

“Magrefa was in the Jerusalem Temple”

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Abstract

The Magrefa is mentioned in the Talmud (only), and has a number of descriptions on it. Enough to stimulate the imagination, but not to understand what instrument it was. Four hundred years of “research” have brought up delusional, imaginary ideas that ignore the details of the Talmud, and serve the purposes of scholars (a genuine and naive desire to find out what the Magrefa was, or different interests. I came to a completely different conclusion. An instrument similar to the Chinese “sheng” perfectly matches all the details that appear in the Talmud. There cannot be an absolute certainty that I am right, (despite the high probability and suitability), but it is 100% clear that the other researchers were wrong. The negation is absolute. I show all the stages of the development of imaginations and illusions. From one un-clear Magrefa, “no-one knows what it was” – to two Magrefa’s (with names, “Tamid” and “Arachin”) that have nothing to do with reality.

Two main parts are in this article: (a) negation of all the erroneous conclusions of scholars over the last four hundred years and (b) my conclusions about what the Magrefa could have been. An appendix is about the “Sheng” family. A long history, many shapes and many names.

Keywords

Magrefa, Hydraulos, Jerusalem Temple, Kircher, Portaleone.

Introduction – Why Me?

About thirty years ago I was given a strange instrument for my collection. (Collection of various keyboard instruments that I started collecting when it became clear to me, as a pianist-accompanist, that there are other keyboard instruments besides the piano ...)

A strange wind instrument (see Figure 1), with many reeds, can be exhaled in part or in all, an instrument that “does not exist”, unlike any other instrument. But, oddly enough, it reminded me of the description of the rake, mentioned in the Talmud “Ten reeds, and a handle comes from it.”



Figure 1. Zami Ravid with a “strange wind instrument” at his private Museum of Musical Instruments, Metula, Israel, 2005

Since “no one knows” what the musical rake was, I feared that the tool was made simply to sell it to innocent tourists coming to Jerusalem, as an “authentic tool from the Temple.”

But it became clear to me that the tool is a cultural tool, a real one, which exists in a variety of designs, and is used by millions of people – in East Asia. (Beyond the mountains of darkness at that time).

The information I gathered, about researchers who have been researching, for two thousand years, what the tool was, is amazing.

Not only did none of them know what the tool was – they all built mounds of “facts,” “proofs,” “pictures” (and lacked only recordings to complete the fantasy) based on prejudice ideas, which rolled like a snowball, starting with explicit ignorance, ending with an accurate description of tools that had never been created.

Some of the ideas arose simply because of the curiosity and frustration of not knowing, others to justify different opinions. Real research – I did not find. The chapter devoted to research (below) will lead us in following up on the mistakes that resulted from inaccurate copying, incorrect translations, lack of understanding on the one hand and a desire to innovate (and probably get published) on the other. When amateurish, and fundamentally wrong information found its way into Diderot’s encyclopedia, in the late eighteenth century – the imagination became a reality.

Why me? A little luck and a little common sense. My musical knowledge, the beginning of the Internet age, and knowledge of the Hebrew language. So simple. Now we can get started.

N.B. (the last preamble): Translating some phrases, I preferred the original word order, even though it does not match the spoken language of today. Such as: “She is one meter and high one meter” instead of “its length and height are...”

I. General Introduction to Music Instruments in the Bible

As big is our will to know, our curiosity, about the musical instruments that were (or were not) in the temple – So big is the “black hole”, the missing information about them, and our “no-knowledge”.

Not only musicologists are interested in this subject but religious, history, culture people, and the “normal public” – everybody likes to know what exactly King David’s violin (harp, lyre...) was. And, each writer or translator tries to explain what it was.

So, let’s face it immediately – we do not know, and there is not any chance that we will know. Trying all ways of searching – will not help us, because ...

Translations

It is obvious that the musical instruments in the ancient Temple in Jerusalem were similar to those of neighboring countries. (North and east – Schumer, Babylon, Accad, Persia; south – Egypt, west – Greece.) More or less the same construction, same material, same sound, same uses.

But we cannot relate the Hebrew names to certain instruments. Not only because of different translations (and if they are different, it is a proof that one of them is wrong) but even the Hebrew, original, text is unclear to us.

For the modern violin we use the name “Kinnor” (Yuval, Genesis 4:21). But in the English translation it is written as “Harp”. So, I checked it in the Spanish (“antigua version 1569”), and found the same (arpa).

But in the same phrase the English organ appears (in Spanish) as “flauta.”

But the “arpa y órgano” in another Spanish text is “la cetra ed il flauto” in Italian, and in French they are sure he played “la Harpe et du Chalumeau”. “Geiger und Pfeifer” in German, not to mention the one-string “Gusle” in Russian...

So, for the very first appearance of music-instruments we have:

“Kinnor = violin = harp = cetra = Geiger = gusle

“Ugav = organ = flauta = Chalumeau = Pfeifer.

All these translations are not from the original Hebrew, but from old Greek and Latin. Even then, many years ago, there was not enough information.

[It was Eliezer Ben Yehuda, in the beginning of the 20th century who, “modernized” the language, and related biblical “nevel” to “harp”, “psanter” to pianoforte, “kinor” to violin. It was not musical research, but phonetic relations, when he found, to modern instruments. From the orchestral score he gave similar names as much as possible. That why flute, oboe, trumpet, horn, violin got modern-Hebrew names, and the lower clarinet, bassoon, trombone etc. have no names.] The Hebrew name “Abuv” sounds like “oboe, hautbois” but it is not the same instrument.

In the Septuagint the word *ugab* has three distinct renderings — *κithάρα* (*cithara*) in Gen. iv. 21; *ψαλμός* (*psalmus*) in Job xxi. 12, and xxx. 31; and *ὄργανον* (*organum*) in Ps. cl. 4. That learned scholars should have

In the Septuagint the word psalterion comes for: “kinor” in Genesis, “psanterin” in Daniel, and “nevel” in 25 other cases.

Information

There are hundreds of music terms in the bible. We cannot know if their meaning is for instruments or style, dance or singing, scales-modes or instruction of who-or- when does sing or play.

There were two reasons for “not enough information”. First – things were known to the people of the time, and there was not a reason to explain them. Secondly: the “guild” of musicians preferred to keep many details as professional secrets. The (religious) impression of the “un-known” is much bigger.

Archeology

Archeological search: either the instruments were made of organic material (wood, skin) – and nothing left, or it was made of precious material – gold and other – and it was stolen, and/or melted.

Even in case of some archeologic artifact (no chance...) we shall not know how was its name, because we have not a “Rosetta-stone”. We have no index with pictures and different names of the instruments.

[The only example of a picture and a written name which I found is an Egyptian Beganna with the hieroglyph: “KNINIRA”. It sounds similar to “kinnor”. Is it really connected, or just by any chance? Did King David play a square lyre? Perhaps, because the square model was the “social elite” instrument in Greece and in Ethiopia while the round lyre, in both countries, was of the plebeians.]

