*בְּסִיַּעְתָּא דִשְׁמַיָּא*

“…and write down this Song…”

Often called the “Song”—the book of books, the most popular work of all time, the Torah, or as Christians around the world call it, the Old Testament—commands mankind to copy and multiply the holy volume with each new generation. It consists of material codified from its source, the words of the prophet Moses, or as the more mystic Jewish liturgy informs us: the song of its creator. Concurrently, the Holy Book has strictly exhorted mankind to pass down everything across the centuries while maintaining absolute textual accuracy and without changing the slightest spelling of words. Clear rules governing the pronunciation of all laws making up the harmony of life, which the holy composer of this song of the universe teaches us, have also been passed down by word of mouth.

The diligence with which religious Jews observe the commandments of the creator during the many years of their exile is apparent not only by the extensive Jewish liturgy and clear picture of the life and religious service, which has been passed down even to this day, but also by the corroborative findings of science, and in particular archaeology. The latter has confirmed the identity of numerous canonical scrolls and books of Holy Scripture that have been discovered so far, which are greatly dispersed across time and space. The cherished lines have come down to us verbatim with only minor ethnic differences that manifest themselves in how the letters are adorned. However, something of great significance has been lost and forgotten along the way. It is so characteristic of the Jewish people that we must recognize the history of its disappearance and consignment to oblivion as a sad miracle. Of course, it is miraculous that it is once again becoming known and obvious, indeed it is as amazing as peace itself.

You, dear reader, must be particularly sensitive to peace and its absolute perfect harmony, due to either a professional or personal interest that you have taken in the subject. Or perhaps you are simply interested in the peace that comes from observing the harmony of art. The music of the holy song was lost for centuries before it was unexpectedly discovered once again. We are now starting to decipher the musical score, which has been hidden in both the arts and in the lines of the Holy Testament. In compensation for many years of silence, we have been able to open the curtains to reveal a large-scale opera occurring across the centuries, and its music is composed of the sounds from many unexpected works of art. These include the artistic fruits of familiar kings and sages, who have turned out to be poets, composers, and playwrights, even though we never previously suspected it. In addition, leading this concert across time is a work familiar to everyone: the Torah—a poem and composition by the Creator himself.

A historic discovery in the art of poetics and music

A new study of the texts of the Holy Scriptures using semiotic analysis has allowed us to decipher the musical meanings of the traditional *taʿamei ha-mikra* , or system of Hebrew cantillation marks. They reveal that the book of books, the Holy Torah, is a completely rhymed musical and poetic work, which is striking for its enlightened composition and imaginative power. Furthermore, we have also discovered many other sources of the sacred canon that are fully aligned with the rhymed songs and produce melodies of various styles that are familiar to us. These are exact matches to the deciphered meanings of the original notation.

This unexpected discovery requires us to reconsider our understanding of the level of achievement of ancient musical and poetic techniques as well as key figures, dates, and the general narrative of how art evolved in this direction. This recent decoding of the traditional marks demonstrates that they contain indications of melody and musical rhythm, which reveal the compositional component of the original works precisely and consistently. By using the rhythm created from the deciphered values of note durations, biblical texts can be built into rhymed pieces of music that satisfy all the rules of poetic and rhythmic composition, many of which are familiar to us. An analysis of the musical motifs demonstrates that the melodies found in the sources include forerunners of styles that are popular today, including opera, Latin American music, jazz, and even rock and rap. That is to say, the compositional structure of biblical musical motifs often follows all the laws of modern musical and poetic techniques.



Taʿamei ha-mikra marks

In ancient Jewish liturgy, *Taʿamei ha-mikra* marks are small signs of various shapes that accompany the words and letters of the source texts, which complement the traditional Hebrew language vowel and punctuation marks. They can be placed on various sides of the letter, and they are indicated using various graphic devices, such as short lines, arcs, arrows, etc. According to tradition as we currently understand it, *Taʿamei ha-mikra* indicate how words and phrases should be pronounced. There are several traditional schools of how to “read” texts with *Taʿamei ha-mikra* marks. With only minor disagreements, members of the main school argue that they essentially perform the function of punctuation marks, that they do not convey semantically, but rather only phonetic information by determining the boundaries of individual words and phrases. This school of thought, despite some contrast with other traditions, claims approximately 25 *Taʿamei ha-mikra* marks. According to traditional sources, originally only specially sanctified groups of clergymen determined the rules for writing holy texts, and they were passed down orally from generation to generation. These marks were introduced into scriptural texts by the Men of the Great Assembly in the era following the destruction of the First Temple in Jerusalem. Like vowel symbols, they were added only to special editions of the canonical scrolls of scripture, which no longer appear today.

The discovered notes of the Testament

The original musical score has been miraculously rediscovered, or more precisely, we have uncovered the basic principles of how to recreate it from the sources. In this article, which is mainly directed to the professional community of readers in musical theory, I describe this discovery precisely and demonstrate the technical musical details. Let me start by explaining why this discovery can truly be called a miracle. The in-depth story of my discovery is described in *Testament Rhapsody*. It describes the causes and events that accompanied this unexpected discovery, and it also gives many individual details regarding this topic, which I discovered in the process of reviewing various sources of the Jewish liturgy. Due to the specific amalgamation of the evidence, I have created a picture of the completely underestimated and enormous significant influence of Judaism's musical and poetic art that one might say is still unknown. Furthermore, I discovered that this not only concerns almost all of the canonical scriptures, but also the very manner in which the texts were taught. Furthermore, this influence permeates the daily people's daily rituals, life, and everyday religious practices in the land of Israel and Jerusalem, which is the capital and center of Jewish intellectual development. Most of all, it affected the laws of ritual practice and almost all types of services held in the Jerusalem Temple itself. As a result, the first, completely counterintuitive fact that we have to face is that this system has been forgotten for so long. For more information about this issue, I refer the reader to the story of my discovery.

I ask the professional reader to examine my narrative critically since I suspect that it may contain inaccuracies, particularly those related to terminology and failure to adhere to academic style. The reason for this is that I do not have any formal training. I never previously anticipated that my research would lead me to seek entry into this academic field. I discovered to my surprise that I had enough knowledge and skills to make this discovery despite my limitations. This lack of knowledge may have even given me an advantage. Though I had a deep understanding of the traditional technique of reading texts with *Taʿamei ha-mikra* and was a law-abiding Jew in my observance of traditional religious rules, I would have never dreamed that I could unravel the meaning of diacritical marks that were almost as old as the Hebrew they accompany, since it is among the most studied alphabets in the world.

Of course, it may turn out that some of the rules and principles that I believe myself to be the first to have discovered are actually already known and have already been identified by other scholars. If that is the case, then I am frankly glad for it, and at least I will have confirmed that by publishing this exciting discovery deserving of a more thorough study. I wish to submit it for discussion by a society of specialists and experts who can appreciate its significance. There is no doubt that your professional support will help today's masters of poetry and musical composition to be able to develop the far-reaching technical and scientific potential of this discovery. It is in hope of receiving your generous professional assistance that I undertook to complete this wonderful work, however difficult it was for me.

Now I will try to do my best to tell you what I discovered and explain how it all works and even why this is the case. As we will see later, in contrast to the “concrete” notation system that is used today, the “original” one that forms the topic of our discussion is heavily based on the surrounding context, which is why we often need to know the answers to all three of these questions. Thus, while some of the information provided here may seem redundant at first glance, there is a reason for mentioning it that will eventually become clear in the course of the discussion.\*

In general, I must admit that in an attempt to retain your interest in this topic, I have tried to keep the narrative as well as the accompanying guide as concise and accessible as possible. This might have something to do with the nature of my insights, which are novel compared to the ancient textbooks on this subject, the first examples of which were written thousands of years ago.

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*\*Of course, in the hope of piquing your interest and hopefully convincing you to actually join me in the further study of this topic and perhaps exhume it from the primordial dust of the restrictive traditional interpretations encasing so many masterpieces of ancient art, I also include here some of the original discoveries that I made along the way that I think deserve your professional attention.*

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Frankly, due to my lack of academic training, I was not entirely clear on how I should format this article. Therefore, I decided to write as if my task was actually to teach you how to use this original (in every sense of the word) notation system. Due to this plan of presentation, I must naturally be completely frank both in my presentation of the facts as well as in admitting that I still harbor some doubts concerning all the details of the discovered system of marks.

According to one tradition, *Taʿamei ha-mikra* can be translated as “the spices for holy scripture,” which quite aptly reflects the essence of my discovery. It provides insight not only into the influence that the works that used these marks had on their readers and performers. Rather, this translation also provides a lens through which we can interpret the original associated religious, educational, and everyday practices, improving our appreciation of the general intellectual level of the creators and consumers of this artform. Therefore, at this stage, let's use this name for both this system of musical notation as well as the entire discovery itself. To distance ourselves from the allegorical flair of this traditional translation and to promote technical correctness, let's translate the term the way it sounds in Hebrew as the “original (though newly discovered) note system.”

The Discovery of the *Taʿamei ha-mikra*

I will first discuss the musical aspect of the discovery, which is quite significant, though it is not the only dimension. All facets of the discovery are interconnected in one way or another, as is often apparent when a systemic approach is applied. The linguistic insights in particular are sometimes fundamental to our understanding of the principles of individual *Teameim*\*. Whether I discovered these elements in the course of my research or they are otherwise already known, one thing is for certain: their role in musical composition has remained unknown until now. An understanding of these elements is necessary both for deciphering the TeaNotes\*\* of the musical scores and for performing works based on TeaNotes. I am talking about one essential aspect of the discovery, namely the poetic models of the works that play an important role in determining the rhythm and harmonic logic of their music as well as the rules of pronunciation and composition that are especially significant. These comply with systematic principles that are reflected in the clear definitions of note durations and other musical parameters. (We are not talking here about *Teameim* marks per se, but about the discovered properties of notation that have been laid down systematically and at the level of the rules for writing and pronouncing the letters and the words of these musical works).

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*\*A portmanteau formed from Taʿamei ha-mikra* *that will be used hereinafter.*

*\*\*I propose using a new term (TeaNotes) to describe the discovered musical properties of Teameim. I will use this term hereinafter.*

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But first of all, I will list the individual facets of the discovery, since each of them represents, in fact, an integral thread of the whole and determines one specific particular part of the system. In my opinion, each one of them could be considered a “significant discovery” in and of itself and is deserving of separate detailed study and thorough analysis.

The following list of works is in order of their (relative) religious significance. The discoveries, as we later learn, were not made in the same order.

Discoveries in Poetics

The book of the Torah (the canonical Pentateuch) is a multilayered and integral poetic work. It follows a poetic model that, though it may vary from chapter to chapter, represents an organic whole like an opera, permeating every part of the narrative. It consists of several different poetic forms, which are systematically combined in the text at the same time. The poetic models and techniques used in this work are in no way inferior to today's standards of poetic harmony and make use of rhyming syllables, words, and even phrases. In other words, the models utilize strict (almost always uncompromising) classical rhyme.

The discovery of this poetic model in all the other books of the Tanakh\* may be considered to constitute a separate facet of this discovery deserving special attention. All of the books are also integral, poetically structured works and use similar techniques that allow for more frequent use of repetitive and self-rhyming prepositions and character names, to name two examples. I claim that unlike the Torah, which makes only limited use of rhyme, the other books of the Tanakh actively make the text fit the rules of its selected poetic model.\*\* Despite the general similarity between the two works, there are certain differences in their styles and techniques. Most importantly, we should not forget that they were created in different periods by different authors, and therefore they deserve independent discussion and research.

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*\* This abbreviation, which is formed from the words* “*Torah,*”“*Neviim,*” *and* “*K'tuvim,*” *designates the union of the three books Torah, Prophets, and Scriptures.*

*\*\* However, this conclusion is not absolute. Traditional commentators have provided their objective explanations for such linguistic features by offering other reasons. They explain these passages in the text of the Torah by saying that the Tanakh* “*allowed itself*” *the liberty to slightly modify the standard Hebrew formulations, or they claim that such changes were made* “*for the sake of the text*” *(as will become clear from my argument, these changes were made to comply with the rhyme scheme).*

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Another work that deserves special mention within this group due to its poetic form is the Book of Psalms (Tehillim). It has long been recognized that its verses are intricately connected to music and a “certain kind” of poetics. The singing of the psalms by the Levites in the Temple has been repeatedly described in many related texts and sources, but none of these attest to the poetics that we have discovered. All of the psalms without exception are works of art written in original styles that are surprisingly complex, utilizing systematic rhythm and a poetic model. (These qualities are manifested, of course, only when the works are performed in their original rhythms). The level of sophistication of the special techniques employed by the Tehillim deserves special attention.

Once I understood the underlying characteristics of these styles as a result of my initial discoveries, I was able to recognize them in another vast group of texts. The range of works in this group is significant, but the total number is not yet clear. Most likely, it will never be known, since many, if not all, of the significant liturgical works of Judaism from the beginning of the first millennium as well as the later works of many leading religious authorities of the medieval period can be classified in this group. There are seven sources for which I was able to identify their poetic and musical form:

1. The first six sections of the Mishnah, are songs. This body of work is the canonical collection of rules and laws of Judaism, which is the primary source for and basis of the so-called Oral Torah. All of the parts and chapters of this collection, including the numerous individual and topically organized paragraphs that each form the basis of a particular law, rule, or system, are made up of short phrases (consisting of just two to four words) that are systemically rhymed. (The rhymes are accurate, more or less). The main reason for this compositional organization was to make them easier to commit to memory. Stylistically, they are similar to “couplets” or even Russian *chastushki* with an Orientalizing intonation and style. While adhering to this style, they still perform a complex narrative function.

2. The Babylonian Talmud, is an integral musical and poetic work. It is stylistically similar to the Mishnah, but, oddly enough, it is of higher “quality” from the poetic point of view (according to the treatises that have been written about it). (I have almost no doubt that the Jerusalem Talmud is also organized based on a musical structure, but I am still collecting evidence to support this claim). Cognitively, the Talmudic text is not as structurally dependent on short phrases as the Mishnah, but the poetic rhythm similarly divides sentences. The main difference between the Babylonian Talmud and the Mishnah (and this provides a natural transition to a discussion of our next point) is that it was largely not written in Hebrew at all, but rather in the Aramaic language—and it has been found to use a systematic rhyme scheme.

This Aramaic work opens an additional window into the Jewish liturgy. I was surprised to discover that it belongs to a larger group of works that includes almost all classical orthodox interpretations and commentaries on the sources of the past. Based on the literature I have been able to review, even the religious authorities of the fifteenth century still followed works written in this tradition. As has now become clear, these scholars were not simply paying heed to tradition, but were effectively following a cherished rule: all works must be composed in accordance with a poetic form and set to music. I will conclude my discussion about this in the next paragraph, but here I would like to single out another scholar:

3. The Talmud of Onkelos, a Roman convert who became an interpreter of the holy scriptures, deserves mention due to several specific features. This scholar set the form of the first (as far as we know) translations as well as interpretations of the Pentateuch of the Torah. This unique work of the highest religious significance stands apart from the Mishnah and the Babylonian Talmud not only since it is written in Aramaic, but because the music of this work corresponds almost exactly to the music of the corresponding chapter of the Torah. In producing an almost word-for-word translation of the complete text of the Torah, Onkelos also preserved almost all of the musical qualities of the original.\*

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*\*A separate interesting issue is the situation surrounding the well-known Greek translation, the Septuagint. It is almost certain that if this work does not have identical musical qualities, then at least it has its own poetic form and music. However, I would be grateful if one of the esteemed readers would be able to confirm this suspicion.*

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I hope that this insight will allow many great and unexpected poets and composers to come to light and be appreciated again. As will be immediately apparent from this list of outstanding musical and poetic talents, these authors represent totally different countries and eras. What they all share is their active participation in the Jewish liturgy and a shared commitment to follow works written in the above-mentioned “traditional” style. The musical and poetical works representing this “traditional” style that I have managed to review and analyze so far include:

4. All of the commentaries of Rashi that I have managed to locate. It is no coincidence that Rashi makes the top of my list. I was lucky to get my hands on a book of the Torah with his commentaries that are written in the standard Hebrew typeface and intended for primary school students. (All of the other editions of Rashi are printed using a special typeface, which I, unfortunately, can hardly read at all). The historical reason for this is not important to consider here, but this fortunate children's edition has helped me. In addition, I was struck by the fact that the comments were written in a direct and almost childishly simple style for such a serious work as an interpretation of the Pentateuch. I later learned that some think that these comments were intended for the youngest disciples of the great scholar. In any case, the poetics of Rashi's works deserves special assessment, and my initial attempts to decipher the style showed that musically some of his comments on the Tehillim seem to follow the melody of the psalm itself, which is the case of Onkelos's translation of the Torah. (This point awaits scholarly investigation.)

