalist, however, would have to constantly be aware of the pitch relationship, as there is no direct correlation in Ziffersystem between the symbols and actual pitch classes. In this way, it is clear that the Ziffersystem is much more accommodating for the vocalist, but quite limiting for the instrumentalist.

Solfege enables musicians to have a visceral understanding of the space between notes; it grants singers a spatial awareness that is mental and physical. Using number notation may utilize the same benefits as solfege, because the singers are employing an already established understanding of number units and space and value between numbers. Someone unfamiliar with music notation might see that C4 and B4 are spaced apart from each other, but the visual plane is so small that there is not a lot of actual data with which to calculate the jump of a 7th. However,

understanding that 1 and 7 are much farther apart from each other than 1 and 2, a singer may more accurately sing a 7th without having ever looked at a page of music.

Some might argue that building a dependence on numerical notation or solfege ultimately hinders or lessens someone's musicianship. I am not here to even enter into that argument, because it warrants none of my attention at the current moment. Music can exist as many things to many different people. As an art form that is refined and performed, the peak of musical potential may be better reached using conventional musical notation. I am not here to make a statement against the use of standard notation. However, music as a system of community, culture, engagement, healing, storytelling, and growth requires no form of musical genius or expertise. As a communal activity, however, it does require the participation of multiple members across multiple planes of musical understanding. As far as success of creating a shared experience within a community, Ziffersystem may be the superior. It does not discriminate against the poorly trained musician, but rather invites members of all levels into a small pocket of mutual understanding.

While the Ziffersystem may not lend itself to the establishment of musical genius, it most certainly excels as a pedagogical tool that makes music more accessible to the general musician. Regrettably, I believe more people would engage in musical activities if they were not intimidated by the often-pretentious nature of academic music. Again, I am not making an argument against musical excellence, for I myself am a music student who very much appreciates the sophistication of conventional music notation. But I have no reason to argue in favor of preventing people from participating in music simply because they do not read standard notation (some, in fact, may not be able to, much like a form of musical dyslexia). And if I cannot argue in favor of preventing

people from doing so, then I should really argue in favor of creating more ways for people to engage in music regardless of musical literacy.

Perhaps something can be learned from this community. The musical system we have in place is certainly efficient, and it allows for a great deal of excellence. It is a system without which we surely would be severely limited in our musical achievements. However, it is possible that the musical notation we use inhibits some from our community from participating in the very thing we claim is for everyone. I cannot argue that everyone was born to be an excellent musician. I can assert, however, that the music produced by shared community participation is excellent in its own way. For all the reasons described above and more, collective music-making is a biologically, psychologically, emotionally, and spiritually engaging experience. It is for those reasons that I believe more can and should be done to include members of our own communities in those musical practices. Music brings members of a community together in ways no other form of interaction can—and that fact is evident in the history of the Russian Mennonites.

Research regarding cultural identity formation describes the kinds of interpersonal relationships that tend to develop in groups that practice communal income gathering such as farming, which often requires teamwork and interconnected community networks in order to be successful and sustainable. Historically, communities that rely on settled subsistence styles such as farming, which deals with unpredictable strain and abundance of individual resources, must develop tight-knit relationships between one another to create a supportive environment. This is often assisted by low relational and residential mobility wherein groups of people stay settled in one place for a long amount of time. In this case, relational mobility is defined as the rate at which new relationships are formed and old relationships are relinquished, and residential mobility is the

rate at which members of the community move in and out. In farming communities, frequent moving is discouraged in favor of establishing roots and longer-lasting relationships. Lower relational and residential mobility thus assists the community's growth by encouraging interdependence and the sharing of resources between trusted members of the group.

Unfortunately, for groups such as the Russian Mennonites, political and religious persecution often limits the establishment of long-lasting roots in one region. Low residential mobility is nearly impossible for groups that are not permitted to stay in one place for very long. The need for flexibility and adaptability was forced upon the Russian Mennonites first as they immigrated from Danzig to Russia in the early 1800s, and then as turmoil erupted in Russia in the early 1900s. And yet the Russian Mennonites, both in the practices of their faith and farming, depended on the unity of the group to truly flourish. The opposition of these two forces—that of political pressure to be flexible and mobile, and the other to remain stable and interconnected—forms a fascinating juxtaposition of community needs. From a strictly objective point of view, a compromise was necessary to ensure the survival of the group; either the values of the Russian Mennonites must give way to adapt to the strain of a people constantly on the move, or the group remains in one place and faces extinction by economic instability created by political persecution.

For the Russian Mennonites, however, there was a third option that enabled the preservation of community values and identity in the face of economic, political, religious, and social disadvantage: music. The threads which both figuratively and quite literally bound the Russian Mennonites together in harmony are found within the pages of their Choralbuchs and Liederperlen. In the face of great hardships and often little power to change their circumstances, the Russian Mennonites invested in an identity that withstood the pressure of high residential

mobility and the destruction of physical communal space. Music, an entity which exists on a plane made inaccessible to the fevers of persecution by simple act of doing. Every hymn was a harmonic rebellion against the forces which threatened to tear their community apart. In this understanding one can see that the Choralbuch is simultaneously an act of political and religious defiance as well as an act of unification and assurance.