“Thou shall not make a picture”

cancel any chance that we’ll find any original photo of King David... pictures were made much later, like the famous mosaic from the synagogue floor in Gaza, from the 6th century (See Figure 2):

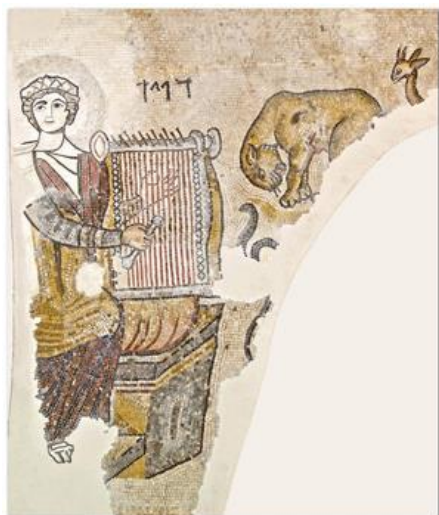


Figure 2. Mosaic from the synagogue floor in Gaza, 6th century (Public domain).

Continuity and Tradition

As a behavior of mourning about the destroyed-temple – Jews eliminate playing after the Babylonian exile. (Psalms 137, 1-3) “By the rivers of Babylon we sat and wept when we remembered Zion. There on the poplars we hung our harps, for there our captors asked us for songs, our tormentors demanded songs of joy; they said, ‘Sing us one of the songs of Zion!’ “

Etymology

In the book of Daniel, we read: “When the sound of – “קַרְנָא וּמְשֻׁרְקִיתָא, קִתְרוֹס וּסְבָכָא, פְּסַנְתְּרִין” Translated to English as: “the horn, pipe, harp, trigon, psaltery, bagpipe,”

Spanish: a bocina, del pífano, del tamboril, del arpa, del salterio, de la zampoña;

French: la trompette, du chalumeau, de la guitare, de la sambuque, du psaltérion, (only 5);

Italian: del corno, del flauto, della cetra, della lira, del saltèro, della zampogna.

“Katos”, for example: (a Greek word, appears in Daniel-book, written mostly in Aramaic) can become: Katos > kitaros > gitaros > guitar, but can be also: katos > kitar > sitar > tzitar > tzitter (tar is “string”, but we cannot know much more).

2. Information about the Magrefa in the Talmud

The essence of the Talmud is not a history textbook, and – on the subject of the rake – the intention is not to teach us what the Magrefa was.

The quotes are presented in the context of an argument that was between sages as to whether it had 100 different sounds, or a thousand. These are arguments in disagreement, and not an explanation of what the tool really was.

Citations 1, 2, and 3 are from the Talmud Arachin 10b-11a; citations 5 and 6 – from Mishnah Tamid 5:6.

Citation 1:

“אמר רבא בר שילא, אמר רב מתנה, אמר שמואל: מגריפה היתה במקדש, עשרה נקבים היו בה, כל אחד ואחד מוציא עשרה מיני זמר. נמצאת כולה מוציאה מאה מיני זמר. במתניתא תנא: – כל אחד מוציא מאה מיני זמר, נמצאת כולה מוציאה אלף מיני זמר” (ערכין י' ע"ב)

“Said Rabbi bar Shila in the name of Rabbi Matna in the name of Shmuel:

There was a Magrefa in the temple. Ten holes were in it. Each of them makes 10 different sounds. So, in the sum it makes 100 different sounds.

In the Mishna we studied (about 10 pipes, with 10 holes in each) “--- each of them makes 100 different sounds, so in the sum it makes 1000 different sounds.” [and, as it is written, it is of course exaggerated, means “many many sounds”].¹

Citation 2:

“רבי שמעון בן גמליאל היה אומר: הרדולים לא היה במקדש. מאי הרדולים? אמר אביי: טבלא גורגדנא, מפני שקולו ערב, ומערבב את הנעימה”

“Rabbi Shimeon Ben Gamliel says: hardulim (**hydraulos**) **was not in the temple.**

“What is hardulim?

“Said Abaye: Tabla Gorgadna, because its sound is pleasant, and it mixed the melodies.

[“arev” = pleasant, “arbev” = mix, in Hebrew]

[“Tabla” can be a plate, but also “litbol” is “to put in the water”. So, it is connected with the “hydro.”]

Citation 3:

“היא אמה וגבוה אמה וקתא יוצאת הימנה”

“It is one ‘ama’, and is high one ‘ama’, and a handle is going from it”

[ONE CUBIT, ONE CUBIT HIGH, AND A HANDLE CONNECTED]

¹ Translation hereinafter is mine unless otherwise specified – Z.R.

Citation 4:

“נוטל אחד את המגרפה וזורקה מאחורי המזבח”

“Notel echad et hamagrefa vezorka meachorei hamizbeach”

In order to make the sound of the Magrefa – **“Takes one (priest) the Magrefa, and ZORKA behind the altar.”**

This is the word (zorka) that mixed up so many clever people, and made much misunderstanding. Understanding it can be the solution. (See below – Kircher, (1650) says that “they throw it on the pavement”)

Citation 5:

“אין אדם שומע קול חברו ביריחו מרעש המגרפה”

Its sound was so high that “one cannot hear his friend speaking in Jericho” (around 20 miles far; exaggerated, of course).

So – what we do know?

1. “MAGREFA WAS IN THE TEMPLE, TEN HOLES IT HAD. MANY SOUNDS IT CREATED”.

Although nobody speaks about pipes – we can assume that there were some. Rashi (many years later, around 1050 a.d.) was the first one to say “pipes”, “KANE”. But, logically, there should be something “to hold the holes”.

2. The Talmud tells us about the size: “that the Magrefa was ONE AMA [long?] AND ONE AMA HIGH [!] Only two dimensions. “Ama” is something between 30 to 60 centimeters. Literally is a part of the hand, and was used like the English “feet”. AMA is translated to “cubit”. The “cubit” has nothing to do with the 3 dimension “cube”!

3. The Hydraulos and the Magrefa

Almost every article or discussion on the Magrefa of the Temple immediately mentions the Hydraulos. Two reasons for this: The first reason, no matter how illogical, is that we simply have no idea what the rake was, and this is an attempt to find an “underground” solution. The second reason is the desire of Reform Judaism to get permission to play the organ in the synagogue (something that is forbidden in Judaism), relying on the fact that “there was an organ in the Temple”.

From Raban Gamliel to Diderot, in the Encyclopedie, from Shiltei Hagiborim (Mantua, 1612) to Galpin 2005, there are many speculations, but only a little connection to what is written in the Talmud (see Figure 3).

The idea that the rake was the Hydraulos [invented by Ctesibius in Alexandria, Egypt, in the third century BCE, and therefore already existed, chronologically] – this idea was rejected by Rashi, who in response to a question, answered that “Hydraulos was not in the temple”, quoting Rabban Shimon ben Gamliel, who lived in the first century.