Once I understood that Rashi's commentaries on the Torah and Tehillim are in fact musical and poetic works, I began to look at similar sources and other authors. Thus, based on my present research I can introduce the following additional sources and works:

5. *Sefer HaChinukh* by an unknown author, presumably dating to the thirteenth century.

*6. Iggeret**HaRamban* by Ramban.

7. I came across several editions of different abridged versions of the book *Shulchan Arukh* by different authors, and they also have their own musical qualities and poetic meter. I did not spend enough time to confirm whether these abridgments are really just a combination of certain fragments of the original text (which is never presented in its entirety) or whether they simply represent a paraphrase of the original written by (much later) compilers of these texts (in the appropriate form). I do not think that this task will be difficult to undertake in a subsequent study, but for now, there is no doubt that the original itself that was composed by Ravin (Joseph Karo) in the fifteenth century is a musical and poetic work.

It would be impossible to compile an exhaustive list, but each entry that we can add to it will undoubtedly provide evidence for many interesting and important conclusions as well as many newly discovered beautiful works of art, though they are as ancient as the world itself.\*

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*\* Despite the similar (synchronous) rhyme scheme shared by all of these works that represents its own genre, each of the above works has its own characteristic style. Of course, each such work raises many interesting academic questions about what makes it unique (in terms of geography, period, author, etc.).*

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One of the first works that I suspected of being a member of this group of works by virtue of sharing similar compositional features were the traditional daily prayers, including all of the Jewish prayers and even separate groups of blessings,\* including daily, festive, everyday, and ceremonial prayers. All of them are integral and multi-layered works of art. They include everything from short songs to large-scale concerts, and performances, as well as multifaceted works that are thematically unified and composed around a common musical and poetic form.\*\*

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*\* If we weigh their religious significance as well as my preferred reconstructed order of the works that make up my discovery, this group should come first on the list. However, if we consider that this group consists of paraphrases of source texts and* “*collections*” *created from the topically related parts of all previous groups, then it could be argued it should be listed last.*

*\*\* I did not want to list many other works in their category. This includes many compositions and concerts, including ones that are very extensive and significant, such as, for example, the ceremony performed on the evening of the celebration of the Jewish New Year (*“*Rosh Hashanah Seder*”*) or the Passover holiday (*“*Seder Pesach,*” *which is a large, multi-act, and multi-genre work, and a group production. It is a full-fledged musical theatrical performance with all of the features essential to such a performance, including an adventure scenario, a tragedy, and a victorious conclusion along with stage scenery and even an intermission and a triumphant final song). This group also includes such traditional folk rituals as the readings of Kinot and Selichot (collections of thematic works performed on the eve of fasts and holidays), readings from the scrolls Megillat Esther, Megillat Ruth, Eikha as well as modern-day* “*only slightly*” *musical performances that may have departed quite significantly from their original versions. The longest performance that has been passed down with the least changes is, of course, the Judgment Day ceremony, which, like other holiday prayers, even today is performed with musical accompaniment, though it may have no connection to the music performed at the original ritual. But we have almost no evidence of the scale of the musical festivals that took place in the Temple or on the streets and squares of Jerusalem were, as our discovery shows. Yet I kept coming periodically across occasional and unrelated allusions to this all-encompassing spectacle in the sources, but here is the main and most ceremonially outstanding fact: I did not find any descriptions of the musical performance of the Torah (most likely consisting of a chorus and a many-piece instrumental orchestra), whether in the basic, additional, or* “*secret*” *sources. However, in the course of my discussions and consultations about my discovery with some of the leading rabbis of our generation, some of them testified that they learned and heard from the lips of their teachers and other authorities that this Song existed, it had been passed down together with the Torah, and it was very important. Thus, in addition to these isolated testimonies as well as the Torah itself, which in several places calls itself the Song, we can now see irrefutable proof of this fact in the Discovered Notes of the Testament.*

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Discoveries in Music

Before I proceed to a detailed description of my discoveries about music, I would like to trace the order of events, which will help you to understand some of the causes and consequences of my discovery of the underlying logic of the musical systems. I also hope to provide you with a general understanding of my research methods and the specific nature of some of the evidence that I used to reach my conclusions. In principle, I have no documentation of my reasoning to decipher the value of each individual mark.\* Nevertheless, some individual explanations can be found in this paragraph as well as in the supporting descriptions of the system.

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*\* This is due to the simple reason that I did not document it during the research process. At the time I started working on the project, I did not anticipate that I would make such discoveries.\* However, I have many digital photos of various corresponding marks and texts together with accompanying brief notes (with my reasoning, calculations, etc.). These can probably be used to reconstruct how I decoded some marks and rules.*

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Chronicle of my discoveries

The first discovery was that there is a poetic system shared by the psalms of the Tehillim and the texts of traditional prayers. I was able to detect the presence of the poetic model in each work first by identifying groups of rhyming words in the texts. Then I divided the text into phrases, or groups of phrases, whereby I placed rhyming words in the places corresponding to poetic harmony (while keeping the desired form), thereby adhering to a consistent poetic model. Thus, in a particular work, whose final poetic model turned out to be a quatrain, the rhyming words needed to be placed at the end of each even or odd phrase (at corresponding key accented syllables, etc.). This is a poetic model similar to rap music,\* whereby the artist chooses from a rather wide range of existing poetic models. And while adhering to this compositional approach, the artist did not have the liberty of changing the actual text of the psalm or breaking the rules of correct pronunciation.

Within a few months, I was able to identify the poetic model (faithfully reproduced) in all 150 psalms of the book.

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*\* A model that is almost identical to the style of modern rap music is widely used in these works, often in combination with other models and within the same text. It eventually occurred to me that this style has African folk roots.*

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In the process of identifying poetic models, I also took up the task of finding possible variant rhythmic musical forms of the work. My main guiding principle was that word stresses should coincide with the accented beats of the rhythm, or the strong beats or syncopations. Given the strict rule that prohibits changing the “correct” word stresses when sacred texts are read (or rather sung) that can be found in the traditional source commentaries, it is safe to say that the original composers went to pains to always observe this stricture.\* But it was usually the case that it was more than just the notes that were stressed in words that were emphasized in melodies. (There can be as many stresses as the composer likes in accordance with the style and rhythm of the work.) Nevertheless, I tried to find a consistent rhythm that at least matched this known stress pattern. And I succeeded in finding works that comply with the rhythm.

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*\* And this, surprisingly, absolutely does not correspond to today's traditional repertoire of works (which, again, does not fit within the framework of Jewish religious practice). By contrast, according to the customs of various communities (mainly eastern ones), performers are strictly prohibited from even the slightest distortion of the traditional pronunciation (sound) of words. At the same time, the compositions of almost all ceremonial songs allowed for gross distortions from the correct placement of word stresses, naturally not corresponding to this correct division of phrases and the rhythm of the songs. An identical situation exists for traditional European motifs.*

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Both to identify the poetic form (used to divide the text into separate phrases corresponding to the original poetic structure) and to discover possible suitable rhythms in the work, I also considered the intonational features inherent in the pronunciation of ordinary punctuation marks and other characteristically phonetic principles that follow the underlying meaning that the narrative was trying to convey. The commas and periods, that are used to punctuate the texts of modern editions of the Tehillim were carefully compared with the pauses used in typical grammatical structures in the organized poems, final pauses marking sentence divisions, and other similar “everyday” intonational properties. In other words, the task was to determine whether the works were systematically composed per the rules and not simply that they employed occasional rhyming stock phrases. The former turned out to be the case since these works used true rhymes and were composed according to living poetic forms.

In the process of seeking to identify correspondences in rhythm, I noticed several common features shared by the rhythms. They could be technically deployed in all works while still preserving their own authentic and original style. In particular, the asynchronous (syncopic) properties of the rhythm corresponded to the majority of the poetic models that I identified in the works. The stresses of words in their current positions often fell on the weak beats of a poetic foot, thereby “forcing” the composers to utilize asynchronous accentuated syncopations, and they were systematically evenly distributed in this form across all phrases of the work. This condition, in our particular case, acted as a very significant and powerful selecting factor, limiting the set of possible rhythmic options. Most of the works that I analyzed at this stage were textually dense and particularly dynamic. They all utilized an extended and stable rhythm to maintain the correct placement of the stress in words while still maintaining the beat of the poetic meter. This turned out to be a non-trivial task, which meant that only a few of the available rhythms were suitable.

Sometimes, a text was written in no more than one particular rhythm that exactly fits the requirements of the text of a long work, since no other ones were suitable.\* In the end, asynchronous rhythms turned out to be suitable. They differ in their form from model syncopation sequences (identical rhythmic measures, or groups of measures, with equivalent and uniformly accented parts of the rhythm in them). If I were to describe these choices in terms of modern musical genres, then I could say that the works favored Eastern or Latin American styles. For many works, what we would recognize as a rhythm characteristic of the Caucasus, which also features syncope, was found to be suitable, producing the same rhythms that we find in the *Lezginka* and similar dances.\*\*

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*\* However, composers were constantly looking for alternatives, even if they had already found one with a suitable rhythm. Frankly, they spent quite a lot of time on these attempts. Suitable variants that required a significant distortion of the organic nature of the work (by using inadequate pauses or* “*stretching*” *the words, etc.) were discarded in the same way as rhythms that did not match the needed thematic progression of the work (its essential meaning and narrative mood). So, for example, it would be unnatural to set a dashing psalm from the Alleluya series in a ballad style, which is also used for a different series of dynamic songs in a certain part of the prayer. Many other characteristic factors were also taken into account.*

*All of these details described here, as a result, have almost no practical bearing on those works with Taʿamei ha-mikra marks. In order to detect the rhythms of these melodies, transcribed note durations and other marks determining rhythm length are used. They sometimes make it possible to find a highly probable match for the original. The significance of this process played an important role at an early stage of the study. It later turned out to be the reason why I discovered that Teameim play a role in the rhythm of the works, and, as a result, how I discovered musical notation systems. Though this technique can be used to decode the rhythm of all musical liturgical works (and this is why we are discussing it in this article), the sources of these works do not contain Taʿamei ha-mikra marks (and this is a significant majority of them). The marks must be reproduced using this or a similar method (given the lack of an alternative). Therefore, later in this article, we will engage in a broader discussion of this decoding system. I noticed the essence of rhythmic markers, the Taʿamei ha-mikra, due to the correspondences between the rhythms that I found in this way, and this itself is evidence that this system was used to detect (basically true) rhythms, or at least rhythms that are close to being true.*

*\*\* I subsequently discovered archeological evidence that there was a likely Kazakh influence in the region under discussion (research demonstrating this was published during my study).*

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I confirmed my suspicion that the *Taʿamei ha-mikra* marks were used to determine the rhythm of the works. What is meant here is the rhythm of the melody of the work and not the form of the rhythm of the musical accompaniment. This ability to find the rhythm of the current melody promises that more discoveries with the corresponding stylistic rhythm will be found in the future. One of the *Teameim* marks turned out not to completely match the rhythm of the melody, and the meaning of this mark (just like all of the other marks) was unknown to me. However, it looked like an accent or stress mark (a short vertical line under the letters), which usually (in many other languages) is written above letters to indicate the stress of the word. So I deduced that this character functioned as a stress or accent mark, especially since in this case, the mark was always placed in the correct place to indicate the stresses of words (their leading vowels). However, the mark was also written under many other letters in words.

As a result of my investigation into the phonetic dependencies (or influences) of the mark on the pronunciation of the corresponding syllables in the text (when they are sung), it turned out that it was these syllables (rhythmic beats corresponding to the key vowels of the syllable) that turned out to be the accented ones in the selected rhythms. In other words, when reproducing the motif from the discovered melodic rhythm and considering the text of the work, including the *Taʿamei ha-mikra*, it was clear that every time a certain note (the rhythmic beat of this note) is accented in the melody, there is always a stress mark placed under the letter corresponding to this note. However, it became clear as a result of this process that its correct name and function is to act as a mark of rhythmic accentuation in the melody of a work. The observed situation was consistently repeated in all the works where I discovered the rhythms (as of the time of writing, this was about half of all the psalms of the Tehillim).

I was able to identify the rhythms of the rest of the works in the book in light of this accent mark, after I had already discovered additional accented beats in addition to word stresses. Therefore, I started to detect the rhythms of the rest of the works much more easily, faster, and, most importantly, with much more accuracy than before.

The main confirmation that I had correctly identified rhythm was that there were matching rhyming words at the end of phrases. That is, if up to this point my initial step was to identify rhyming words followed by dividing the text into uniform phrases before proceeding to identify a suitable rhythm, now my first step was to discover the rhythm matching the indicated accents. Generally speaking, this was all that was needed, since the rhymed words now came clearly into view, inserting themselves into the correct places to maintain the rhythm in the resulting phrases (of the correct length). Moreover, I began to detect original (in the sense of unusual) poetic patterns that would sometimes rhyme, such as, for example, the rhyming of the ending of one word with the middle syllable of another. I also came across many other variations of poetic harmony, which would not be noticeable at all from a rhythmic reading.

Once I discovered that the textual compilers were strictly adhering to a system, namely how the musical form of the work is tied to the accent mark, my attention was naturally drawn to all of the other signs that could be found in the textual sources. However, the main thing that I noticed at that time was the clarity of the technique (the consistency and evenness of the phrases used in each work, indicating the presence of an underlying model), the maturity of discovered rhythms, and their compliance with the musical form of absolutely all the psalms without exception.

I eagerly sought out all of the general information about the traditional liturgical materials that have a bearing on this topic in one way or another. I was not interested in the traditional systems of meanings ascribed to the marks. At this stage, I decided not to set out to try to learn them Rather, I was interested in general descriptions of events, including musical performance and singing, their scale and significance in the life of the people living in the corresponding era, and in particular, in the practice of various festivities and rituals, which are accompanied, by definition, by specific works.

This period of research and the incidents and actions accompanying it are described in some detail in my story of the discovery. It also contains a lot of general information concerning these issues as well as some specific details that turned out to be practically useful and that can be found in a wide range of texts and classical commentaries on materials from fundamental religious sources, which were devoted, as a rule, to other topics.\* As far as the fact of the discovery itself is concerned, already at this stage, three deductions can be made:

1. The level of development of the poetic and musical art of the period under discussion was much higher than modern scholars have assessed it to be. In any case, the people of this particular region utilized poetic and musical techniques that were as highly developed as corresponding modern styles.

2. The books (such as the Tehillim, which forms the subject of the current discussion) that are the sources of the fundamental religious canons of Judaism included (and continue to include) a notation system that reflects the musical component of these texts, which are accomplished works of art.