Participation in musical traditions that transcended the current circumstances provided the Russian Mennonites with a tertiary form of community identity that did not rely on relational or residential mobility. This musical identity could be preserved through oral tradition, physical books, intimate gatherings, choral festivals, and the memories of individuals. Music creates space for every member of a community that wishes to participate—the directors, the creators, the observers, and the people in between. For the Russian Mennonites, the firm establishment of choral traditions provided every member of the community with a place they could meet together no matter where they were. Whether thriving in the Molostchna colony on a successful farm during the mid 1800s or fleeing the coming war and violence of the 1920s, choral traditions invited members of the Russian Mennonites into a sacred space of safety and support. It was not the only source of unity to be sure, but no account of Russian Mennonite identity formation and preservation would be complete without including an analysis of their musical practices. I do not think it would be that outrageous to extend this claim to many other groups across the world, and I am aware that it has already been done on many accounts; musical traditions are so intricately woven within the history of community identities. Further analysis of these relationships could only yield more illuminating insight into the importance of musical cultivation.

How is this done? A cognitive sociological lens offers insight into the ways in which music encodes cultural meaning within a group. The neurological intricacies of the ways our brains process musical symbols is mostly beyond the scope of this thesis, but it is worth noting that there is nothing inherent within musical notation itself that dictates the meaning behind its symbols. It is the subjective interpretation of these symbols and the collective agreement upon their meaning by a community that grants any identity to the symbols. The Russian Mennonites, by agreeing upon the common use of numbers to represent musical sounds that carried significance and meaning within the hymns, thus imbued the Ziffersystem with cultural meaning that is preserved in books such as the Choralbuch.

Ultimately, what one can observe in the music of the Russian Mennonites is perhaps described by the term *musical mediation*. For the purposes of this thesis, musical mediation might be defined as the phenomena that occurs when music intercedes on behalf of a group's values and traditions to create agreement and balance between opposing forces of identity formation, enabling the preservation of cultural values amidst pressures to assimilate, concede, or disappear. Through this mediation, music acts as a carrier for an identity that is simultaneously reflective of and independent of external political and sociological forces.

Many art forms are capable of this mediation, but music enables a distinctly different identity preservation, as it is a form of communication that exists in the liminal space between verbal language and nonverbal communication. Music contains both the cognitive functions of a language, being both an agreed upon set of symbols that convey a common goal, as well as the functions of an aesthetic medium that transcends the limitations of functional language (having

the capability of expressing ideas and concepts that requiring no temporal or definitive attachments).

Throughout years of ever-changing political leadership, evolving theological values, and fluctuating social position, the Russian Mennonites' identity required methods through which to be sustained. In this case, the musical traditions of a group serve as a tertiary identity, acting as a capsule in which to preserve cultural, social, and theological values. Regardless of temporal or political limitations, the identity of this group—when expressed through the realm of music—is mediated by an art form that is capable of simultaneously preserving, expressing, and developing a group's identity. In this sense, the identity of the Russian Mennonites is preserved forever in the very form of the hymn book I possess.

Musical mediation allowed the Russian Mennonites to form an identity immune to the opposing forces of political pressure to assimilate with surrounding cultures and religions. This mediation was done by clinging to traditional music and simultaneously developing an original identity through the adoption and development of the Ziffersystem. Connection to heritage and traditions of the past was sustained by the continuation of the musical practice of hymnody, and the preservation of a separate group identity from their surrounding neighbors was successfully conducted by the development of a distinct notational style.

Such a theme appears frequently throughout history within many groups. Musical identity mediates the stresses of external factors by allowing a group to both connect to aspects of their past while developing a sustainable identity for the future. In some cases, this may be seen by a complete abandonment of tradition in favor of a completely new musical identity in order to

entirely separate a group from the history of their past. In other cases, this may be seen in a return to previous musical traditions, or a “purification” of musical practices.

The Ziffersystem is evidence of musical mediation at work within a community. As it was originally developed for instructional purposes, there is no reason within its initial intent that it should have become such an integral part of the Russian Mennonite’s music. But in the way that music so capably pulls members of a community together, the Ziffersystem and the music it encoded acted as a vehicle through which members of the Russian Mennonite community could establish a common ground with each other and with their religion. That the Ziffersystem became so popular amongst this people is a testament to their value of communal music making.

And thus, I find that the book in my hands is not simply a music book with strange looking number symbols. It is a vessel of tradition, connection, theology, and innovation that speaks to a much larger force at work throughout the history of the Russian Mennonites; the book itself is a symbol of sustainable community created through the choral arts, preserved in the form of unassuming numbers.

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