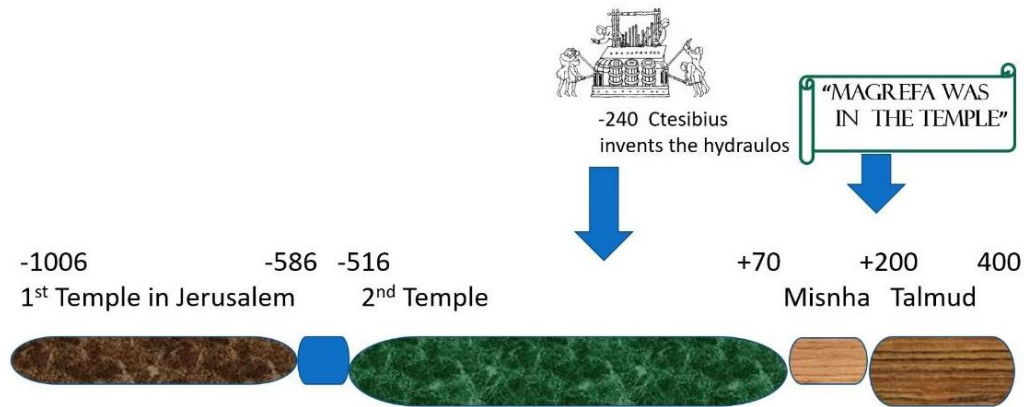


Figure 3. Magrefa and Hydraulos: Were they the same instrument?

[The reformists like to tie in with a much brighter past. So remarkably even the “Jewish Encyclopedia” in 1911 stated: “*The Temple organ very likely was the “magrefa” mentioned in the Talmud as one of the instruments of the sanctuary. It is described by Samuel as consisting of ten pipes, each pipe having ten holes; a total of 100 notes was thus obtainable.*”]

4. Research of the Magrefa in the years 1600 to 2000

Imagination – Mis-translation – Mis-interpretation – Mis-explanation

The first two characters – Portaleone and Kircher are the basis for the series of errors. They both gathered information as much as they could, from many different sources, in many different languages (both were educated people). They both tried to understand for themselves, and what they did not understand – they added according to their hypothesis and imagination, which was not always realistic. Both tried to explain things to their contemporaries, so they brought up examples that were known to their time. On the subject of musical instruments, Kircher relied on Portaleone. (But he does not always understand exactly the spirit of things). More of that, Kircher also adds illustrations – to the best of his understanding and especially his imagination.

This combination of quotations in an incomprehensible language, and drawings (supposedly accurate) created in the readers, and in all the scholars who came after them, and the translators to other languages – the feeling that these are solid facts, based on ancient texts. An example of Kircher’s exaggerated confidence, and exaggerated imagination can be seen when he draws the flute and oboe, (flute a bec, crumhorn – see Figure 4). Although already in the 1st century AD people had no idea what they really were, and what was the difference (“it was the same”).



Figure 4. Halil (Flute a bec) and Abub (Crumhorn) as they appear in Athanasius Kircher, *Musurgia universalis*, (Rome, 1650), vol. 2, p. 54.

1611 – Portaleone

Mantova, Italy, (1542-1612).

His name – [Rabbi] Abraham Portaleone (“Gate of Lion”).²

Languages: 11 (!) include Spanish, Arabic, Greek, Latin, and Hebrew, of course.

Profession – a medical doctor (was the doctor of Mantova’s duke), and wrote books on medicine). A wise scholar, an educated man but not a musicologist.

A somewhat innocent belief, and an attempt to prove that everything “modern” was already in biblical times.

The book he wrote: “Shiltei Hagiborim” [Signs of the Heroes] (see Figure 5), a kind of encyclopedia, describes the work in the Jerusalem Temple, and among ninety chapters – about ten are devoted to musical instruments. He summarizes all the information he has managed to gather in these chapters, trying to explain about them while referring to tools of his own time.

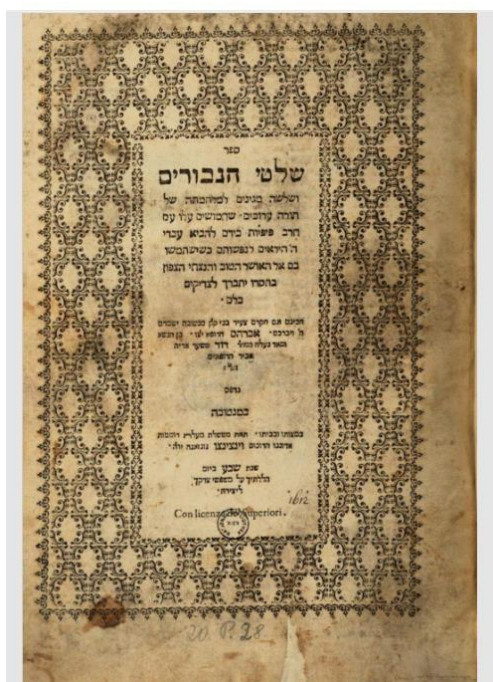


Figure 5. Cover of A. Portaleone’s book “Shiltei Hagiborim” (Mantova, 1611).

The Magrefa (rake) according to Portaleone

On the subject of the rake, like the researchers before him – the author has no idea. From two quotations from the Talmud, he raises the hypothesis that there were two different rakes. According to a quote in the Tractate Tamid [Always], “thrown behind the altar” – he assumes that it was a percussion instrument.

According to the quote in the Tractate “Archin”, “Ten pipes” – he assumes that it is a wind instrument.

Thus, from a lack of knowledge of what the real Magrefa was – two imaginary rakes were born – and they appear as authoritative facts in all future researches and publications.

The percussion instrument, “Magrefa Tamid” used as a signal “I HAVE NO IDEA ABOUT IT’S SHAPE”. But then he describes it: Perhaps looks like the rake, made of metal, slightly rounded, and makes a huge noise when they throw it on the floor.

² Extensive information about him – in the introduction to the “Shiltei Hagiborim” 2010 edition (about sixty pages of interesting articles) – Z.R.

The wind instrument, “Magrefa d’Arachin”. He does not know what it is. Out of respect for Rashi – he does not write that he does not agree with him, but that he does not understand him (“I did not go down to the end of his mind”).

“Nobody told us” if it was made of wood or other material, the shape of the pipes, and how they are connected, and how wind entered to the pipes (mouth-blowing or otherwise). With finger-use or not. Perhaps “ten people blow, each of them in one pipe” but then “it should be a very big instrument. And, why not use ten separate flutes instead?” Later, after all these questions, he writes, in the total absence of knowledge “What my heart tells me”, “maybe it was something like ...” the organ of the 1600s. And maybe it had pipes, and maybe bellows, etc.

“[...] perhaps it was a box [like a toaster-oven], closed and empty. About 1 meter long, 1x1 ama large and high, and in the box there are the ten pipes, (each with 10 holes), some short, narrow, and some long and some wood-pieces [we shall call them “keyboard...”] enable to change and close some holes. And two bellows in the sides...” [A very long, 23 lines of description, of a very complicated instrument, and – believe me – it is un-understood-able.] He concludes: “that’s what I’ve imagined. If you like it – I’m happy. If you’ll find something true and better fitted to the citations – I’ll join you happily!”

1650 – Kircher

Athanasius Kircher (Geisa, Germany 1602 – Rome, Italy 1680).