3. The auxiliary cantillation marks of the *Taʿamei ha-mikra* play an important or leading role in this system.

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*\* I mainly found confirmatory and generally consistent information in the classical sources of the Talmud and the Mishnah as well as in the commentaries of interpreters (such as Rashi and David Kimhi) about these and other sources, including ones devoted to each psalm of the Tehillim. I considered the well-known tendency towards hyperbole (even in the Mishnah), but even when I excluded false information (where the exaggeration is deliberate, since it serves only to emphasize the significance of the topic), I was still left with an understanding of the scale and weight of the musical accompaniment, for example, for each ceremonial ritual. The strongly detailed repertoire of the concert that was commanded to be held each day in the Temple began with the strike of a gong at the first rays of sunlight, and it was continued with a choral performance accompanied by an orchestra (in which parishioners sometimes participated). This event was accompanied by ritual actions (mainly sacrifices and the reading of various works, including mainly the Tehillim) until the gates of the Temple were closed at night. But along with the* “*background*” *accompaniment of the elements of the service (performance of works from the Tehillim), there were also many mandated ceremonial texts and blessings accompanying these elements that are presented in the mentioned sources, whose words were evenly phrased and rhymed, and also performed to musical accompaniment. (This is evidenced, in particular, by the fact that during some of these performances, the sources describe folk dances). Most likely, these performances fit organically into the composition of the concert for that day.*

*In terms of the specific details that help us to decipher the system and that can be gleaned from the pages of these sources, I came across phrases in passing where I noticed that a certain word was always sung loudly and in high notes. I was able to distinguish certain phrases by noting the* “*pause*” *in the pronunciation between words corresponding to the placement of a specific mark (Taʿamei ha-mikra) or other articulatory and intonational hints. Everything that I discovered was revealed based on the comparative method. I found quite a few instances of the use of these marks, especially in many of the sources. These details are indispensable evidence grounding the results of this study. In particular, they are essential to accurately decoding the notation system, and, accordingly, they help us to reconstruct the lost original poetic and musical techniques (some of which have now come to light). One of the priority tasks of a future study would be to recruit as many students from relevant disciplines as possible (though that insights from seemingly unrelated fields are useful as well) to organize this information and supplement it with additional relevant insights that help to place my study in an even better context. A subsequent analysis of this data would likely produce even more interesting and surprising results. Of course, the success of my idea, as well as many other outlined goals, will depend in part on the success of this article and your professional assessment of it. I hope to raise awareness of this amazing discovery among the general public and to attract the attention of scholars in religion, science, and, of course, spirituality.*

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When I compared different passages with general descriptions, it became clear that the performer passing his eyes along the line of text (or, in the exact wording of the sources, “... guiding his finger along it”) received musical direction from various marks, including in particular ones whose meaning depended on visual associations. It became clear that, in contrast to the modern musical notation system that we use, which places the musical notes in the foreground, the idea of this notation system was to accompany the text with musical indications (to supplement it with *Taʿamei ha-mikra*),to color the narrative musically, and to mark the intonation and rhythm of the work. Note that *Taʿamei ha-mikra* marks are written in such “letter-note” lines of the sources not next to just any letters of the alphabet, but only next to a certain subset of them, and there are also certain words that are never used together. I could see that many of the marks do not indicate a single note, but rather are shorthand for an entire musical movement. In addition, there are some parameters that performers understood should be played “by default”. At this stage, I decided to assemble all the correspondences that I noticed up to this point, and with the help of the musical, algorithmic, linguistic, religious, and other knowledge available to me, I attempted to decipher the meanings of marks and unravel the principles of the system.

However, let's digress for a moment and return to the above description from the sources of the finger of the performer passing along the line of work, which is evidence that the process was guided by a system. The finger highlights another interesting point for us: the primordial role played by theater and related features that are of interest to us.

The “canonical” finger under discussion, and how it is used to correctly read the marks, offers a metaphor that continues to be used today. It has been transformed into the venerable (sometimes precious) silver pointer with an index finger at its end that is held by everyone who reads the Torah scroll today (today, this performer is designated by the word *hazzan*) in both the synagogue and on the stage. The raised place on which the prayer leader stands is called a “stage” in Hebrew, and a certain part of it is the designated place from which the *hazzan* reads the Torah. The hazzan uses this “finger” to trace the text that he reads from the scroll, which helps him avoid losing his place because periodically his attention is distracted by glancing at the conductor, who continues to sit next to him to this very day.

The *Taʿamei ha-mikra* cantillation marks (so named because this is the function they performed, and they continue to be used today by tradition) are not written in the scrolls. The *hazzan* would have to memorize them by heart to avoid ambiguities, and given the great importance assigned to the correct performance, an assistant would stand beside the *hazzan*. This person would follow the *Teameim* in a printed book, and with the help of certain gesticulations and hand and palm movements, he would “indicate” the current characters to the performer. It would be even more correct to say “relate,” since a certain gesture exists for each individual letter of the Hebrew alphabet, so what is happening is very much like a gestural conversation.

The most original insight here is this: as already stated, the discovered original notation system, in contrast to the modern one, “strategically” prioritizes not music, but the text and its narrative meaning while utilizing musical devices with emotional and intonational associations. At the same time, the ancient assistant, like his modern counterpart, reflects the storm of emotions in the work using movements, and he communicates very specific notes to the performer. I will demonstrate here that they are specific notes following an ancient strategy. And yet, it can be determined from the descriptions of the responsibilities of the conductor in the Temple that he conducted more than just the performers: he also gave directions to the spectators who took part in the performance – a multitude of people who replied “Amen” to blessings, for example, in strict accordance with the musical composition.

For purposes of my study, let's say that, as was already noted, the existing (rather wide-ranging) information of traditional schools about the function of *Taʿamei ha-mikra* is irrelevant at this stage. Knowing this information might contaminate the purity of the experiment. I originally proposed that my method could be considered successful if I could achieve identical or similar results to the traditional methods using associative means. This could be considered to constitute proof of the correctness of the values that I decoded that are not known to tradition or at least that I am very likely correct for any discrepant interpretations on my part that I almost certainly existed in the past.

Once I was able to determine the rhythm of the works by relying on the rhyming phrases in the text and techniques for locating rhythms, I was able to determine the logic and algorithm for calculating TeaNote durations. I compared groups of different combinations of characters that took part in numerous similar “TeaMeasures\*” within the works. As a result of these calculations, I was able to determine the individual values of the character durations.

As I expected, the graphical appearance of the marks was associated with their meanings. So, the addition of a “tail” to the accent mark (in the direction of text movement) suggests that the indicated note should be held longer than usual, and the carrot “<“ written under a letter (again, in the reading direction, from right to left) indicates that the pronunciation from this point onward should be doubled.

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*\* Let's consider another definition for clarity of understanding. The Teameim system is similar to the technique of dividing the text into measures in how it determines the boundaries of complete phrases and expressions (phonetically complete parts of phrases). We wish to use the word* “*TeaMeasure*” *to designate these phrases or half-phrases. The boundaries of TeaMeasures, which are specified using special marks, are always equal from the musical (rhythmic) point of view, but they differ in their meters. We will define these elements in more detail below.*

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But the most seemingly unsolvable goal was to find a reasonable basis for teasing out the “tonal” logic of the system (the sound pitches on any scale), and, to verify that such a logic tests at all. And yet I still managed to uncover a feature that was in no way generally well known (but that was still intuitive to those who lived during this period) using intensive and comprehensive associative tests satisfying the required disciplinary requirements while remaining accessible to someone with my training. All representatives of this (philharmonic) community would be able to cognize it through the correct placement of marks, and the leading role it played in the intuitive logic of the original notation is undeniable.

In particular, I realized that the Torah was an important poetic and musical work, which makes use of an almost identical set of the same articulatory marks (vowel diacritics and *Taʿamei ha-mikra*). A similar story can be told about all of the other works of the Tanakh. Up until this point, the focus of my research had only been the psalms of the Tehillim, and at this stage (of deciphering the durations of the marks in it) I had already determined the meanings of some of the key marks. Therefore, I applied the system to a new experiment: the chanting of a single (random) chapter in the Torah. All of the rhythmic features of the work fell into place: they were consistent, and most importantly, I could see that the work was rhymed.

From that moment on, the basis of my research, comparisons, and experiments became incomparably larger. There were now so many correspondences that there was no doubt that the logic of the tonal notation was completely systemic. The only question was: what was this system?

Generally, it gave the leading role to the musical notation of the works, and in tonal terms, the system gave meaning to the narrated text, and in our case, it was the key to marking intonations in pronunciations. In other words, TeaNotes indicate when to pronounce a sound that creates the necessary intonation for the word. More precisely, it specifies which key syllable to emphasize. (There are both individual marks and assigned combinations used for whole words and even phrases). The marks and their combinations are used so consistently with words of similar meanings and in similar phonetic contexts across a variety of works that it becomes quite clear that this is exactly how they were intended to be used for pronunciation and emotional emphasis. The performer was required to hit the right note, and thus provide the correct intonation. This note, however, is still indicated using a certain (relatively narrow) pitch range, which is divided into four segments that represent the entire singing range that can be reached by an average singer. (For more details about this, see below). Moreover, these features could be applied both to individual words, where a single mark could be used to emphasize the content of a word, as well as to phrases (to indicate expressive intonation) for which a corresponding combination of marks was used. Some marks are used to determine the necessary modulations of the sound itself, including the amount of trembling, slowing, and doubling to reflect corresponding emotional nuances, etc. The way that they are written often reflects their intended function: a wavy line for a trill, a high-placed tick for a high-pitched note, and so on.

Around the same period, and probably as a result of the same experimental conditions, I uncovered several more important key principles of tonal notation within the system. I wondered why some characters are written alternately above or below the letters of the text. Eventually, I concluded that the function of these marks was to indicate direction up or down. Without going into details about my logical considerations, I can say:

1. I was able to verify that the system correlates the concepts of the up/down directions to pitch in a way that is identical to our current understanding, where higher pitch corresponds to up. Of course, I could not assume that any of our ancestors would have used such a basic convention, though we might take it for granted.

2. Certain marks are used to indicate that the following note should be of a higher or lower pitch than the current one. These marks sometimes add a certain dynamism to the notation, allowing the musical movement to be raised or lowered through repetition of the same mark (indication) until it is terminated by one of the existing “unambiguous” marks (such as, for example, “return to the tonic”).

3. In addition, these marks are also used to indicate the direction of the notes following it up to the appearance of a new mark. Often this direction also applies to the notes of the text preceding this original mark.

Moving beyond my discovery of how to pitch directions were manipulated, I addressed the question of whether marks can be located above or below letters. At a certain stage of my search for intonational correspondences, it became clear that (as we have already noted above) the two positions indicated different pitch ranges: low pitches for marks written under letters and high pitches for marks written above them. The “emotional note” (or group of notes) represented by the mark must be within these relatively defined ranges, according to its location (above or below the letters). In addition, I understood that each of the ranges as well as the individual marks also reflect a certain general narrative intonational property.

Besides these two general pitch ranges, the system can also specify the two extremes: the lowest and highest pitches. As a result, the system conditionally divides the entire singing range of the human voice (or rather, the sound of the narration in this context) into four height levels, each of which entails a certain “global-narrative” intonation. (Some examples of their approximate characteristics are given below).

It is not easy to determine, or rather, to name the intonational properties of either the ranges and individual marks used by the system (at least at present). My sense of their properties is based on numerous illustrative examples of how they are used in the works under study. One can develop a sense of the essential intonation that the performer must provide with a given note within the specified range based on repeated familiarity with the emotional context considered together with other factors.

I will show a certain associative formula of correspondence and accompanying harmony governing these properties as I currently understand them. In the table of values below, I lay out the approximate determined intonations of the individual marks. Here I will only look at one example illustrating the (again, figurative) segments in the range as understood by the system:

1. “Low” (consisting of a set of marks written under the letters of words) corresponding to a narrative, ordinary “storytelling” timbre.

2. “High” (marks written above the letters) designating the beginning of a new story, happiness, and emphasized claims.

3. “Lowest” (special marks written under letters) designating profound moments in the narrative, severity, and sadness.

4. “Highest” (special marks written above letters) designating exclamations and rejoicing.

Again, these are only outlines of the approximate associative meanings. Several of them may be used for both segments as well as for individual marks, and they can be combined in various ways. *Teameim* can sometimes even be used to show contrasting intonations depending on the context of the expression. But in phonetically similar expressions as well as in different sources, such a mark or a combination of them can be represented identically.

And yet, this paragraph pushed me to see for the first time the overlap in the terminology used by this ancient notation and the modern terminology. Let me briefly describe what I mean. The terms tonic, dominant, etc., are used here as the closest matching associative concepts for determining some of the rules of the system. It was a separate question to investigate whether these features play these roles and whether the logic of the system contains these concepts. As a result (and this is, of course, based on an analysis of the discovered information, which forms only a part of what may exist potentially), the root of some of the fundamental elements of today's musical styles can also be found in this original system. Even though factors that provide a fundamental basis for the visual notation of a musically composite work differ from the ones used today, they are almost identical tasks. The problems it must solve (in particular, the physiological diversity of the singers' vocal ranges and the need to synchronize the musicians during the performance) are almost the same.\* I said “almost”, because in fact, given the specificity of the current notation system and certainty in terms of its precise indications extending almost down to the level of sound frequency, such relative concepts as tonic and dominant are, in fact, less necessary to a system that is relative by definition. There are other examples of the keys and tools used by the present system that perform similar functions to some of the *Taʿamei ha-mikra* marks. However, this topic is quite extensive in its own right and is not the focus of the discussion in this article. Even though there are many details and interesting hypotheses concerning it, it still seems to me that this is not enough evidence for a scientific approach, In any case, it would be better to have a conversation about this in a different format.

Our main task should be to understand the principles of the logic of the notation system. There are some modern elements and terms (which we will encounter more often later in the article) that can be useful to us for associative explanatory purposes. Of course, when we make these comparisons, we cannot expect the terminology and definitions that we use to be entirely accurate.

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*\* It is, of course, currently impossible to compare the capabilities and practical features of this fundamental notation system and today's mature full-scale system, and yet, I would like to note that maybe if the Taʿamei ha-mikra strategy had been given time to develop across history, some fundamental elements of its primordial logic could have played a rather original, and perhaps even blessed role for the authors of the works since it could have helped them to come closer to what they were aiming to achieve. It seems to me that, if we ignore the presence of the* “*intonational*” *component of the idea, modern logic has developed, one might say, only a two-dimensional explanation, leaving almost the entire emotional coloring of the narrative to the responsibility of an unfamiliar performer and sometimes many co-performers, arrangers, etc. (Perhaps some of the* “*fervent tragedies*” *and* “*sad entertainments*” *that sadly exist in our today's repertoire could have been avoided). In addition, the sources testify to the great popularity of the holy day* “*concerts*” *in the Temple, where a fairly large ensemble of vocal and instrumental performers was guided precisely by the discovered musical scores, and these came off very successfully according to contemporary descriptions.*

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Now that I have laid out the steps that I have completed, we are ready to elaborate on the primary list of *Taʿamei ha-mikra* musical values in the table below by my current understanding (which continues to be refined). However, it is not entirely true to call them solely musical: the values described in the table are closer to being “articulatory.” By using certain rules that I will detail in the following paragraphs, we can see how these values can be used to restore works to their original beauty and how to recreate how they were performed thousands of years ago.

Returning to the “restoration” technique, I would also like to note that, even though the logic of the system makes it possible to specify different notes for some of its marks, today I have managed to assign unambiguous tonal meanings to certain marks, that is, to individual notes or combinations of them, whose use (within the framework of a given harmony) allows us to achieve the correct musical result in all cases. In using these values, and of course, correctly interpolating musical segments between the marks and their assigned notes in the melody, we can arrive at the final work, which is identical to the original in terms of rhythm and at least close to the original in terms of melody. The most important point is that the marks in such work always correctly reflect the intended intonational-articulatory (narrative) component. (I will not elaborate on these definitions here yet, since I am still testing how well they match in many works. I hope that by the time the article is ready to publish, they will be available on the website of my discovery, whose address is at the end of this article).

I continue to improve my technical expertise by practicing transcribing and reproducing the chapters of the Torah and the psalms of the Tehillim. In the process, of course, I continue to discover all sorts of subtle details and new insights. In addition, I have found some additional information in the general educational literature. But I must admit that the research process itself has been stopped at the moment, unfortunately. The reason for this is that I am currently spending my time publicizing what has been discovered so far and drafting this article, which is one of the key outcomes of this process. I hope to complete this article at the beginning of 2022 in one way or another. I hope that by this time it will be possible to recreate and write down noteworthy demonstrative examples of the works.

I also hope that shortly I will be able to start drafting an overview of the poetic techniques used by the sources that are similar to this one. The diversity and technical level of these poetics is very impressive, and some of their unique techniques that have been lost to time have great potential to be used to develop contemporary techniques. It is even possible that, on the whole, the weight and appreciation of the poetic accomplishments of my discovery will ultimately be valued more than its musical notation. But this may only seem to me to be the case, since I am far from being finished with my musical research, and the mysteries of the marks that I have not yet completely decoded promise many more musical surprises. To conclude our discussion of this topic, I will here provide a list of several ideas that I have not yet totally worked out as part of my musical research into the discovery:

Next steps in the study

First of all, I will review the details that I have assembled about the techniques that were used by the traditional schools. It is almost certain that they have cultivated knowledge about the marks and principles governing their use that hint at their musical properties as part of the tradition. Up until this point, I have not delved into this material in order not to contaminate “the purity of the experiment”, though there is a large amount of scholarship to consult, including many existing manuals. Consulting this material is necessary to confirm the results of my study, and the task will require a special approach and a considerable amount of time. It would be most practical to give the task of this comparative analysis to an expert in the traditional school who also has musical training, though this is not an absolute requirement.