Jesuit scholar, geology, medicine, magnet, Egyptology, birds, China, music and much more...

His desire: “Nothing is more beautiful than to know everything.”

His books – “Encyclopedia”, All Inclusive.

He wrote in Latin. Knew (and taught) many languages include Hebrew. But his knowledge of Hebrew was limited, as we can see: Portaleone wrote that his father was an honored man = “nassu” in Hebrew, but Kircher thought it was his name, and called him “Rabbi Hanassi” (Mister President).

The Magrefa according to Kircher – 1. Magraphe Tamid

Not only he translated Portaleone’s ideas about the Magrefa from Hebrew to Latin. With limited Hebrew, Kircher did not understand that these were not facts but hypotheses, so he added an accurate sketch of what the tool was. With publication of 1500 copies (and he gave 300 exemplars as a gift) his books and ideas became a basis for everybody’s mistakes after him (see Figure 6).

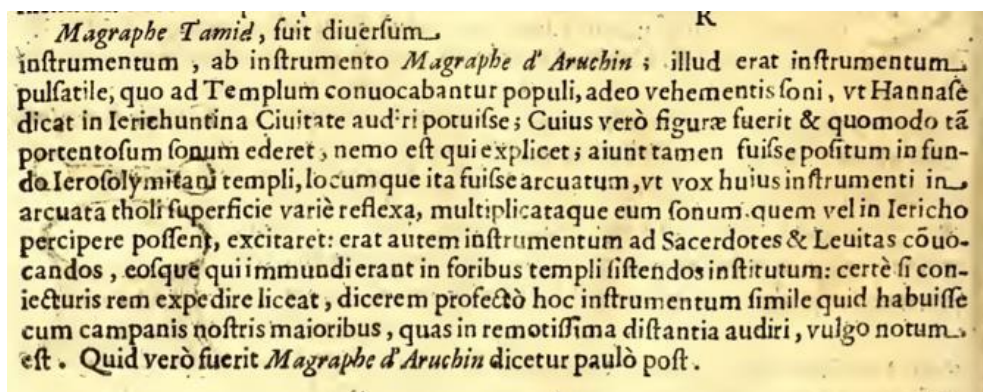


Figure 6. Description of Magraphe Tamid in Athanasius Kircher, *Musurgia universalis*, (Rome, 1650), vol. 2, p. 53.

[Z.R. translated, summarized, explained:] “Magraphe Tamid” [“tamid” = always; daily. It is the name of a chapter (in the Talmud) which deals with daily offerings] was a different instrument from the “magraphe d’aruchin”. [“aruchin” = value(s). It is the name of a chapter (in the Talmud) which deals with value of offerings].

This was a percussion instrument. (Kircher added holes in the floor, to amplify the sounds). [it was used to announce the beginning of the prayer] when the people were being summoned next to the Temple, and it made such a violent sound (“as say Hannase”) that people in the City of Jericho [30 km away] could hear it. Nobody knows its shape, and how the huge sound is created.

[Very nice speculation, without any basis, that it was in some place in the temple, that created many echoes and multiplied the sound].

It was not melody-playing but a signal, for the priests and the Levites etc. inside and next to the entrance of the temple, that the prayer begins.

Certainly, it was like the bells, of the time our ancestors had a similar experience, which in far and remote parts was heard, for announcements. Later, [page 54] we’ll see what has been “Magraphe d’Aruchin” (see Figure 7).

The Magrefa according to Kircher – 2. Magraphe [Macraphe] d’Aruchin

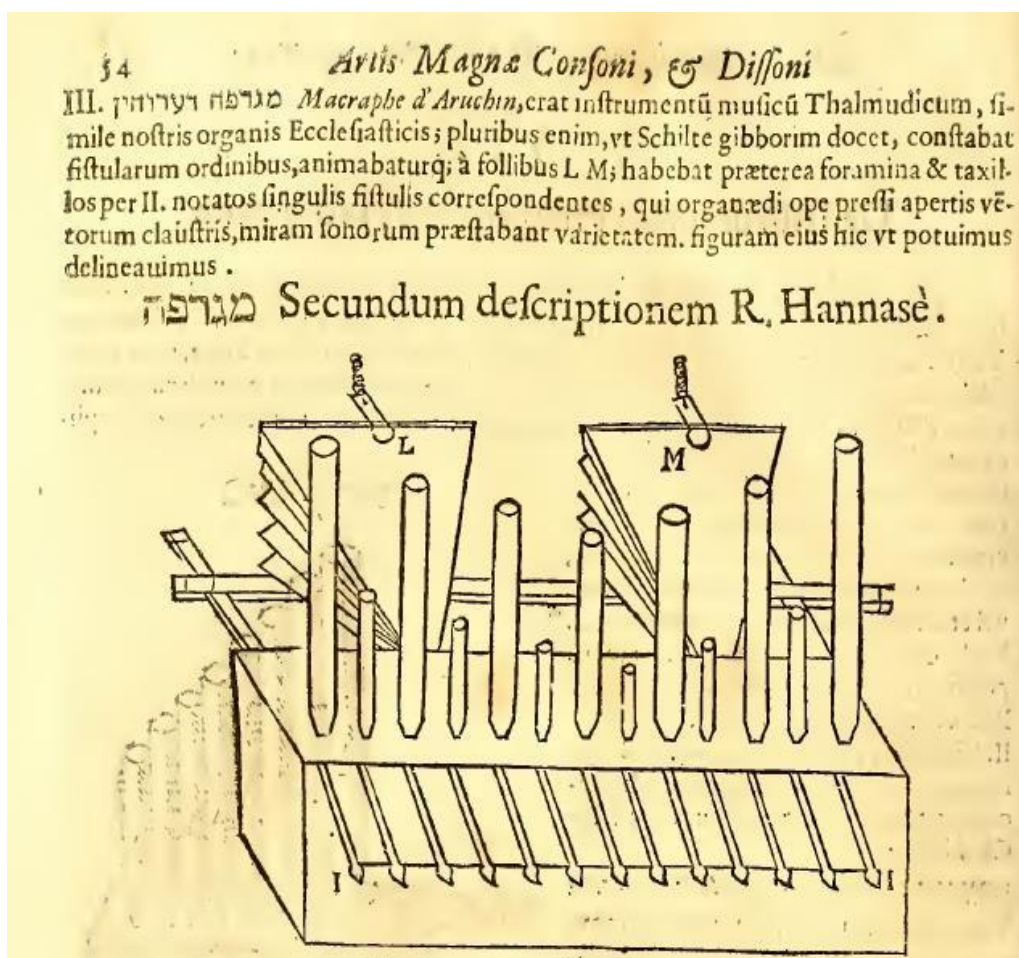


Figure 7. Description of Magraphe [Macraphe] d'Aruchin in Athanasius Kircher, *Musurgia universalis*, (Rome, 1650), Vol. 2, p. 54.

[The Macraphe (sic) d'Aruchin was a musical instrument similar to our ecclesiastical instruments. For, as Schilte-Gibborim teaches, it consisted of a humpback in several rows of pipes, and animated; a bellows L M It had, moreover, holes and dice corresponding to each of the 2 scored pipes, which, when pressed by the aid of the organs, when pressed through the open cages - - - afforded an astonishing variety of sounds. So that we could delineate the figure of him here.]

1690 – Printz

Wolfgang Gaspar Printz (1641–1717)

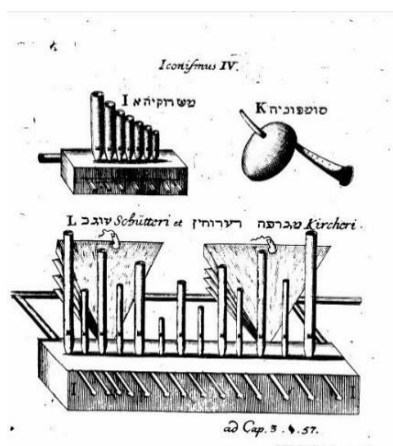
A musician. Composer, singer, and theorist as well as a historian (Portaleone and Kircher were not musicians).

His book “Historische Beschreibung der edelen Sing- und Kling-Kunst” [Historical description of the noble singing and singing art] (see Figure 7) was very influential, (to new readers) because it was in German.



Figure 8. Front pages of Gaspar Printz's book (1690).

The description of the instruments is based mainly on Kircher's book (which was written in Latin). The supposed design of the several of Temple instruments is provided (see Figure 9).



The text is:

"I" - Mashrikita,

"k" - Sumponia,

("L") "ugav (hebrew)

(according to) schutteri, [= shiltei Hagiborim]

"magrefa d'arachin" (Hebrew) (according to)

Kircher.

Figure 9. The design of the Magrefa, as appears in Hawkin's book³ (taken from Printz 1690).

³ Sir John Hawkins. *A General History of the Science and Practice of Music* (London, 1776), page 257.

1720 – Calmet

Antoine Augustin Calmet (1672 – 1757), a French Benedictine monk.

Books: *The Bible in Latin and French, with a literal and critical Commentary* (1707-1716);
New Important and Curious Dissertations about Different Questions (1720) – see
 Figure 10).

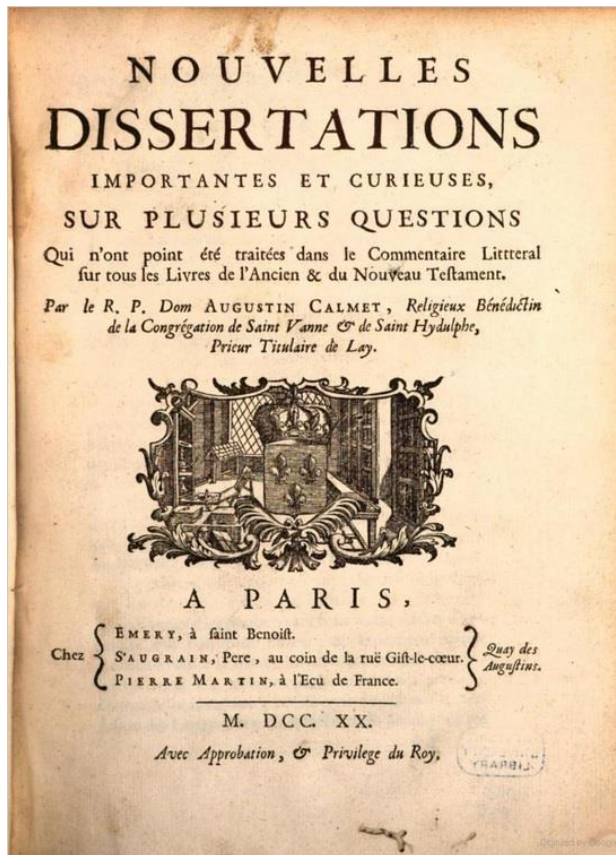


Figure 10. Cover of Calmet's book (1720).

The latter book includes a beautiful article on the musical instruments of the Jews in the biblical period – summary and pictures, but does not refer to the rake, which is mentioned only in the Talmud.

The various translations of the word organ. The reference is probably a pan flute, and certainly not a church organ (see Figure 11).

ORGUE. *Hugab*, qui est ordinairement traduit dans la Vulgate par *Organum*, une
 Fig. XI. Orgue, est rendu différemment dans les Septante; tantôt par *Cythara*, (*d*) ou
Psalms; & tantôt par *Organum*. La plupart des Interprètes le prennent en ce
 dernier sens. Mais il ne faut pas s'imaginer un corps d'Orgues comme les nô-
 tres. C'étoit un composé de plusieurs tuyaux de Flutes collez ensemble, dont
 on jouoit, en faisant passer successivement ces divers tuyaux le long de la lèvre
 d'en bas; comme on le voit encore pratiqué à Paris par certains Chaudron-
 niers; qui vont par les rues. Moÿse nous dit que le *Hugab* étoit en usage dés
 avant le déluge. (*e*) Job nomme en deux endroits le même Instrument; (*f*)
 & le Psalmiste en parle dans le dernier Pseaume. Il n'en est rien dit ailleurs
 dans l'Ecriture. Ce terme vient d'une racine, qui signifie aimer éperduëment.

Figure 11. Original text (in French) of the article about organ from the Calmet's book (1720), p. 147.

1722 – Bonanni

Filippo Bonanni (Rome 1638 – 1723) Italian Jesuit scholar.
 Pupil of Kircher. Later – his follower and curator of his collection.
 Books included treatises on fields ranging from anatomy to music.
 Created his own microscope.

In his book *Gabinetto Armónico*, 1722 (see Figure 12), Bonanni translated to Italian the Latin text of Kircher, cited from the Hebrew text of Portaleone **that exactly the same (and copied from) as written by Kircher:**

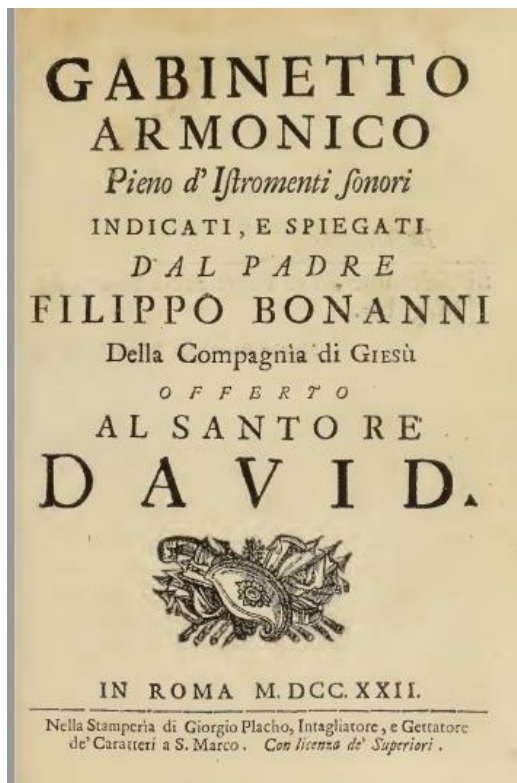


Figure 12. Cover of Bonanni's book (1722).