Similarly, we also need to analyze information about traditional *niqqud* diacritical marks for representing vowels (with auxiliary marks indicating the vowels of the text). These marks also have certain systematic musical properties, and they play an important role in the logic of notation. There is a set of rules for indicating vowels that some publishers of liturgical texts use to integrate these characters into modern editions of ancient texts (whereas they are absent from the original manuscripts\*) without taking into account the additional properties and principles of the marks that they are ignorant of. Even computer algorithms can be used to mark the vowels. It would be worth checking whether this logic can be integrated into the algorithm for producing the musical transcription of works. That is, it may be the case that the musical notation of the works may only be recreated through a computer program, and if it is not possible to reproduce the full arrangement, then it may be possible to produce a basic version that a composer can revise.

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*\* It is possible to write Hebrew without vowels, and this is a commonly encountered practice. I will discuss this in more detail later in the article.*

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I have not developed a conclusive explanation as to why certain marks were shifted horizontally relative to the letters they modify. The environment in which this occurs appears to be consistent, but it seems to behave differently in the works of Tehillim than in the Torah and other books of the Tanakh. According to my calculations, this shift has a rhythmic character within the Tehillim system and a “melodic-dialectal” one in the Torah system. It may be, however, that when a mark is placed more closely to a letter, this means that the pitch should be produced more accurately (we will consider this issue again in a detailed discussion of the systems below).

In addition, there is a traditional opinion that the shapes and directions of calligraphic “tails” or “crowns” are added to letters that actually have musical meanings. After a cursory examination of them in several Sephardic Torah scrolls, I did not find any consistent patterns, but that might only mean that I do completely understand them.

The question of both this and the previous points as well as any other possible ideas for determining the musical notation of the source must be tested against the ancient archaeological evidence. It is important to seek out the most ancient evidence, including perhaps just from a certain geographical area. It would make very little sense to consult manuscripts by scribes from periods during which the system was lost, meaning that the graphical marks of the system could not have been taken into account. Thus, if we were to clarify this issue in general by determining criteria to test the credibility of materials based on accurate dates and localities as well as by identifying the events that caused knowledge of musical notation of the sources to be lost, this can be of great practical benefit for our study. We would be able to decipher the underlying principles of the system. This way, we will be able to assemble the most complete and accurate set of unique musical and poetic techniques that have up until now been lost. And as is already clear at this stage, these reconstructed techniques will be able to enrich and even improve modern masterpieces of art through the use of original and “fresh” turns of compositional harmony.

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The Original Notation System

Thus far, I have clarified the basic motivation and strategy of the notation system as evidenced by the sources. In this chapter, by discussing the principles and meanings of the marks, their dependencies, and their scope in more concrete detail, we can see how all this looks in practice.

Let’s begin with an overview of the individual elements of the musical notation before delving into the main topic of this section: the poetic revelations of the discovery. And in this case, let's divide the list into three separate sections, which stand for three subsystems. We set them out separately here, not only because I have found them in different periods of research and different categories of works, but most of all because there are significant differences between the techniques for decoding and performing them. The reason for the three categories may be due to the existing opinion that the still unexplored work *Mishlei* (written by King Solomon) utilizes a special technique that differs from the others, although it does also make use of the same *Taʿamei ha-mikra* marks (from the visual point of view). I do not yet know whether this is so (since I have not yet thoroughly studied the *Mishlei*) but based on the fact that I noted a similar distinction in another group of works, I have taken due account of this opinion, and I will therefore leave this question open at this stage. The aforementioned differences relate to the system of the Tehillim, which indeed in a certain way differs from the system of the Torah, even though most of the *Teameim* marks used in them are identical. This is the reason for discussing it here separately.

Even at the beginning of the story of my discovery, I noticed that the name “*Taʿamei ha-mikra*” that I gave for the discovered system of notation could be a generalized term. I say this based on the fact that I had discovered several systematic techniques, and each of them was applied in different periods to different categories of works. Notably, the *Taʿamei ha-mikra* marks play no role whatsoever in any of them. All of these systems are nonetheless closely logically interconnected, and the mentioned main one is an obligatory component of the others, although it can also be used independently in a certain category of works.

This main system is fundamentally based on musical definitions, which are written in various ways with the letters and vowel diacritics of the language. The most interesting insight into the keys of the notation systems under discussion is that the “root” of the musical system in Hebrew is the language itself. Or, to put it more accurately, the basic musical nature of its fundamental literary and articulatory rules was brought to light as a result of this discovery. I explore this phenomenon in more detail below. Given the interconnections and depth of the literary principles informing the logic of this so-called fundamental system, I decided to name it the “literary” notation system.

I have devised the following list of notation systems:

Discovered notation systems

1. “Literary” (basic) system

It is fairly easy to characterize this system for our purposes: it allows us to recreate the works that do not use the traditional *Taʿamei ha-mikra* marks (since they either were not used historically or no editions with the marks have yet been found).

2. The “*Taʿamei ha-mikra*” system

This system can be used to decipher all of the sources that use *Taʿamei ha-mikra* marks except the Tehillim. This book requires the use of a technically very similar, but still different system to decode its marks due to certain differences.

3. The “*Teamei Tehillim*” system

This system is only used to decode the psalms of the Tehillim. However, this system is also useful for deciphering all of the other works, including prayers and other ceremonial works.

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Fundamentals of the basic “Literary” system

We are discussing the underlying technical details of the musical notation, which is based just on marks that have always been regarded as literary conventions and used exclusively for literary purposes. This encompasses an extended set of marks, including, in addition to letters, vowel diacritics, punctuation marks, and a special cantillation mark for dividing the text into separate phrases: *sof passuk*. It is important to note that this system is based on Sephardic versions of the sources that I was able to obtain in modern editions. For various reasons, the set of characters found in various works may differ. Certain modern versions of original sources took the liberty of adding marks to comply with existing traditional rules of adding vowels, and they would often do this using computer algorithms. The validity of this approach has not been verified. But most often, I have dealt with sources whose texts have just such an “indefinite” status. Inaccuracies may be present even in the ancient sources, and I am prepared to uncover them, however difficult such a task may be.

In fact, despite the relatively limited set of original (musical) characteristics informing this system and given the specific characteristics of the structure of the texts and the rhythmic style of the sources, the conditions that I will review below produce a limited set of possible suitable rhythms for the works. In the long list of “potential compositions,” there are also sources with only the “naked” text (without vowel or other diacritics), but even for these texts it is still possible to reconstruct the works, and the same rules, conditions, and auxiliary recommendations that I have elaborated for this system can help us to decode these texts as well.

There are situations where we have direct access to the original source text, like in the Torah, along with potentially other books of the Tanakh. In these situations, we have access to the traditional scroll (with letters and no diacritics). Here we find words and phrases written together and other times—exceptionally—separated by a space, and there are also cases of inconsistent spelling. I argue that these deviations are made in particular for reasons of rhythm. In the first case, it may perform a command function: the continuous pronouncement to sing two words “as one” (a function that is the musical equivalent of the “hyphen” sign). In the other case, there is probably a pause. All of these cases should be worked out according to the rules that I describe in more detail below. Here we see the first practical systemic principle that can be formulated as follows: a rule that is already defined by a more basic level system will not be duplicated by a later system—such as one of the *Teameim* marks—even if it contains a mark that fulfills an identical function.

This principle in particular is evidence that the musical notation evolved gradually, and we thus must understand the order in which it developed. Therefore, to comply with the above principle, the TeaComposer must know this order and the TeaPerformer must take it into account when performing. This order is simple: the first original evidence of basic notation was already the “bare” text of the work (which was obviously musical), since it contained marked deviations in how it was written. Then the set of musical indications was expanded using the vowel diacritics (of the *niqqud*), which was followed by the division of the text into phrases using *sof pasuk* characters, which are essential for determining the rhythm of the work. The last stage in the evolution of this system is the addition of *Taʿamei ha-mikra* marks.

In the corresponding section below, we will also consider a possible subsequent “subbranch” of the system: the *Tehillim Teamei*. I discuss below the reasons why I think this group should be considered as a separate subbranch. In addition to this, we will also consider modern punctuation marks to decipher certain passages in some later works.

Global characteristics and general rules

I will now describe the system that lays the fundamental groundwork for all the others. In other words, its principles must be observed in all cases. In addition to describing its specific key elements and functions, I will also summarize other information about certain characteristics and rules that are fundamental and practically significant for understanding all the works.

First of all, there is an inherent stylistic characteristic that applies to all the works that I have discovered and deciphered. Despite the different ethnicities of their authors, their historical diversity, and other traits, these works share common poetic and musical traits by virtue of adhering to a common rhythmic style. This style is characterized by asynchronous syncopated rhythms. Of course, these rhythms could still differ in the number and placement of their asynchronous accentuated rhythmic stresses. Exceptions include certain chapters of the Torah, all of the psalms without exception, the Oral Torah, and all the accompanying and educational songs.

Their rhythms meld styles that are familiar to us as Samba, Rumba, and Hora Samba. There are also overtones of folk rhythms from the Caucasus and Africa. The underlying reason for this shared style may be due to a commitment to shared religious principles or something else, which is not important to the point made here. This fact provides a useful starting point by helping us to recreate the style and (most of) the rhythm of a given musical work. And yet, we should note that, in combination with the specific features of the language, this choice of style is exceptionally fruitful. It provides a unique and flexible platform to create music as well as a rhythmic “template” that can be used to create the poetic structures of the works. The multitude of syncopated syllables and the flexibility that the creators had to change this rhythm, even within the same work, demonstrate that there were numerous opportunities for phonetic manipulation inherent in the language. Composers were free not only to create unique and complex text rhyme models, but, most importantly, they had multiple choices for how to accentuate words and phrases, allowing them to convey the narrative significance of sentences with absolute intonational accuracy.

We return to this later during our discussion of the Tehillim system, the texts of which provide a prime illustration of this characteristic. We can formulate a general rule that allows us to capture all of the matching works: the primary task of decipherment should be to identify its poetic format. When we identify a poetic style, we must fully work out all of its facets. In practical terms, this means that we must analyze all of the additional options for a matching rhythm once we have identified a certain correspondence, since the works are very saturated with rhyming words.

The original poets used phrases that are much more complex and longer than the ones used in modern poetry and verse. We must take a global view of the boundaries of poetic phrases while considering all possible, close, and nearby rhymes. The rhymes may be far apart from each other, and they may be used to complete long phrases (including, at times, many interpolated rhyming devices, which must also be taken into account accordingly). Incomplete rhymes in a work can be left hanging, waiting quite a long time for their completing phrase. It is often difficult to catch all of the correspondences during the first reading of the text.

As per the objectives of this article, only those stylistic features of the narrative that require appropriate musical support to achieve the overall composition in accordance with the author’s intentions will be considered. These can only be recognized on the basis of certain fundamental characteristics. Of course, we must recreate each individual work based on the general characteristic details. However, each work has its own specific traits, including its harmony.

The original harmony

One of the most influential elements that reflects the character and emotional characteristics of a piece of music is, of course, its accompanying harmony. We are talking about the accompanying harmony, tonality, major and minor mode, and other characteristics of vocal works in particular. Even in those cases when only a single vocal part is performed today, we can still “hear” the accompanying chords from the set in our mind, and they most often completely match the intentions of the composer of the work. Could the work have been performed similarly as part of the original repertoire?

I have not been able to find any scholarship about the possible corresponding types of harmonies, musical rules, and the like. But when I made my initial attempts to reconstruct the music for a work, even with the initial aim of determining the length of the marks, I kept asking myself questions about the keys, chords, scale, etc. I even asked myself the most elementary of questions, though it is a major one: were the discovered notation elements intended for instrumental performers at all? If so, then for which instruments and in which cases? How did it all look in practice?\* And the main question: how did a performance sound?

*\*During my research, I was able to come across various descriptions of many details about the musical aspect of the sources. Many writers focused in particular on the performance of the service in the Temple. There are detailed descriptions of the places of performance, times, the set of performers, as well as information about various musical instruments and even detailed descriptions of them, down to their carrying cases. Of course, I was not able to find any descriptions of the orchestra playing music from scrolls attached to the stands. However, I found that starting from the most ancient times, smaller scrolls were created and used for certain purposes in addition to the whole scroll of the Torah, which includes the text of the entire Pentateuch. At a minimum, each of these smaller scrolls contained a separate book, and these scrolls were probably created for educational purposes as well as to provide musical scores. The latter in particular were kept in special rooms of the* “*music academy*” *located in the Temple itself, whose existence written evidence attests to. This academy administered long-term courses that performers had to complete before they were allowed to play in the Temple choir and orchestra.*

*We also have evidence that* “*non-certified*” *parishioners could also participate in support of the main performers, However, only the Levites were allowed to sing with instrumental accompaniment. But even without any assistance, there were many performers on the partially tiered stage. Sources assure us that thousands of graduates of the academy went on to perform in the Temple. This is impressive, even considering that the number might be exaggerated.*

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I tried to find answers to these questions in the liturgical sources and the scholarship that is accessible online, but I quickly realized that there are no clear answers. The scholarship that I reviewed does not allow for the kind of systems that I have observed in the sources, including in both terms of poetry and composition. On the other hand, even the most allegorical liturgical illustrations of everyday musical participation by the people during the period under discussion do not reflect the true scale and prevalence. Religious sources, nevertheless, present a picture that is more in line with the revealed details: they contain some elements in particular that are essential to the practical deciphering of the meanings of marks. These have proven themselves to be mathematically and rhythmically reliable within the limitations of the tests that I established for all other marks when applied to different categories of works.

Regardless of how I have organized the evidence in support of my particular hypothesis, there is no doubt that it will prove to be controversial, though it is not the place of the present article to engage in this discussion. However, I do hope that in the future there will be a platform for such a discussion, especially since my discovery is substantiated by strong evidence. Perhaps it will be possible to fill in the evidential picture by adding those missing elements that are not at my disposal but that may be known to other academics.

Of course, we should not forget that in addition to certain extremely ancient works, I have also reconstructed works from later periods (which mainly relate to the system currently under discussion) with many examples of harmony as it is currently understood. But the indisputable stylistic similarity inherent between the sources from all periods deserves special consideration during the reasoning process.

It is important to demonstrate the poetic forms that underlie the composition of the works (even though others have argued that each work cannot share poetic forms due to their original nature). In demonstrating the musical range of the works, I decided to use a (rather elementary) set of modern elements to demonstrate the accompanying harmony.\* Secondly, we will also use some of the factual details that I discovered (that answer some of the basic questions that I raised) to explain the underlying principles of some of the *Taʿamei ha-mikra* marks. I offer two major claims:

1. The purpose of some individual *Taʿamei ha-mikra* marks is to provide instrumental notation: some marks perform this function together with others, while others are used exclusively for this purpose.To put it simply, these are musical function marks that are designed to give directions to instrumental players, not vocalists.

2. Some of the marks are designed to (musically) reproduce not a certain note, but rather an intonation or even the mood of a certain point in the melody.

Given that these marks either partially or fully perform such functions, I will specify the intonation or mood of each mark as required by the harmony as we currently understand this concept in modern musical performance. For example, we are accustomed to perceiving a completely affirmative phrase by the accompanying harmony (or chord or tonic).

When reconstructing the musical accompaniment, I made use of the modern seven-note scale, (mostly) minor key, and the components of accompanying harmony, including tonic, dominant, and subdominant. These components allow us to create modern “templates” of the sheet music for the works so that they can be performed. They more clearly reflect the intonations of the context and allow for the chords to be extended along with occasional short transitions to a major key (as allowed by context).

Rhythmic parameters

Another parameter that I was able to determine based on the initial data set, which I used to figure out certain rhythmic system functions, is the “relative” values of rhythmic units, meaning the musical time (meter) and the duration of the notes used in our musical scores. In reconstructing the music, I decided that the smallest length of the notes for which there is an equivalent (*Teameim*) mark would be one-sixteenth.Thus, this would make the one-eighth length mark the most commonly used one, which we will designate the “basic” mark for all further calculations concerning time and length. This will allow us to determine certain other parameters relative to it.

Given these definitions of length, we can divide the time and measures (meters) into four quarters. Thus defined, the musical boundaries almost always coincide with the endings of logical phrases in the works and the existing marks denoting these endings, respectively (see below). We frequently describe the works in terms of rhythm, which can best be described as triple time, using 1/12, or 1/6 beats, for the measures. (The reason, or the consequence, of this is sometimes the rhythm of the works, which resembles those of the Caucasus).

I often use relative values and meters to make determinations related to time and length. I apply this approach systematically to certain functions. So, for example, there is a mark that plays the following function: “Play a note double the length of the previous one.”

Beat

Many of the works are characterized by a strong dynamic beat, which constitutes one of the general distinctive characteristics. I was able to determine this by measuring the times required for the performance of certain rituals and prayers (consisting, as already stated, of certain parts of the chapters of the Torah, individual psalms, and other works under consideration). In some cases, there are traditionally defined temporal parameters for their performances.

The rhythmic significance of word stresses

I am still trying to determine the general principles that apply to all of the works, but already at this stage I have identified that the works exhibit a common characteristic style, strong dynamics, and adherence to a well-known poetic model. There is an additional general principle—it could even be called a religious law—that makes it possible to get much closer to restoring the original rhythm of the work. This is to correctly stress all of the words of the work during performance. This principle is unconditional,\* and this religious rule is specified in the sources precisely for the context of the singing of sacred works.

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*\*In rare cases, the traditional word rhymes are nevertheless altered, and this is specially marked using the accent mark from the Taʿamei ha-mikra set of marks. In all of the cases that I have discovered, such a change is consistent with the poetic goals for this particular situation. In addition, there are words where the stress distinguishes between different meanings, and so a mark must be used to indicate the intended meaning.*

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In fact, if we consider the specific stylistic and linguistic features that are evident from my initial data set from a composer's point of view, we discover that the possible rhythmic options are quite limited. By understanding the text, we are able to add in the punctuation marks, thereby allowing us to see how the text was performed during the service. The men of the Great Assembly generally did not add vowel diacritics and *Taʿamei ha-mikra* marks to the texts, so in order to restore the music of the Torah and other books of the Tanakh, the placement of these marks must be reconstructed.

Others have already completed this work for the main sources. However, I will describe many other works in their original form (with only a bare text), and I argue that the only method that can help us to learn the underlying composition of the text is to check whether the work is a part of a prayer. If it is, then we should note the music of the previous and subsequent parts, since they will probably contain clues about what the additional instruments are. With rare exceptions, all parts of the prayers are interconnected by the same rhythm and mutually rhymed “at the junctions.” Therefore, in this situation, we will be able to achieve a “correct” result. Many of the psalms are similarly produced in groups that share a common music (and theme). One of the leading interpreters and commentators of sources has claimed that only eight melodies are used in the Tehillim.

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The keys to the “Literary” system

Once we recognize the general stylistic traits of the works, we can systematically work out which tools are available for reconstructing them given the evidence of the individual work.

By factors that are “specific” to the first of our systems, I mean the following set of evidence:

1. The words of the text (while strictly respecting their order in the original).

2. Vowel diacritics (Hebrew *niqqud* marks).

3. The hyphen mark, which plays a particular musical function that is essential for us.

4. The *sof pasuk* mark (designating the end of the phrase), which for the purposes of this document will be called the “phrase” mark. Its function is to mark the end of separate phrases that complete the information in the text. Its mark is a regular colon (:), which is positioned in the line of text after the final word in the phrase (see below).

The “Shva” mark is also designated by a colon, but it is written under the letters. It has two graphical marks: the usual “:” and the bolded “**:**”. The “Shva” mark is traditionally included as one of the vowel diacritics, but it plays a special role in the system, and therefore should be treated separately. The position under the letters is underlined because the system also uses ordinary colons to designate two other types of characters, which have different, significant meanings and differ mainly in how they are positioned. (They should also be written in different sizes, but the uneven quality of many publications whose editors are ignorant of the meaning of the characters means that these marks may not be reproduced correctly or may be omitted entirely). The colon mark in a line of text discussed above is used to designate a phrase, but there is still another third type of colon that I have found in the sources, and it is always written above the letters and is one of the *Taʿamei ha-mikra* marks. I discuss it in a separate section below.

Modern punctuation marks

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The text of the work and vowel diacritics

The most important quality to investigate and confirm is the credibility and (physical) quality of the source. I hope to eventually evaluate the primary sources in terms of how well they comply with the musical systems. I would also like to pin down when and where this knowledge disappeared as I continue to reconstruct the sources. In the meantime, I rely on the evidence that is available and correct its notation when I am able to detect errors in it. However, there is a high probability that in such cases other readers will be able to point me to an alternative version of the ancient source that is correct.

In any case, I would like to take the most reliable text and its vowel diacritics and then clearly document absolutely all the rules and nuances of how to exactly pronounce it in accordance with an eastern, preferably Iranian or Iraqi dialect. This is important mainly for determining the stress of words, but it is an equally significant exercise for musical decoding, since it may turn out that the most unprepossessing apostrophes are key to the pronunciation of consonants and the characteristic extended pronunciation of some vowels.

Usually, this drawn-out pronunciation is not a dialectical idiosyncrasy, but a musical direction, which is reflected by the use of a corresponding fundamental graphical mark that forms part of a system. This is also our first principle:

1. Everything that is written in bold type in (reliable) sources should be accentuated and drawn out in its pronunciation\*:

The note corresponding to the “bolded” vowel diacritical mark (in the case of a consonant, the indication consists of both the mark and the vowel underneath it) should be accentuated and prolonged longer than others.The exact duration of such drawn-out pronunciation is ambiguous, and sometimes it can be insignificant (as in cases where such a note is part of an “accelerated” word-combination written with a hyphen (see below)). But sometimes it is exactly doubled in relation to the others. Special attention in such cases is required, including when an additional system (*Taʿamei ha-mikra*) is used, since it has a dedicated mark that is used to indicate double duration. In this case, it is not used (since it would duplicate the functions of the “older” system). The exact meaning within a given (basic) system can only be found by “counting down” durations from the nearest “phrase” mark. (I will explain this method later).

2. A word that is entirely written in “bold” type must be evenly drawn out in its pronunciation over the full measure.Often, this will be the first word of a work (psalm) or a single verse in a song, but sometimes it includes the first word of each verse throughout the series of the work.

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*\* It should be noted that (out of ignorance) sometimes such bolded type was used to create a calligraphic table of contents in the sources, and it was duplicated for the start of each entry in the list. Accordingly, many bolded (initial) marks or words are present in many modern editions for no reason. In other cases, publishers have devised new uses of bolded type to emphasize something for purposes of commenting on it, or, for example, as a way of indicating the moment in the prayer when to bow.*

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Various seemingly purely calligraphic flourishes or decorations can be found in the sources. They may serve only an aesthetic function, but they are deserving of attention, because they probably provide more information about how we should reconstruct the music.

3. Thus, compound words that are written as a single word should be “worked out” according to the principle governing the deciphering of hyphenated words.

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The “-” sign

The hyphen, which joins two or more words in the text—entailing the use of multiple hyphen—, is located between these words, but unlike cases where it is usually written (vertically and centered between the letters), here it is aligned along the top line of these letters.\* It plays a different role in the sources than what we are used to: here it is used to join words when they are pronounced and not to specify them, or to point to something. The same is true of the phonetic principle inherent in this musical mark: to sing words (two or more) always together, without any pauses between them, as if they were one word.

4. The stress of the whole word (unless otherwise indicated by a corresponding mark) always falls on the last syllable of the first word before the hyphen. The stress will also be there, including if more than two words are joined by additional hyphens.

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*\* The letters in the sources as well as in the Torah scroll itself are calligraphically aligned along their upper line. This insight helps to explain some of the mysterious marks (that may be unfamiliar to modern readers) not only in the manuscript originals, but even in contemporary printed editions.*

5. In addition to an uninterrupted pronunciation, in most cases such a combination also requires the performer to speed up their delivery (the phrase must be sung faster than the adjacent words) to exactly twice the standard rate (or by half the length of the “basic” notes of the work in terms of notes).To determine whether such acceleration is required, for purposes of this system we will again have to count down the durations from the end of the phrase. For any given work, I determined that these combinations were either always accelerated or not. (I have not yet set out to study the logic of this system, and it may turn out that what I discovered was only a consequence of coincidences).

The hyphen played a wide range of functions in all categories of works. It was used as a convenient device for adjusting the text to a certain general rhythm, by compacting and accelerating. This was an established convention throughout all the works that I examined.

**The “phrase” mark (*sof pasuk*)**

The “phrase” mark can be found in all of the books of the Tanakh and in certain fundamental works. This mark, which occurs quite frequently in the sources as a colon between words, indicates the boundaries that are traditionally used to divide the text into complete separate phrases. Such phrases cannot be called sentences in the usual sense. Rather, they are a precursor of a concept that is familiar to us. They can be shorter depending on the context, and they may include only part of the phrase that is pronounced.

But they always indicate a “complete” intonation, and therefore, in most cases, the “phrase” mark specifically indicates the performance of a tonic. The exceptions are “non-affirmative” or “non-final” phrases. In these (rare) cases, the situation must be considered in accordance with the context. When reconstructing music, we must not forget the usual intonational representation. These phrases may represent a tonic, though this is not how they are currently pronounced. Such (non-final) phrases denoted by the “phrase” mark are very rare. *Teameim* systems use certain marks to designate phrases, but in the case of texts without additional marks, theoretically, these phrases simply should not be marked in any way. (Modern commas or other punctuation marks that have been added by contemporary editors may be used in modern editions). In any case, such situations are not errors, since the additional rhythmic function of a given mark is indeed required in this case.

The “phrase” mark is the most common example of the fact that the indications of earlier systems are not duplicated by later ones. The *Taʿamei ha-mikra* systems use the special “Athnach” mark to directly indicate the letter that the tonic falls on, and in cases of phrase endings indicated by the “phrase” mark (which always exists in (is inherited by) texts that contain *Teameim*), the “Athnach” will not be added there. And this is even though even though the “phrase” mark performs the same musical function as “Athnach”, it uses a different visual mark to do this. The “phrase”, unlike the *Teameim* marks, is not located directly under (or above) the exact letter of the word that the tonic falls on. Rather, when it appears in a line of letters, it indicates only the very (final) word of the phrase in which this letter is located. And this letter, in this word, is the one that is stressed.

As a result, I can formulate the following principle of the “phrase” mark: in the presence of the “phrase” mark, the tonic must be performed on the beat of the note that corresponds to the key vowel of the syllable that is stressed by the word preceding this “phrase” mark. I mean the beat of the letter that is stressed in the last word of the phrase.

The rhythmic function of the phrase

The musical properties of the “phrase” mark, which is a textual diacritical mark used to divide the text into separate phrases that are used consistently to indicate rhythm, leave no doubt about its actual purpose. It is the precursor to the musical bar used in modern musical notation. The lengths of these musical phrases (TeaMeasures) are not uniform. They may include several “uniform” measures of the kind that are familiar to us, but these phrases are always rhythmically aligned. They will always be a multiple of what I have defined as a measure for my reconstruction.

I define the measure as the shortest similar phrase found in the existing sources of one word consisting of eight syllables. There are not many such short phrases (TeaMeasures) in the sources, but there are a few. In the most typical phrases that I could find, there may be 3–4 bars of this meter. We will almost always assign a musical score to our basic short TeaMeasure of four quarters, in which each of the eight vowels (syllables) of the word will be assigned equally long notes (as one-eighths).

In terms of determining (and detecting) the rhythm of works, the “phrase” mark provides us with a template for how to divide the work into measures. It is always aligned with the end of the text.This means that the last word that precedes the mark will be the last in its measure. The word following this sign, or rather, its accented (stressed) syllable must form part of a new measure. In the case of this system in particular, it will not always be easy to detect all of the (possible) pauses surrounding this “junction”. But we can almost always compare the other TeaMeasures of this work to help tease them out. A complete set of individual TeaMeasures provides us with an essential basis for determining the note lengths that make up their constituent words using a comparative method. (Subsequently, by accenting the beats of the notes under the correct stresses in the words, we can eventually surface the rhythmic pattern of the work).

Despite the apparent vagueness of the principle, this tool is very intuitive. Given the fact that “phrase” marks occur frequently and are relatively evenly distributed in the works, I have learned how to make the alignments relatively simple.

Modern punctuation marks

Our modern punctuation marks, including the period, comma, and even the question and exclamation marks, can be found in later scholarship. Many works of this type, in all other respects, correspond exactly to the works in the category under discussion (the sources of the “Literary System”). The details of this paragraph apply mainly to these songs. However, it is the practice of certain editors to also add modern marks to ancient sources, including sometimes in editions of the Tehillim and often in the texts of prayers. At the moment, I do not know what criteria are being used to determine when they are added to works in each specific case. Therefore, I think it is appropriate to consider them only as “auxiliary” information when trying to work out intonation. But in works in which we find *Taʿamei ha-mikra* marks (except for modern added ones), they should be ignored for purposes of musical reconstruction.

In all other cases, the punctuation marks regulate the rhythm of the work in the same way that the “phrase” mark does. In terms of melody and accompanying harmony, these marks define relatively clear intonational requirements.\*

*\* It might seem that creating a melody and musical accompaniment for the works of this category would be a task only for composers and that they would have absolute improvisational freedom in the absence of any systematic source data. However, this is not entirely true. In our case, these particular works almost always incorporate many phrases that have been integrated compositionally (melodically and rhythmically) from fundamental sources. We can recreate the music of these works by applying systematic principles. Thus, parts of these works may also include well-known excerpted passages. Considering this and what we know about the style and motifs of these excerpts, likely, our final reconstruction will adequately reflect the original musical idea.*

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Pauses

I noted above that it is necessary to seek out the lengths of pauses when determining where to divide measures. This is one of the most significant shortcomings of all existing systems: except a single character from the *Teameim* group denoting a special “pause-syncope” (“accord” mark), no other pauses are defined. (The Tehillim, however, contains hints as to where to pause. I consider this in the corresponding section below.) This is a very significant drawback, and it can be partly attributed to the characteristic dynamism of the works. The lyrics of the songs are quite dense, and the “elongated” notes indicated by the marks are most often used to fill the empty spaces.

Nevertheless, pauses exist, and teasing them out is not a trivial task, even in *Teameim* systems. In any case, in any of the systems it is impossible to calculate the arrangement of words in a measure as well their pauses without the available “measure” marks.In this system, the “phrase” and punctuation marks can be used to indicate measure divisions. (The *Teameim* systems have a few more marks that indicate the scope of TeaMeasures).In most cases, it is better to perform this calculation in reverse, by adding up the words (the indicated lengths of their vowels) from the end of the measure to their beginning (since there is some rhythmic “uncertainty” at the beginning of measures when the phrase does not begin with the first beat).

The “Shva” mark\*

I think that linguists will be interested to learn the properties of this mark that I have discovered. It is unlikely that the laws of pronunciation in any other language contain such systematic principles of a musical and poetic nature.\*\*

This mark has several functions, and all of them without exception are used to order the pronunciation, and some are used to rhythmically balance the works.

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*\*Honestly, this is just a nondescript colon that is written under the letters. At first, I did not suspect that the punctuation mark played any significant role in the list, but now I can outline how it functions within the musical (song) rules of the language. In any case, I did not try to come up with an alternative (associative) name for it in the way that I did for other marks. It is simply a* “*Shva.*”

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First of all, its primary function is that of an ordinary vowel (“E”). As the character for a vowel, it would have been one of the most commonly used letters. In addition to its widespread use in ordinary words, it also accompanies the consonants of many prefix words (such as the letter pairs kE, bE, and lE in Hebrew).

In practice, most members of the Hebrew-speaking community today simply ignore it and do not pronounce it in many cases. However, many members of the eastern communities do pronounce it with its given vowel value. This pronunciation is one of the characteristics of their distinctive dialect. What does this mark really do, and what secret note does it stand for?

The old Sephardic tradition is correct. This letter is unique within the rules of the language: the correct pronunciation of the word depends on whether there is a vowel or not. It is the thickness of the mark that determines whether a full vowel should be pronounced or not. The composers of our dynamic musical scores can exploit this flexibility. Given the varying style and the compactness of the text, the author can adjust the length of many words and prepositions by a vowel. (The spelling of the text does not change. Only the vowel diacritics change, which, as we already know, were added to printed texts at a later stage). But unfortunately, many editions do not reflect these definitions correctly.

I have determined the rules for the pronunciation of the “Shva” based on the discovered logic. They are verified by numerous examples from correctly printed books of the Tanakh, whose vowel diacritics have not been determined on the basis of contemporary algorithms, but rather on a thoroughly accurate census of ancient sources.