“Magraphe Tamid” was another instrument. With it they called the people, the “kohanim [priests] and Levi'im” [to announce the beginning of the prayer], [and it made such a violent sound], but nobody explained of what material it was, nor its shape. They just say that its huge sound could be heard by people in the City of Jericho [30 km away]. That is why P. Kircher [Bonanni writes] says it is equal our bells [campanile].

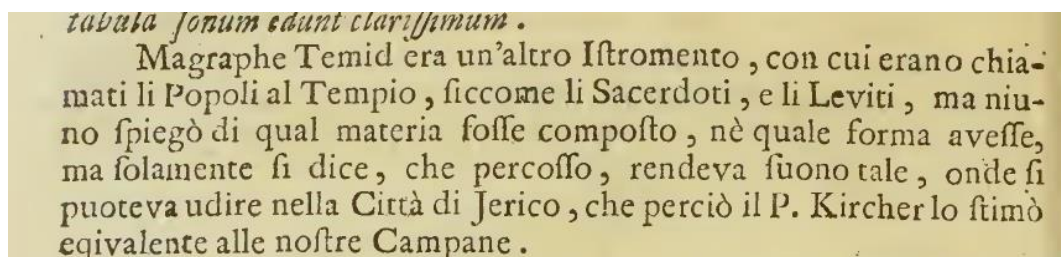


Figure 13. Bonanni's translation (to Italian) of Portaleone's / Kircher's

1776 – Hawkins

Sir John Hawkins (1719 – 1789) was an English author.

A General History of the Science and Practice of Music took him 16 years to write, published in 1776.

His text about the Magrefa (Magraphe) is taken exactly from Kircher, including the mistakes. About the wind instrument, he is convinced **“without hesitation** be called an organ”! (See excerpts and a drawing in Figure 13).

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Magraphe Tamid, another of the pulsatile instruments of the Hebrews, is conjectured by Kircher to have been used for convoking the priests and Levites together in the temple: it is said to have emitted prodigious sound; and though Rabbi Hannafe says no one can describe the form of it, Kircher thinks it must have been like one of our largest bells.

The Hebrews had also an instrument, described in the Schilte Haggiborim, called Macraphe d'Aruchin, consisting of several orders of pipes, which were supplied with wind by means of bellows; it had keys, and would at this time without hesitation be called an organ. Plate V. fig. 3*.

* This instrument is delineated by Kircher, but the figure of it above referred to, is taken from the *Musica Historica* of Wolfgang Gaspar Printz, written in the German language, and printed at Dresden in 4to. anno 1690, who cites the *Collectaneis Philologicis* of Johannes Schütterus, to justify his deviations from Kircher, in the form of some of the instruments described in the *Musurgia*. But it is to be feared, that his author

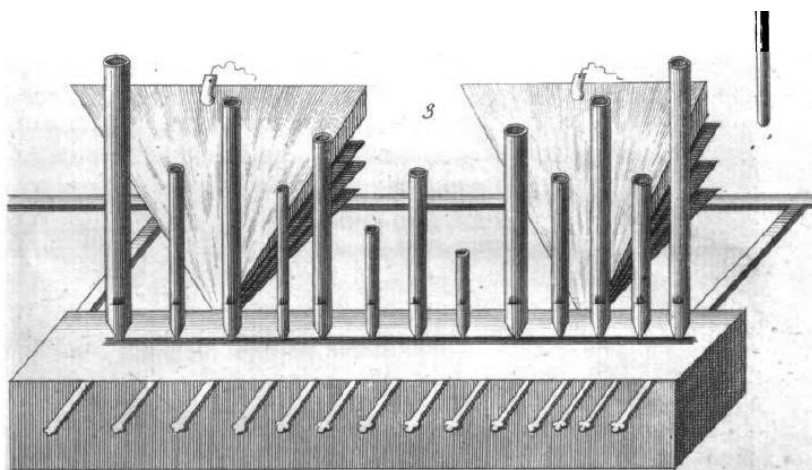


Figure 14. Excerpts and an outline of the Magrefa's hypothetical design, as appears in Hawkins' book (1776), pp. 256-257.

1778 – Diderot encyclopedie, Magrephe

MAGREPHE. Il paroît qu’il y avoit deux instruments de ce nom chez les Hebreux: Kircher les distingue en appellant l’un *magraphe tamid*, l’un *magraphe d’aruchin* ; ce dernier mot est le titre ou nom du chapitre du Talmud ou Tamid, d’où la description de cette magraphe est tiree.

Quant à la magraphe tamid, on n’en sait autre chose sinon que c’étoit un instrument de percussion qui servoit a convoquer le peuple, devant le temple, dont le son étoit si fort qu’on l’entendoit a Jericho depuis Jerusalem. Tout ce que l’on dit pour expliquer cette force de son, c’est que la *magraphe étoit posee au fond du temple de Jerusalem, sous une voute propre a multiplié le son. Kircher pense avec assez de raison que c’étoit une espece de cloche.* Quant à l’autre magraphe ou magraphe d’aruchin, voici la description qu’en donne le talmud. Cet instrument *avoit dix trous*, dans chacun desquels étoit fiche *un tuyau*, chacun de ces tuyaux étoit perce de dix trous, qui donnoient chacun un ton different, ensorte que la magraphe avoit en tout cent tons, par la combinaison desquels on pouvoit executer un nombre infini de melodies differentes.

Cette *description* est tres-imparfaite. Comment faisoit-on resonner ces dix tuyaux e Comment pouvoiton boucher & deboucher a volonte les cent trous de cet instrument e

La description qu’en donne Kircher, *qu’il a tiree du Scillte haggiborim*, est plus claire : la voici.

La magraphe Voyez la fig. planche de luth. Supplm. que *Kircher a dessinee lui-meme* sur la description, laquelle prouve que si jamais les Juifs ont eu cet instrument, ce n’étoit rien qu’une espece *d’orgue* tres imparfaite. (F. D. C.).

Explained and summarized (by Z.R.):

It seems that there are two different “Magrefa”s.

Kircher [Athanasius Kircher, *Musurgia Universalis* (1650)] distinguishes [taken from Portaleone] between the percussion instrument and the wind one. He calls them by the chapters’ names (of the Talmud) – “Arachin” and “Tamid”. [they’ve mixed the names of the chapters in the French text. Never mind.]

All we know about (1) “tamid” – that it was a percussion instrument, used to announce the beginning of the prayer. It had a very loud sound. It was placed in the temple in a special place to make it sound. Or: “they throw it on the pavement” and it made a huge sound.

Kircher thought it was a bell (logically - they write).

The other (2) is that with the 10 x 10 pipes and holes, etc. makes 100 [or 1000] sounds.

A very in-complete description [they write]. No explanation of how it works or being blown.

The picture in the encyclopedie is the Kircher-made, which he drew after reading the description [no picture] from “shiltei hagiborim” (in Hebrew, Mantua 1612) [translated later to latin]

It brings us to a very complicated primitive pipe organ, [which has nothing to do with the old citations]!

1879 – Stainer

Sir John Stainer (1840 – 1901) was an English composer and organist.