* When there is a thickened (bolded) “Shva.” it should be pronounced (sung) as a full vowel “E”, whose length is the same as the other letters in the word unless otherwise specified (using the tools provided by one of the systems).

The pronunciation of the thin (normal) “Shva” depends on whether it is attached to a consonant or a vowel.

The normal (thin) “Shva” is written under the vowel letter.The author will use this variant if a full-fledged “E” vowel does not match this part of the melody. Many contemporary Sephardic performers follow this convention. Unlike members of the main language community, they do not completely ignore the letter, but pronounce it somewhat similar to an “apostrophe.” It does not take a major note beat. Within a text, this sign probably performs the same function as a Russian hard sign (ъ) between two consonants: it introduces a kind of “stammer” before the next letter. It is not a smooth transition in pronunciation.It is reminiscent of how speakers pause between neighboring consonants when reciting the alphabet. A similar clear and “affirmative” pause must be voiced even after the last (consonant) letter in the word if there is a mark there.

If a normal “Shva” is followed by a vowel sound, then the length of this vowel is doubled using conventional duration notes (usually 1/32). This rule is my current hypothesis. Of course, no one currently follows this rule in modern practice. Sephardic performers simply ignore this mark. But according to the duration calculations and certain other indicators, this is where a separate short sound can be pronounced. This potentially represents a fundamental characteristic of how the holy scripture and prayers are sung. By singing using a trembling or “quivering” voice, such a choice of voicing reflects the preferred nature of the performance (the emotional state of the performer) as determined by religious rules.

In summarizing the discovered principles of the “Shva” mark, it can be noted that strict adherence to these rules creates very clear outlines for all elements of the work, “forcing” the performer to pronounce all the letters of the text in their correct rhythmic arrangement, preventing the practice of “swallowing” and eliding letters as required by (rather strict) religious rules.

We can use the discovered rules of the “Shva” and, most importantly, its regulation of musical-poetic performance to explain many other phonetic and grammatical mysteries of the language. They help to decode other marks and discrepancies in the sources. This topic undoubtedly deserves separate treatment. In addition to the fact that some other linguistic discoveries may have a direct impact on the musical reconstruction of the works, many other aspects of the discovery, including in particular the poetic architecture of the works, allow us to use matching rhymes to identify errors at the level of individual letters (including even several entire words). They sometimes affect the rules of modern pronunciation, and this, should not be ignored. These corrections to the sacred language are justified due to the popularity of these reconstituted works.

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So far, I have identified patterns of elements that reflect the music of the works, which I have been able to characterize in those cases where they contain the requisite source data that I have described above. Is this data sufficient to perfectly reconstitute the composition of the original author? I would love to have your professional opinion.

Technically, these parameters leave a lot of room for different interpretations of the details. However, I think it is possible to completely solve the main task that this discovery poses. Yet, there is a large issue that concerns me more. I have shown that for a given style and a specific topic, each such work carries a separate and recognizable “spirit” inherent to its particular category (or even author). Have I clearly presented my reasoning for how I have formulated the procedure to extract definite musical precursors of many of the works of interest?

Even though the discussed systems provide a wide range of additional tools that do not play an essential role in the “literary” system, knowledge of their principles helps us to decipher the works within this fundamental category. This is not surprising, because in the end, all these signs and marks are actively used in these works. They both provide evidence of their functions and specific information on how they influence the musical performance, combinations, and adornments within the framework of a given style. These devices play a consistent role across works, so when we are faced with the task of recreating melodies of fundamental works in the future, these devices can be seen, especially in interaction with each other.

I will define another fundamental key rule of the *Taʿamei ha-mikra* marks and their functions. It is a slight reformulation of the weighty principle underlying the observance of the laws of the Torah: Not only must a certain rule be observed, but it must also be added where it does not appear. I can explain what I mean by way of an example that we have already reviewed: the hyphen, (-) which serves to indicate that words should be pronounced together, determines that a pair of words are pronounced together to satisfy the needs of the melody (the rhythmic beat is not sufficient to serve as the dividing pause between them). The definition of the function of the hyphen does not appear here, which means we have an error. We need to revisit this passage or perhaps even the entire work. My advice for deciphering the rhythm is to start reconstructing it not just from the end of the measure according to the “back to front” method described above, but also from the end of the entire part (and even better from the end of the entire work).

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The “*Taʿamei ha-mikra*” system

This system represents the most extensive musical part of my discovery, though I would like to be as concise as possible. I am not prepared to provide an exhaustive list of all the rules for each mark in light of the various surrounding combinations. Tradition has devoted many volumes to these material “systematic differences”. Yet the rules that these books describe are not always useful. I think it is possible to disagree with the interpretations of the functions of the marks presented in this scholarship based on the needs of the musical score.

All of the fundamental rules and exceptions to the meanings of the marks that I am presenting still need to be rechecked and clarified. Here I will present as general a description of the functions of each of them as possible, summarizing my initial impressions of these marks. As should be clear from the previous discussion, the main idea or even task behind the strategy of ancient notation is not to determine everything, but only what is necessary. It is within these known and defined frameworks that we must fit the text of a given work while taking into account what I just outlined and an additional factor.

Exclusive notation

*Taʿamei ha-mikra* indicate the musical parameters of not all letters, but only those individual letters, or rather, the notes corresponding to them that are musically “exceptional” compared to the other notes in their row. These marks will be indicated only for those notes in the work that differ in their length or tonal height from the so-called “basic” length and tonal parameters that were determined and that form the default values for the system.

Thus, at the beginning of a work, it is possible to imagine a string of notes with one-eighth lengths, where all of these notes are of “medium” height within our performing range. And now, we begin to sing them while looking ahead for period marks that represent “commands” that indicate when and what changes need to be made to this constancy (where the musical notation starts almost from the very beginning, often already with the first letter of the work). I provide a table of *Taʿamei ha-mikra* marks including a graphic illustration of each mark and explanations of the corresponding musical functions and commands of these marks. I will clarify the concepts underlying the “basic” parameters and touch on some key principles governing the rhythm and tone (note pitch as presented systematically).

Recall that I determined the “basic” length to be one-eighth. It is the proposed default length. It is the length of all the notes in the work that are not otherwise marked. Some unmarked notes in the work, however, may form part of a certain musical “passage,” and they may have a varying length. There are restrictive marks or conditions for these passages that indicate their beginning and end. Also recall that in some cases, depending on the type of rhythm, the “basic” beat may be one-sixth (and in rare cases a triple rhythm style).

The style, that is, the type of rhythm of the work, is revealed by the method used to determine the rhythm based on correspondences—as indicated using marks—of lengths and accented beats. I provided a general outline of this process already in the previous system based on a much smaller amount of data that was also of lower quality. *Taʿamei ha-mikra* provides substantial and accurate baseline data for identifying the rhythm. I will review the specific principles of the *Taʿamei ha-mikra* system with a more detailed discussion of this process under these conditions.

Identifying the rhythm of the work

Identifying the rhythms of the works is the most fundamental task of restoration. The representative works contain many marks and accented beats, which give us many options. There is a lot of information in the works to help us determine the beat. I summarize below what I have already been able to determine about the systematic approach to determining the rhythm of these works.

1. In terms of rhythm, the system is entirely based on a clear sense of what are the “accented” notes (rhythmic beats) in a song. That is, the accented vowels are the “key” components in the accented syllables.

2. In determining where the accent is typically placed in the system, I have found that it is always on the syllable that the word is stressed on and/or the syllable that falls outside the “smooth” rhythm, in other words, “syncopation”. So, for example, the offbeat beginning of the pronunciation of a word will ensure that the first syllable is “accented” when it is pronounced.

Any of the *Teameim* marks may be appended\* to these syllables, or rather, to the key vowels of this syllable.

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*\*We already mentioned that the mark may be written above or below the corresponding letter. In any case, it will be graphically obvious whether a certain letter has an appended mark. We have also already specified that in most cases, the mark will be written next to the consonant letter preceding the modified vowel, which is also traditionally indicated using a vowel diacritic.*

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3. Within the system, any of the marks encountered in the text first of all tell us that the associated note is accented in relation to others and the rhythmic chain. In other words, various marks may specific additional information, such as note pitch, length, and mood—in addition to other marks that determine the style. So, for example, if the 1st, 3rd, 5th, and 8th syllables of a word were marked (on the vowels), the rhythm of the work would be similar to a modern Tango. In this case, the three “strong” (even) beats of the rhythm should be accented, and the eighth asynchronous beat is a syncopation.

Subsequent words will arrange their stresses in accordance with their marked accented syllables, and this template, which takes into account all of the existing marks (accented beats) in the work, has a more drawn out melody. This is a simplified example, of course, and it is figurative because it contains all the outstanding beats in a single word (that are accented more than the rest).

In fact, throughout the entire work the system only marks those accents that must be punched in order to maintain the correct rhythm. Accents that have no place in the rhythm are not noted, but in those places where a specific combination of words provides many possible (non-matching) alternatives, the required outstanding beats (which are supposed to be accented in this segment) will all be marked. Thus, it follows that:

1. It is practically impossible to identify the correct rhythm on the basis of only one or two TeaMeasures. In other words, it will be possible to find a matching rhythm option on the basis of this evidence, but the chance that this is the correct rhythm of the original is small.

2. The likelihood that the original rhythm can be identified is directly proportional to the size of the work: the greater the total number of correspondences of the accented beats in our identified rhythm, the closer we are to the truth. (In fact, however, given the specific nature of the difficult asynchronous rhythms, the probability of hitting all the indicated accents is quite high, including even for a short psalm).

3. When we intuitively complete accented beats for unidentified elements, we see that the system assumes a certain level of personal musical ability and previous experience on the part of the performer. Identifying the rhythm requires a fairly developed sense of rhythm, but apart from that, it also requires an intuitive familiarity with the system. Performers must have a musical sense of the passages with missing marks as well as a fairly clear understanding of the system's assumptions. To call attention to a particular rhythm, the system can specify marked stress, which the experienced performer may already know, allowing them to determine where the rest of the rhythm pattern should play out\*.

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*\* It is quite interesting how the concept of a musical notation system is similar to the fundamental traditional rules for interpreting the texts of Holy Scripture. Given the scarcity of the available evidence and the ambiguity of certain passages in the texts, particular details are decisive for finding the pattern given the relativity of the definitions. Given these rules, passages with similar combinations of phrases can often be clarified on a comparative basis, and many other vague features of the notational definitions can be successfully resolved by applying (often intuitively) known rules of laws and covenants.*

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The final proof of my method for determining the rhythm is the correspondence of all the marks in the work with the accented parts of the discovered rhythmic pattern. All of the rhymes in the work fully match this pattern, that is, the rhythm complies with the poetic model of the work that I already identified. Except for the accented beats, we will also need to comply with the measure framework together with certain lengths of individual notes indicated by the corresponding marks. It is not easy to accomplish this task in some works, but it is always possible.

Division of the text into measures

The list of *Taʿamei ha-mikra* marks contains a dedicated “accent” mark that indicates the accented beat, or rather, the letter of the word corresponding to it. As was mentioned, other marks also imply accentuation, but they also provide additional information about the length of their associated note, its tonality, the pitch of its sound, the characteristics of the voice, etc. When identifying rhythm, it is best to completely ignore all the tonal definitions of the marks and take into account only the fact that the notes they indicate are accentuated.

The identification process should begin with determining the possible “time frames” for the parts to be analyzed, which are the text groups delimited by TeaMeasure end marks (which are intonationally complete phrases and expressions that are fundamentally rhythmically “aligned” units).We have already encountered some of them in the main system, such as the “phrase” mark as well as the possible use of modern punctuation marks in certain situations. Several other marks can help us to determine the end of TeaMeasure similarly. I describe them here in the table of *Teameim* functions. As a result, we get a chain of TeaMeasure groups, which make up a primary musical score filled with notes (letters) of various lengths, in which the uniform measure divisions can be indicated.

Furthermore, we use these groups of our TeaMeasures to define all the notes of “non-base” length that are indicated using the corresponding *Teameim* marks, and the rest of the notes (vowels that are not marked with anything) will serve as the notes for basic lengths (by default, they can be either 1/8 or 1/6 lengths).

When determining the exact values of the lengths of the specified (relatively defined) notes and possible pauses, we may need to make relative comparisons of groups of notes. (Basically, it is best to calculate the lengths in the direction from the end of the measures to the beginning).

As a result, the chain of TeaMeasures with known note lengths and defined rhythmic accents can be divided into uniform and familiar measures. We have now produced a probable version of the rhythmic arrangement of all the words in the melody in our reconstructed work.

The task of identifying a suitable rhythm within a small part of the work consisting of 3–4 TeaMeasures is usually not difficult. But as we add new groups of TeaMeasures, we will be faced with new syncopations whose accenting must fit in the rhythmic series, and as we discover new lengths, these will also have their own requirements. We will need to satisfy all of these requirements in accordance with a merciless system of rules: none of the notes within our rhythm may carry the accent in pronunciation if it is not marked by one of the *Teameim* marks.Here we must add that in accordance with this rule, implied accents that are not explicitly marked should be considered as so marked. None of the indicated notes may be shortened or lengthened in an attempt to make the word fit the pronunciation dictated by the stress.

It should be recognized that there are many gray areas. In principle, each passage of a text that is free of marks has room for improvisation. In trying to determine the musical score for these unmarked sections, I devised the following formulation: the text should be rhythmically arranged in such a way that the system would not add any of the indications that it has already specified.

In the end, we must observe the organic intonational logic of possible individual gaps at the “junctions” of TeaMeasures and the work as a whole so that they reflect the form of the work's poetic structure.

In summing up this section, I must admit that in comparison with the logic of modern texts, there are shortcomings in the logic of the rhythmic system of the reconstructed texts that leave room for debate. First of all, the text should be pronounced by the currently deciphered principles of the system. I do not doubt that as the scope of the study is expanded and more scholars approach it professionally, I will be able to state the system rules and principles more concretely. (I myself have not completed some of the necessary calculations).

Likely, the places where there is room for debate could more correctly be termed areas where improvisation is freely allowed. Suspected “shortcomings” may present opportunities for originality that allow the performer flexibility. The works have been able to be performed by the most progressive and successful talents across generations without violating religious prescriptions in any way. I think that many will be able to appreciate the significance of this observation.

Even today, when discussing such a “revolutionary” interpretation of the style of performance of the works under discussion, leading religious authorities recognize that it fully complies with the rules (basically, these rules relate to “side” effects of the rhythms, since they specify that some words should be pronounced together while others must be pronounced separately, and stress-accents must be observed). It is absolutely clear that if the system had been stricter in its fundamental definitions, this art would never have gotten off the ground, at least as part of Jewish religious rites.

In concluding our discussion of the criticism and praise for the system's conceptual approach to the issue of rhythmic notation, we must also consider how it was used. As I have gained knowledge and experience of the specific style, the density of the text, and other inherent qualities of the works, the task of determining the rhythm becomes similar to learning modern musical notation. The ability to read TeaNotes from sight is like reading sheet music, especially when the performer knows the text of the work well. (Of course, the performer may make some errors, but thanks to the frequent use of certain phrases, an experienced performer can easily smooth out the melody, aligning it rhythmically to conform with the boundaries of TeaMeasures, by extending, for example, one of the elongated notes more than is required).

I do not base this conclusion only on my personal experience. Rather, this is my opinion of the system itself and reflects my confidence in the high level of its intuitiveness and practicality (of course, when used by an experienced performer). This is confirmed by the fact that many prayer books (especially ones that accurately reproduce ancient editions) reproduce the “barebones” text\* with just periodic standalone marks indicating a rhythmic accent under the single letter of certain words. Given my accumulated experience, I can safely say that these marks provide enough evidence to accurately identify the rhythm of the entire movement.

These marks are always located exactly near the place where there is alternative stress, whether in the same word or a nearby one. It is my sense of rhythm that attracts my attention to these locations, and this could lead to a distortion of the correct rhythmic model. These are only accent marks, and there may only be two or three on a page, or only in certain parts of diverse multilayered works. The context they are found in, and thus their level of ambiguity and the chance for potential error, is always the same. By assuring that the performer adheres to the correct rhythm using such unobtrusive indications, the system plays a certain function of assuring the quality of performance. However, this “key” provides additional evidence for my understanding of the generalized characteristics of the texts, the styles of the works, and their general stylistic similarity, on which the *Taʿamei ha-mikra* system is undoubtedly based.

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*\*Even when there are vowel diacritics and Taʿamei ha-mikra marks in the originals, prayer books often do not include them and only print the unadorned text in those parts that are compound prayers.*

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Tonal notation

Before moving on to describing the principles of individual marks, I need to discuss one more elementary aspect of the system separately. I have already discussed the different opinions on the level of development of the elements and the very concept of “musical harmony” during the periods under discussion, so I do not need to repeat this discussion here. I have been able to reconstruct many of the works, and in this process, I have shed light on how musical harmony was understood more than three thousand years ago. I will discuss the fundamental logic of this harmony that I managed to discover, or rather, uncover the keys of the system that indicate musical notes, or rather the melody TeaNotes of the sources.

I have already covered the basic elements of this logic in the previous sections of my article, so here I only summarize its basic principles. I describe the specific functional details and meanings in the definitions of the corresponding marks in the following table.

It is easier if you picture to yourself that the system encodes four successive pitch segments, which we can call “TeaOctaves”. This, is only a figurative representation of the system architecture, which provides a more accessible, and even intuitive presentation of its order.

The scope and dimensions of the TeaOctaves can be determined by dividing the entire statistically average singing range into four equal parts. Each TeaOctave has several specific marks (of its own), where each such mark indicates in which TeaOctave its note is located.

In addition to determining the scope of the note pitch within the boundaries of the corresponding TeaOctave, the system determines certain properties for each of these marks (for TeaNotes) and even each of the TeaOctaves themselves. The following are some examples of the meanings and intonational properties of the (TeaOctave) segments:

1. The notes of the lowest TeaOctave indicate sadness, deep reasoning, strict and negative emphasis, and crying.

2. The low TeaOctave performs a narrative function.

3. The middle TeaOctave includes the middle notes of the performer's vocal range, which are also the base notes of the system for purposes of relatively defining the note pitches.

4. The high TeaOctave notes are used to start a new story and inject sprightliness and energy into the performance.

5. The highest TeaOctave is reserved for bursts of jubilation, joy, but also sometimes quiet sobbing.

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*\*Individual TeaNotes, whether used in the current melody or pitch segments (TeaOctaves), do not always have to be used in strict accordance with these properties. In the end, low notes may also be needed for melodies in a more* “*fervent*” *passage. The performer should also behave in such situations with caution: I have seen statements more than once in traditional literature that* “*the Taʿamei ha-mikra marks should be assigned greater significance than the words of the sources themselves.*” *These statements probably reflect correct instincts in how to resolve these types of conflicts.*

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6. In terms of the graphical representation of the marks, when they are written below the letters, they indicate the two lower TeaOctaves, and when they are written above the letters, they indicate the higher ones.

7. some marks belong only to a certain TeaOctave, but some may move between different pitches: these marks can be written both above and below the letters of the text.

8. The function of certain marks is only to determine the “tonal” value or the pitch of the note (and its “nature”), whereas others only specify the length values. However, some can determine both.Recall that, in any case, they all determine that the given note is accentuated in the rhythm.

The main marks that are used to determine the pitch are diagonal lines written under or above the letters, which indicate the “direction” of the change with the previous note. In modern editions, they are most often graphically indicated using short semi-arcs that are drawn with a clear indication of the corresponding direction. The direction is indicated by a diagonal line that is read in the same direction as the reading direction, or from right to left. The line either moves to the upper left corner (\), indicating rising pitch, or in the reverse direction (/), which is for falling pitch.These are “floating” TeaNotes, and they can be used either in low or high TeaOctaves. The TeaOctave is determined by the location of the mark in relation to the letters (above or below them). Thus, for example, when a performer starts singing the words of the song (by default, with “base” pitch and length notes), the first upward direction mark (\) written above one of the letters in the next word would tell the performer that:

1. The note of this letter should be accentuated in the rhythm, and

2. It is one of the notes of the “high” TeaOctave.

You will have to decide for yourself which one it is (within the TeaOctave\*). The specific TeaNote will provide additional information about it and its character. I have provided additional definitions in the table below for each mark. In this particular case, however, our discussed mark (\) does not specify any additional characteristics, except for the direction of the note's pitch. The set of TeaNotes contains marks that are intended only to define the rhythm. They also do not provide any intonational definitions.

Within the system, if the melody requires the intonation to be specified, the desired mark (which encodes additional properties) will be indicated. The same intonationally transparent TeaNotes accompany the current short melodic passages, in which there is no place for special musical emphasis. And yet, the context must be taken into account here as well. The suitable intonational notes must be determined in accordance with what this word (and perhaps also the next one or even the whole phrase) intends to convey to the listener. Each of the sound movement marks indicate not only the pitch of the note for the particular letter, but also the direction of musical movement for the subsequent notes until the next encountered mark, which specifies a new direction of the melodic path or returns us to the tonic.

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*\* Now that we have encountered the* “*TeaOctave*” *concept for the first time in practice, it should be noted here that it is shorter than the familiar seven-note octave. Following our figurative definition of this concept, we divided a certain reference maximum range into 4 uniform parts. This does not mean that this relative unit changes depending on the capabilities of the performer. It would be wrong to define its extent or that of the TeaOctaves completely exactly. However, for practical purposes, the size of a particular TeaOctave is closer to a fourth or fifth of the size of a modern octave. We should select the desired note based on the additional determinations that we have made about the system.*

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This example illustrating the sound direction mark was not arbitrarily selected. The first (initial) TeaNote (\) is encountered quite often in works and many phrases in general. It belongs to the upper TeaOctave, since this musical movement is characteristic of “the beginning of the story.” It is brief, since in just a few words this mark will usually be followed by an instruction to “return back down” as indicated by the “/” mark, which completes the phrase.

Basically, in this combination, both ascending and descending marks indicate approximately the same note, and the “breaking point,” the point of downward return, will be somewhere between the two marks. The explicit breaking point note denoting the end of the rise and return to normal is, in this case as in many others, not defined. Since it does not need to be accented, therefore, the marks should be seen from afar, and by the time the “return” mark is performed, the performer needs already to be performing a bottom note while also not forgetting, at the same time, that the “return” note is accented in our song (since a TeaNote is assigned to it). However, the performer must have first disassembled the work in rhythmic terms to understand how to perform it.

This effect is only achieved when these marks are arranged in the given order, in visible proximity to each other (within a short phrase). If only one of these marks is present, the musical movement (in the appropriate direction) should start from a specific note indicated by the mark. In other words, if we are currently on the note “do”, the mark “\” that we find above the next letter will tell us to go up, syllable by syllable, with uniform note durations, to the nearest new TeaNote, which will tell us what to do next.

When these marks are written below the letters, in the lower segment, they function the same, only now they invert the musical values. Therefore, we are sent downwards by the “/” mark. (Do not forget that we are moving from right to left).

I have dwelled on the underlying principles of “direction” marks, since how they work can seem especially vague, but they play a dominant role in setting the melody. But despite their uncertainty, with experience, we can understand how they should be voiced in combination (in particular, with the help of the context of the corresponding phrases), and these combinations are quite consistently repeated. In general, we must learn more about these marks. (I already noted that when they are horizontally shifted in relation to the letters, this may indicate a more precise determination of the note, but this cannot be realistically specified on the basis of modern publications). This will require more experience.

In addition, the direction marks function dynamically. When repeated several times in a row, they tell the performer to continue moving (in particular, to the next segment ...). However, they only work this way when they are repeated in different words. When they are repeated within the same word, the “direction” mark means to continue on the same note. This repetition of marks (in one word) is required because, in principle, the system tends to pull the melody towards the tonic. Whenever the melody is away from our “base” note, it must be supported by marks. Otherwise, if we do not encounter any tonal marks met within one or two words (depending on the length), we should organically restore the melody to the tonic.

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In concluding our discussion, let's return for a few more moments to how marks are shifted that we mentioned before. The mark is written consistently—although it looks different in the Torah than in Tehillim, where it is also consistently repeated in an identical form—and I am confident that it is designated by the use of “thin” calligraphy in copying. The level of artistry of this calligraphy is quite high since it involves the well-known practice of thoroughly copying the books of Scripture.\*

My hypothesis concerning this phenomenon in the Torah (or actually in the entire Tanakh except the Tehillim) concerns a certain original manner of singing and even pronunciation in ordinary conversation, which is a characteristic of Sephardic—particularly Persian—articulation. The fact is that with such a shift, most often the mark is written at the edge of the letter (at its final edge close to the next letter, when written from right to left). I think that this is what the system does to indicate that the sound should start to move (or to confirm that it should continue in a new direction by how the mark is specified) away from the vowel associated with this mark to where this sound meets the following consonant letter.

At one time, I noticed that some speakers of an eastern dialect pronounce certain consonants as if they are singing them in their own unique way. This happens with “sonorous” nasal and sibilant consonants, such as “m”, “n”, and “z”\*\*. At the places of transition from a vowel to a consonant, they present a picture very similar to these shifts, such as in the word “im” which is pronounced like a question. Here the intonation rises after some delay, which is conditioned more by the letter “m” than the process of pronouncing “i”. Thus, perhaps in this case the marks reflect the proper pronunciation more accurately. In any case, they graphically look very similar to the actual situation (in the case of such articulation).

Remember again quivering singing, which is one of the presumable characteristics of the “Shva” mark. in principle, the marks and this style of singing are independent of each other, but the combination of these two characteristics creates an authentic sound that is also present in modern oriental singing, in which all letters are pronounced in accordance with “Shva” principles.

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*\* The accuracy of these conclusions for absolutely all cases should be treated with caution, since it is also clear that the musical principles of the system were not known to all editors in most cases. Yet, we can see that the marks are copied accurately, and it is even possible to say that there is archaeological proof of this, even down to such small details as the crowns of letters. We know that these marks contained certain secrets (apart from musical ones) that were discussed in the Talmudic period. This knowledge was also lost, and yet the fact that these marks were so meticulously copied carries great significance.*

*\*There is a separate rule for the pronunciation of the most significant Jewish religious* “*canonical phrase,*” *the first line of the prayer* “*Shema Yisrael*”*: the final letter* “*d*” *in this sentence must not be held longer so that it sounds closer to a* “*z*”*, meaning that the vocal cords continue to vibrate.*

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It bears repeating that these features that I have described are significant. I try to describe all of the details, since they help us to fill in the lacunae in the system. When the sound moves in such a way, it simply does not leave room for a pause.

Thus, with the intention of being attentive to everything that can help us to make the most effective use of the *Taʿamei ha-mikra* system of marks to restore this lost art, let's outline their specific functions.

“TeaNotes”

The table below provides “figurative” definitions of the musical functions of the *Taʿamei ha-mikra* marks that I found to play a dominant role. It is unrealistic to expect absolute accuracy in the definitions of lengths and the principles determining how the measures are defined. There is no doubt that this table will be further concretized and supplemented in the future. First of all, this will happen as a result of drafting modern musical scores, which will further clarify the underlying rules and their functional essence. My definitions, although described in generalized terms, offer a foundation by establishing certain limits for each individual mark and outlining the functional scope of this apparatus as a whole.

I have provided as comprehensive a description as possible of my chain of intuitive decision-making about how to transcribe musical scores that I ultimately intend should be performed. Unfortunately, my mastery of modern musical notation is less than perfect. Of course, this forces me to continually test my decoding by performing works according to the TeaNotes. I find this to be the most productive—albeit compulsory—method for gaining experience and continuing the study.

I have chosen to present the marks in the table together with various letters (in the “Mark” field) to better present the relative proportions and their outlines in actual context.

The names of many marks, including the ones assigned by traditional schools, are not the same today. Therefore, I assigned them various names of my own devising and in accordance with the associations that came to my mind. I am not seeking to propose standard names.