In his book *Music in the Bible* (1882, p. 114) he expresses doubt and argues that an organ, in its modern meaning, could not have existed unless a keyboard had been invented. On the other hand, the sheng – the ancient Chinese tool, could have been.

He was just one step away from the solution of the Magrefa. Writing about the pipe-organ history, he mentioned the sheng, as a very old instrument. But, “improbable connection” can be between the sheng and the music in Israel, because of “no traces” in the Middle East.

“The sheng contains - - - pipes, and is probably one of the oldest wind-instruments now in use - - - but **had it been in use among the Jews, it is difficult to believe that all traces of it would be lost among the nations which were in close contact and inter-communication with them, especially as it is exceedingly light and easily carried, and would therefore in all probability have been preserved by them in their wanderings and captivities. It is improbable, therefore, that the sheng, ancient as is its origin, is allied to the Hebrew ugab”**

In my (Z.R.) opinion, the Sheng, with its very long “handle” (=“mouth-piece”) was very un-comfortable to play. They used it for signals in the Temple, but nobody used it as a musical instrument, to play melodies.

Not in Israel, and not in the neighbor nations. It became popular in the far east because they succeeded to reduce the “handle” [see the appendix about the Sheng family].

1929 – Idelsohn

Avraham Zvi Idelsohn (1882-1938), Jewish ethnologist.

In his book *Jewish music: Its Historical Development*, Mineola, NY: Dover Publications, [1929] 1992, pp. 18-19, Idelsohn states that the place of the Magrefa in the procedure of the daily offering in the Jerusalem Temple in the last century B.C.E. was to announce the beginning of the musical performance (see Figure 15):

This is about all that our sources report of the Temple music. There are no descriptions of the tunes retained, nor is there any indication of scales and rhythm employed, such as the Greek philosophers and authors left us. In Israel music was seemingly taught and preserved in oral tradition only, as is the custom in the Orient to the present day. Yet with the scant information at hand, let us try to visualize a musical performance at the Temple service in the last century B.C.E. as it is depicted in the Mishna.⁵¹

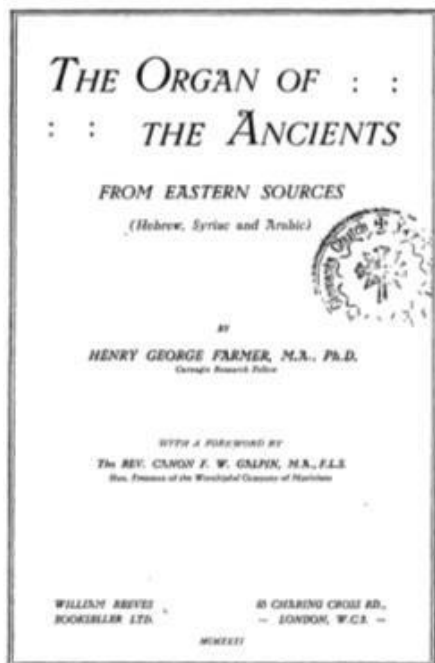
After the priests on duty had recited a benediction, the Ten Commandments, the *Shema* (Deut. 6: 4-9), the priestly benediction (Num. 6: 22-26) and three other benedictions, they proceeded to the act of the offerings. And after they were through with the arrangement of the sacrifices, one of them sounded the *Magrepha* (see above) which was the signal for the priests to enter the Temple to prostrate themselves, whereas for the Levites that sound marked the beginning of the musical performance. Two priests took their stand at the altar immediately and started to blow the trumpets *tekia-terua-tekia* (see above). After this performance, they approached Ben Arza,

Figure 15. Idelsohn’s (1929) statement on Magrefa’s place in daily offering in Jerusalem Temple (pp. 18-19).

1931 – Farmer

Henry George Farmer (1882 –1965) was a British musicologist.

In his book *The Organ of the Ancients* (London: William Reeves, 1931), we find the following statement:



Indeed, it is not until we come to the *Talmud* that we get anything like evidence for its existence among the Jews, and even this has been challenged. In the *Talmud* there is mentioned an instrument of the Temple called the *magrephah*, which is claimed to be a pneumatic organ in the second stage of development,¹² that is to say, with manual or pedal bellows.

The evidence of the *Talmud* has long been suspect. This has been due, mainly, to the conflicting descriptions of, and references to, this *magrephah* by the rabbis. But we must remember that after the fall of Jerusalem in 70 A.D., music generally was *anathema* amongst the Jews.¹³ Its prohibition was a sign of mourning for the destruction of the Temple, and the interdict has had its influence on Judaism up to comparatively modern times.¹⁴ As a result, it is quite possible that the rabbihood in the Talmudic period was not sufficiently conversant with instruments of music to give precise particulars of such a contrivance as the *magrephah*.

Figure 16. Farmer's (1931) description of the Magrefa (p. 25).

1940 – Sachs

Curt Sachs (Berlin 1881 – New York 1959) was a German musicologist, one of the founders of modern organology. In *The History of Musical Instruments* (London: Dent, 1942) Sachs finds a contradiction that does not really exist. (see Figure 17):

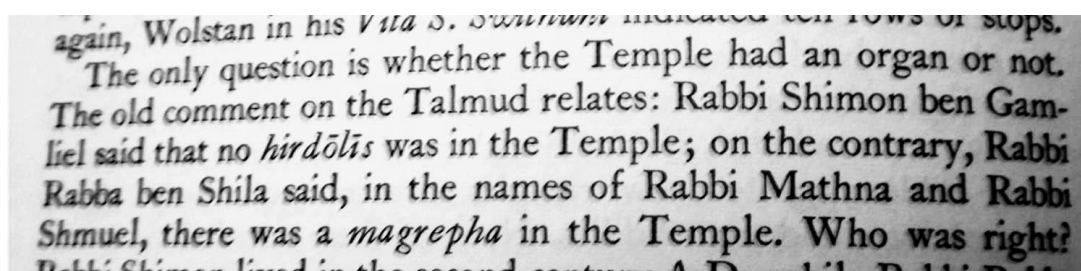


Figure 17. Sacks's opinion regarding the Magrefa and the Hydraulos in the Temple, as appears in *The History of Musical Instruments*, p. 124.

Rabbi Shimeon ben Gamliel said: “there **was not** an hydraulos in the Temple.”

Rabbi Rabba ben Shila - - - said: “there **was** a magrefa in the Temple”

Curt Sachs asks: “Who is right?”

My (Z.R.) answer is that both of them were right. There was a Magrefa, and it was not an Hydraulos.

1960 – Yasser

Joseph Yasser (Poland 1893 – U.S.A. 1981)

After the Bolshoi in Russia, and “Shanghai Songsters” in China, he was organist in synagogue in Denver from 1929 to 1960.

In his article “The Magrepha of the Herodian Temple: A Five-Fold Hypothesis” (*Journal of the American Musicological Society* (1960) 13/1, 24-42), Yasser expresses a deep belief that there were two Magrefa’s (with no connection to any citation from the Talmud). His design is even more absurd than Kircher’s. In order to fit anything to his speculation – when he describes his organ, which has, of course, three dimensions, he writes that in the Talmud “they wrote of two dimensions only because they forgot one”. This cannot be taken seriously.