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| --- | --- | --- | --- |
| **Mark** | **Tonal feature** | **Rhythmic feature** | **Mnemonic** |
|  | In current usage this is most often a direction mark to indicate rising intonation (from right to left) in the “high” TeaOctave (written above the letter). | The rhythmic accent is a function of each mark. The space in this field means that this mark does not have any additional rhythmic meanings.  | **TopUp** |
|  | This mark indicates falling intonation in the “high” TeaOctave. | ----- | **TopDown** |
|  | This mark indicates rising intonation in the “low” TeaOctave. | ----- | **BotUp** |
|  | This mark indicates falling intonation in the “low” TeaOctave. | ----- | **BotDown** |
|  | The “tonic”.This mark indicates the harmony tonic. (See my discussion above defining “harmony” within this system.) The melody note may also be another note where such is needed to complete individual phrases as dictated by context and the harmony of the tonic.It provides informational completion of the phrase (as a separate and affirmative ending for the whole sentence in particular).In the case of a complete sentence, the tonic note in the melody may belong to different octaves. This is determined in probable correspondence with the previous and subsequent marks.Often, the melody will require the performance of a tonic of a low octave followed by a higher octave within the note length, until the end of the measure.  | It is used as a phrase mark.This mark indicates the “measure-ending” note, which plays the same function as a “phrase-ending” mark whenever the phrase immediately follows a word that includes this mark. In almost all cases, a subsequent (complementary) pause is required until the end of the measure. | **Tonic** |
|  | ----- | The sole purpose of this mark is to indicate the rhythmic emphasis of the marked note.It is frequently encountered in the final word of a momentous phrase, before the phrase or “tonic” mark. This “accent” mark is written twice, whereby it plays not just a basic accentuation role within the system, but it also marks the strong beat of the rhythm within the word. It marks the completion of a certain part of a work, most often accompanied by a subsequent change in the type of rhythm. | **Accent** |
|  | This mark indicates extended singing of a single note that is double in length or of two notes that are close to each other (seconds and thirds) legato in accordance with the previously indicated sound direction.It also indicates the required TeaOctave depending on where it is written. (It can be either above or below the letter: I have provided two illustrations in the “Mark” column on the left). | The note length is twice the previous one. This means what it says: the note is defined about the previous note as opposed to the “basic” one, since the notes may form part of an accelerated or slowed-down passage. Therefore, lengthening should be relative to these durations. | **Double** |
|  |
|  | This mark indicates not to follow the “tonic” of the accompanying harmony. (Many other marks are defined within the system according to this principle).For our accompanying harmony, this is almost always the dominant and less frequently the subdominant.This mark indicates a significant note that conveys semantic information (question, condition, “rising intonation” of the phrase before the “denouement”, and so on)A note in the melody may specify the beginning in a certain segment with a transition within the note length to another (from bottom to top) or vice versa (which is more often the case) depending on the position of the surrounding notes in the melody.  | The note is at least twice the length of the “basic” note, and the maximum is four times longer.The exact length should fill in the length required to even out the next subsequent TeaMeasure.  | **Dominant** |
|  | This mark is added to a complete phrase or single phrase in an incomplete sentence.It is most often used to indicate the performance of the tonic of the accompanying harmony in an atonic melody. | It is used as a phrase mark.For the rhythm, it is identical to the tonic mark (see above). | **HelPhrase** |
|  | This is a particularly high note in the upper TeaOctave.It likely performs an instrumental function: a trumpet performance of a short high note.It most often indicates the dominance of the accompanying harmony. | The note length is at least twice as long as the preceding note.The point of “jubilation” in the passage is often emphasized in particular. There might be a longer delay with an accentuating instrumental chord.  | **MaxUp** |
|  | This mark is used for a high segment that is marked by a double note (signifying enthusiasm or a call to action)This often indicates the beginning of a (new) dynamic and augmented motif.In most cases it indicates a forte section.This mark is used to indicate the harmony dominant.It probably indicates a parallel or following instrumental duplication of this chord (by trumpet). | This mark indicates a double performance of a single note:The first note is the length of the minimum beat in the system.The second note extends the previous note to the length of the two “basic” notes. | **Force** |
|  | This mark indicates a doubled (trembling) low note (indicating fear, regret, and crying). | The performance is identical to the Force combination (above), but it is not an aggressive movement. | **Tremb** |
|  | This mark indicates the performance of a series of notes in descending progression.Starting from this, subsequent notes in the word are played in descending order to the end of the word, or (most often) to the subsequent “Bass” mark found in the next word. (See below).It indicates a descent that is approximately the length of an octave. Given this, the first note of the passage is defined independently of any previous determinations.How the descending notes are performed depends on the remaining number of syllables in the word after the mark. (Another rule can help here: the first note of the passage is reached quite quickly. This feature is found fairly commonly in the sources).Usually, the entire passage develops against the background of the harmony set by the dominant or begins with the subdominant before transitioning to the dominant towards the end of the passage.  | ----- | **Roll** |
|  | This mark indicates a particularly low note (in the lower segment) that suddenly jumps to a higher note.This is most often used at the end of a musical passage that is indicated by the “Roll” mark.This mark designates the harmony set by the dominant. | This is a basic length note that transitions (legato) to a note that is half the “basic” length.(This presents an interesting similarity with the modern convention (that is written as a dot behind the mark) that indicates one-and-a-half lengths. Here, however, it also indicates a change in the pitch of the note throughout the added beat.)  | **Bass** |
|  | Depending on where this mark is written (above or below the letter), it indicates the “high” or “low” TeaOctave of the note. It is used to indicate a continuation of the melody (at double speed). | Starting with a given letter (note), you should double the speed of the singing until you reach a new mark or the end of the following word.In the case of a two-word movement (if there are no additional marks before the end of the next word), the remaining syllables of the first word are sung (accelerated) together with the second word (without a break). | **Fast** |
|  |
|  | ----- | This mark indicates a passage consisting of words with uniform measures.All words occurring after this mark and continuing to one of the “phrase” marks (most often, it will be the “HelPhrase” mark) must be evenly sung in exactly one TeaMeasure.The passage begins on the first beat of the measure.(Sometimes editions erroneously print the mark to look similar to the “Fast” mark (see above). It should be drawn more narrowly and elongated. The mark is also distinctively placed at the very beginning of, or a little before, the first letter of the first word.)  | **Passage** |
|  | This mark indicates that the word should be stretched out. (See the rhythmic definitions).It does not define which segment should be sung. The word continues the current melody.Most likely, it means that the prolonged notes should be sung with a vibrating voice. | If it is written above the first letter of the word, it indicates that the singing should start on an off-beat note.When it is marked in the middle of the word, it indicates that all the notes of the word should all be equally doubled in length.If another rhythmic mark is written after it in the same word, only the notes preceding this additional mark are doubled, after which the performance continues following the new indication.When it is written above the last letter of the word, it indicates that the singing of the last syllable should be continued until the end of this measure. The entire next measure must end with a word, which is marked by the final “Pocket” mark (see below).If there are additional words before the “final” word (with the “Pocket” mark), another measure (or more than one measure) must be added to this passage so that this word is extended by at least two “basic” lengths (where the “Long” mark is written above the last letter). The entire passage is concluded with a word with the “Pocket” mark and a final TeaMeasure.  | **Long** |
|  | When this mark is written above the final letter of the word, it indicates a return to the tonic.It indicates a final flourish of two “basic” lengths ending with the tonic.Most often, it represents the end of a “meaningful” musical passage marked by the “Long” mark (see above).Sometimes, it is present twice at the end of the passage, where it is written above different letters of the final word, indicating a longer—or even doubled—“flourish” movement. | Most often, it is written above the last letter of the word. It finishes the “passage” marked by the “Long” mark (see above).It includes a melodic flourish of two “basic” lengths.It functions as a phrase mark when it is written above the last letter of the word.When it is written above another (i.e., not the last) letter of the word, it indicates the performance of a “flourish” that is only two “basic” lengths long.  | **Pocket** |
|  | When this mark is written at the beginning of the word, it indicates a sudden emphasis at the beginning of the word starting with a high note, which is then doubled.When it is written in the middle of a word (often after another mark at the beginning of the word), it marks syncopated emphasis (with the same intonational intention) of the word, “jumping” a note up and then back down. | When the mark is written above the first letter of the word, it indicates a “syncopated” beginning of the word not on the strong beat of rhythm (as is true of the “off-beat” beginning resulting from word resolution) when doubling the first note.When it is written in the middle of the word, it indicates a syncopated emphasis of the note. | **JumpIn** |
|  | This mark plays the reverse function of the “JumpIn” mark, with the same intonational goal.It provides an additional way of making the marked note stick at the end and/or in the middle of a word. | The mark emphasizes the last or middle note of a word with the addition of another syncopated note. | **JumpOut** |
|  | This mark stands for a prolonged, “loud” (“solemn”/”tragic”) accentuation of the significant word.It marks a passage of notes usually against the background of and within the harmony set by the “dominant”, whereby the word is ended on a high note towards the end of the measure. | The accentuation here is especially significant.The length of the passage is at least as long as a measure.It functions as a phrase mark. | **Grum** |
|  | This mark indicates a pause in the singing (a breaking off) followed by a loud and short syncopated chord.It is an instrumental mark.Depending on the context, in most cases it is the chord of the harmony set by the dominant (right before the contextual “denouement of the event”, and before the arrival at the subsequent tonic).When it is used to emphasize items in a list, it can also mark the chord of the subdominant and tonic. | This mark, first of all, differs from all the other *Teameim* by virtue of the place where it is written. It is a straight vertical line that is the same height as the letters that are written in the line of text after the word (and not above or below the letters). This can be seen in the illustration in the “Mark” column to the left of the letter “ק”.This mark can function as a “Pause” mark that is 2–4 “basic” lengths. Most likely, it indicates that a (trumpet) chord (and/or cymbal strike) should be played. It indicates an emphatic accentuated “syncopated beat.” | **Brake** |
|  | This mark is intonationally identical to the “HelPhrase” mark (see above).It usually requires (compensatory) lengthening (in accordance with the defined rhythm.) It is probably an instrumental mark.It is an instrumental chord that is identical to the “Brake” mark (see above), However, it is not syncopated, but rather performed on the “flat” fourth beat (quarter) of the measure. | The note length is filled in to the fourth quarter of the measure.Then there is a pause in the singing and the performance of the instrumental chord on the beat of the fourth quarter.It functions as a phrase mark. | **Stop** |

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The “*Teamei Tehillim*” system

I decided that the “*Teamei Tehillim*” system should be discussed in a separate section in deference to traditional opinion, which distinguishes the *Teameim* system used in the Torah from the one in the other books of the Tanakh. I could not find a justification for this distinction in the modern scholarship, but I can at least say the following in light of my discovery:

1. I have not been able to find any differences between the systems.

2. The Tehillim system does not use some marks from the shared set. That is because these are marks indicating specific musical “flourishes” and “turns” that are commonly found in the Torah and other narrative and stylistically operatic works of the Tanakh, and thus they have no place in the music of the psalms.

The foregoing, of course, reflects my analysis of the functions of marks in terms of the musical-articular meanings that I have discovered. In this regard, I have found that all of the commonly used marks serve the same function. The distinction that tradition draws between them originates in the fact that, while continuing to observe the same musical rules, some TeaNotes are used differently in the book of Tehillim to correctly reflect the style inherent in the psalms, which is distinguished by significant musical and contextual “asynchrony.”

As a result, the marks assume different positions depending on the context. This, apparently, does not match the meanings assigned by the traditional rules. So, for example, the tonic TeaNote function is used in complex asynchronous poetic models in order to intonationally emphasize certain key rhyming words (using the “Athnach” mark) in places where these words are not the endings of phrases, which does not correspond to how the “Athnach” was traditionally defined.

There are quite a few similar examples of fundamental differences in the traditional definitions given to explain the difference between stylistic features.

The specific Tehillim style deserves a separate discussion and even the elaboration of a dedicated set of guidelines with its own table of marks and exceptional rules in which we can describe the features of certain individual TeaNotes that perform unique functions in the performance of the psalms or that are dependent on certain specific correspondences.

At the moment, I can provide two such examples.

|  |  |  |
| --- | --- | --- |
| **Mark** | **Special characteristic** | **Mnemonic** |
|  | This mark indicates a particularly low note (in the lower segment).In cases where this mark precedes the “Fast” mark () in the high segment, this note should be high while the preceding note should be low and at the same level as the preceding marks. This mark is practically functionally identical to the “Bass” mark in the general table.*----------------------------------------------------------------------**I have only discovered one instance of this mark in the books of the Tanakh where it performs this function, whereas it is used persistently throughout the Tehillim. The* “*Bass*” *mark (see the* “*Taʿamei ha-mikra*” *table above) is not used at all in the Tehillim. Musical passages where the* “*Bass’ mark is most often used to indicate a part (or* “*end*”*) are not found in the melodies of the Tehillim. Instead, in this text a different* “*Low*” *mark was chosen. We still need an explanation for why it is not as widely used in the general system.* *Even when the* “*Bass*” *mark is not used in a musical passage, it is sometimes used independently. In addition, this mark does not appear at all in the traditional Sephardic table of Taʿamei ha-mikra marks. It is found in the Tanakh, but it only plays a function in the Ashkenazi system. I think that the confusion around its use has something to do with this.* *In any case, because we still decided to create a separate table of Tehillim marks, I did not include this mark at all in the general Teamey Mikrá table.* | **Low** |
|  | Below, I discuss the specific musical and contextual asynchrony that characterizes the Tehillim melodies. This mark plays one of the key roles within it. As I describe in detail below, it periodically changes its role throughout the melody using the tonic mark.Simply put, this mark serves as the main indicator of this change. In certain phrases or breaks in the rhythm, the melody prompts the performer to place phrasal stress on certain words, but this mark tells the performer to instead emphasize another word that is nearby instead of in the expected location. This word in particular can often be the dominant one of a rhyme, which concludes the poetic turn. The same thing can happen in the psalms with the tonic mark. All this intentionally serves to create a temporary imbalance in the context and melody, which, as a result, is always leveled at the end of a separate musical segment of the work. These explanations will be clearer in light of the examples that I will soon provide. In any case, the note of this mark should be accented and extended (always per the definitions in the general table), with the intonation centered on it. Significant contextual emphasis is placed on the note in the psalms. | **Dominant** |

**Characteristic stylistic asynchrony**

In the compositions found in the works of the Tehillim, the logic informing the behavior of the tonic and dominant marks is somewhat altered. These marks are used to indicate the main distinctive informational property of the psalms: their polyvalency within the narrative.

In the definitions of the special characteristics of the Dominant mark provided above, I have described some of its technical details. Here I try to describe it in compositional terms. In any case, to achieve a clearer understanding and correctly articulate the logic of the notes, we need to know the actual context of the work. The fact of the matter is that in almost all the works of the Tehillim, there is a certain shift in the harmony in relation to the rhythm of the work.

The “affirmatively emphasized” performance of the word as determined by the tonic TeaNote usually—and intuitively—completes the phrase. Depending on the specific features of this style, this performance is sometimes musically shifted to emphasize either a previous or later word in the sentence than would otherwise be expected. In terms of its informational value, it makes it possible to impart either ambiguity or a particular meaning to what has been said.

A similar effect is achieved by the sometimes interchangeable definitions of the functions of the “tonic” and “dominant” TeaNotes. Thus, the tonic may be located in the middle of the measure, and the dominant may be at the end. Thus, a sentence that intuitively might seem to have reached its contextual denouement is in fact not finished. It continues in accordance with the stable dynamic of the melody until a it reaches different conclusion, though it is intuitively unexpected.

It is important to note that, in practical terms, the pauses following the phrase marks in the Tehillim, which can be placed within a certain margin of error in the Tanakh texts, must be placed here with extreme accuracy. In the section discussing the general characteristics and rules of the “basic” system, I noted that the position in such cases can often be determined accurately if we have thorough knowledge of the corresponding rhymes. I have in mind these cases here, where an extra (or missing) pause relating to phrase mark can cover up an intentional shift. If this happens, a significant (if not the main) “informative” idea of this part, or even the entire work, may be lost.

These kinds of shifts may occur frequently throughout the work, and they are responsible for ensuring a compositional-contextual alignment. They provide an informational conclusion with the final tonic and measure. A maneuver that is lost during one of these cycles of the work may turn out to be unnoticed, and an intermediate rhyme may be missed (which is why rhymes are not always devices for resolving pauses). As a result, an unfinished work will seem absolutely correct. The ambiguous and complex rhythm of some psalms requires the reader to always be aware of all the other aspects inherent in these musical and poetic works.

Possible evidence of pauses

In my discussion above of the problem that the system does not seem to provide a way of specifying pauses, I noted that the Tehillim system presumably still provides a different mechanism for doing just this. The horizontal shift of marks (indicating the direction of sound) also introduces ambiguity into this situation. There are several different explanations for how this works. In the case of the Tehillim, this shift has a different graphical presentation than in the Torah and other books of the Tanakh.

I argue that the Tehillim system uses a distinct rhythmic factor in addition to the directionality principles of the marks that I described above. If in other books of the Tanakh the directionality marks may differ in their horizontal placement only within the (length) of the letter—they can either be placed near the center of it or closer to its edge—then I can say that I have not observed any such shift in the works of the Tehillim. Or rather, I have not found evidence of its systematic nature.

On the other hand, there is another, clearly expressed shift, by which these marks may either be placed behind the letter or a little in front of it. This is mostly seen at the beginning of words, where the marks may appear slightly before the first letter of the word. The fact that the marks are commonly found in these positions and the specific details of the asynchronous performance of phrases, either early or late, offers strong evidence for the argument that the location of the marks determine the strong beat of the rhythm preceding the first note of the word.

In other words, they indicate that the word should be voiced with a delay of one “basic” beat of the rhythm relative to any preceding rhythmic factor. This can be expressed differently: a mark written outside of the word indicates a clear pause equal in length to one “basic” system beat before the word. At the same time, this mark is still fundamentally used to define tone, and it still refers to the subsequent letter (as if this mark were written directly below or above it).

I have only reached this understanding relatively recently, and I have not yet made the requisite calculations and comparisons. However, in the places where these preliminary pauses exist (that I have discovered by other means) in the works that I have decoded, the directionality marks are in fact shifted in the corresponding form. There should be no doubts that the shift in marks in the Tehillim is connected to the determined rhythm. There may be additional auxiliary details of how this movement occurs awaiting discovery.

In the examples of the works that I reconstructed in accordance with this principle, the rhythms are correct. This is the reason why I have used these TeaNotes in accordance with the specific stylistic details of the Tehillim. Indeed, there are no fundamental differences between the systems, including in this case. The *Taʿamei ha-mikra* system achieves a similar effect (that one might even say is identical) in other works of the Tanakh through the JumpIn mark. But there, this TeaNote also encodes an additional very specific intonational characteristic that provides dramatic effect. In the Tehillim, however, the JumpIn marks are not used at all. Yet the movement specified by this mark, which is very characteristic of the style of the works, is also created here through free intonation using another tool, which reflects numerous different contextual motifs.

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As of the time of this writing, this is all I can say about the features of the Tehillim system. Frankly, the logic of the harmony and rhythms of many of the psalms is still a mystery to me. I managed to identify some variations in the accompaniment (as part of an extremely simple harmony) containing some clear uses of poetic devices. The latter are used correctly if we assume the familiar intonational devices. However, in some cases, such variations do not quite correspond to certain marks. It is possible, however, that the intonations found in these expressions are not what we currently expect. I would be most grateful for your professional assistance in refining these guidelines. I hope to uncover the great “Song of the Levites”, the harmony of which is still waiting to be restored.

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To be continued

I already mentioned that there is a view that the *Teameim* marks of the book of Mishlei also have unique meanings that differ somewhat from the meanings of the marks in other works. I have not yet verified this view, but I hope that I will be able to clarify it in the near future. I suspect that there is something similar here to the traditional distinctions that have been drawn in the Tehillim system. If I am able to decipher the differing principles, it is possible that I will add a discussion of yet another system to the next version of this document.

The fact that these guidelines still require further development in order to better understand the *Taʿamei ha-mikra* system does not undermine the present contribution. The purpose of these guidelines is to spur continued development of the system. I hope the presentation of these preliminary results will spark interest in this research area. There is much work still to be done: I have not yet been able to provide a preliminary analysis of all existing sources with traditional *Taʿamei ha-mikra* marks. Therefore, the values I have listed here have not been identified in absolutely all available cases.

In addition, in defining the meanings, I have sometimes encountered several alternative principles depending on the conditions. This points to an ambiguity of the marks. I must confess that, looking at the scale of the scholarship produced by the traditional schools, I was more than surprised at the number of described alternative conditions (and therefore functions). Therefore, I have yet to define all kinds of systematic “alternative” meanings. As stated above, the traditional school can significantly help us in this matter by concretizing the existing possibilities.

Therefore, the study is far from over.

I thank you for your time and attention. I hope that the presented information was of interest to you and prompts you to share your knowledge with me!

With respect and gratitude,

Eliyahu Glikshtern.

Today is the evening of the holiday Purim Katan,

14th day of the month Adar Alef, 5782 (February 14, 2022)

***בבברכה!***