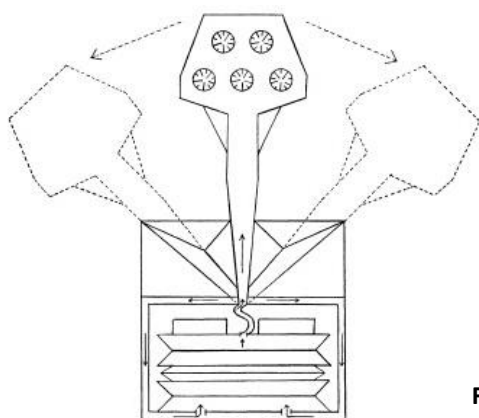


Figure 18. sketch of the Magrepha, according to Yasser (1960), p. 32.

2001 – The New Grove Dictionary, Magrepha

Even a serious encyclopedia like *The New Grove Dictionary* – brings the same false information (see Figure 19):

Magrepha (from Heb. *garaph*: ‘to scoop’ or ‘shovel’). A shovel employed in the Temple of Jerusalem and possibly a kind of ritual pipe organ. The *magrepha* is first mentioned in the Mishnaic tractate *Tamid*, a work written soon after the destruction of the Herodian Temple by the Romans in 70 CE that describes the Temple and its daily sacrifice. It is depicted as a bronze shovel used by a priest to clear away the accumulation of ashes from the continually burning sacrificial fire. At one point in the service it is cast down upon the pavement near the altar with a great clatter (presumably as a threatening cultic symbol): ‘No one in Jerusalem’, the *Tamid* reports, ‘could hear his neighbour’s voice because of the sound of the shovel’.

A number of somewhat later rabbinic sources speak of the Temple’s *magrepha* as a kind of pipe organ. Yasser has reconstructed the instrument on the basis of these sources, concluding that it consisted of a cube-shaped

chamber housing the bellows from which projected a long shovel-like handle. The handle serves a number of purposes: its stem is hollow and contains a wind-pipe leading from the bellows; its spade-like ending functions as a wind-chest, from each side of which protrude five clusters of ten small pipes; and the entire handle is worked back and forth to inflate the bellows. Such an organ would have all 100 pipes playing simultaneously to produce a shrill and menacing sound, one fulfilling with greater efficiency the purpose of casting down the original shovel.

If Yasser’s reconstruction seems strange, it corresponds nonetheless with the later sources and has a certain historical plausibility in view of the fact that instrument repair experts from Alexandria (the home of mechanical signalling devices) are known to have visited the late Temple. The possibility cannot be ruled out, however, that the *magrepha* as wind instrument might be a literary creation rather than an actually observed artefact.

Figure 19. Description of the Magrepha in *The Grove Music Dictionary*, 2nd edition (London: Macmillan, 2001, Vol. 15, pp. 597-598).

Thus, interpreting the Talmud that speaks about 100 sounds (?), but having no logical answer, they conclude our 400-year research from one mysterious Magrefa, through two Magrefa's, with “no Magrefa at all.”

5. The obstacle in the Magrefa search

If I write, instead of “**I make ice-cream**” – “**I nake, or I zake ice-cream**” – anybody, (and my computer) knows immediately that it's a mistake.

If I write: “**I bake ice-cream**”, the computer will not, but you will understand that it is a mistake, because of the absurd meaning.

But if I write: “**I take ice-cream**”, or even “**I fake it**” – one gets the wrong impression but can believe it.

That is what happened with the Magrefa.

The written zorka, instead of s[h]orka, (see citation 4 in the page 6) has a meaning: “throws [it]” instead of “whistles [in it].” There are some Hebrew words, that sound almost the same, Zo'ek, Tso'ek, Sho'eg, Khorek, Torek, and Shorek (זועק, צועק, שואג, חורק, שורק, טורק) which mean: cry, shout, roars of the lion, creak, slam the door, whistle. Apparently, there was no “professional terminology” for playing on the Magrefa, and the word was just a “simple everyday use”. The slight change of the letters could have been in speaking, in writing or in copying.

The fact of “possible” meaning drag the long line of absurd, (and no-chance to get out of the trap): not one, but two magrefa's, (that never existed), with absurd names (“magrefa tamid” and “magrefa arachin”), absurd playing-system, pipe-organ construction 1800 years before Cavallé-Coll. They forgot only the USB connection...

Exchanging letters exists and is known – I do not have to prove it.

Here are a few examples: “cosmos” – in Greek, the “s” is pronounced as “z”.

Amalia Rodrigez's name is pronounced: Rodrigesh.

“hosha-na” (help us) in Hebrew became: “Hozana”

The letter “z” was officially cancelled in Iceland in 1973, because it is similar to “s”.

“L” and “R” are the same for Japanese, “B” replaces “P” in Arabic.

And ancient Jewish people of the Efraim-Tribe said “ssibolet” instead of “shibolet”.

6. So, what was the Magrefa?

Three points will explain to us the riddle of the Magrefa:

1. It was not a rake, but an instrument **similar to a rake** (it looks like a rake – see Fig. 20):



Figure 20. Magrefa (a shovel) and a Sheng (a music instrument)

2. Not 1000 different sounds but 1000 haphazard combinations of sounds (exaggerated in any case).
3. The priest **didn't throw it but whistled in it** (Zorek/Sorek); the priest was not a musician.

In the Talmud we read that “there was a Magrefa in the Temple”. One Magrefa, not two, (and not zero).

Its dimensions are (about) 50 x 50 centimeters (not three dimensions).

So – there were not one percussion and one wind instruments.

It could not be a big box with 100 pipes (Groves), and bellows (Kircher), etc.

It was not an important musical instrument, but a tool for signals, so there was no “official” name for it, and they called it the “shovel” or the “rake” because it looks like these tools.

From the text we read “one takes the Magrefa” = somebody, one of the KOHANIM (a priest) used it. Not a professional musician – “LEVITE”, whose job was the music playing and chanting in the Temple.

And if he “takes” it – it could not have been even a small pipe-organ. (Forget about keyboard and pedals...)

And what he does is whistling – much more logical than through it. (The words “on the floor” are a later invention. They are not written in the Talmud).

And – because he is not a musician, he does not play a melody. He makes sounds. A signal. Noise. That why it never repeats on itself, and you get the impression of “a thousand sorts of sounds” (“1000 MINEI ZEMER”). We do not have to look for scales with microtonality. Just “1000 sorts of sounds”.

If we look at the Sheng, blow in it, listen to its very loud sound – it seems very positive fit the description of the Magrefa (see Figure 21).



Figure 21. Seven shengs with long / medium / short mouthpiece from Zami Ravid's collection.

Ten pipes, ten holes, “Ama x Ama”, many different and very strong sounds. And a very long handle, (the mouth-piece) “comes from her”.

This long handle served to hold the pipes. It is very un-comfortable, and almost impossible to play real melodies. That’s the reason why it was not a popular music instrument, not in Israel, and not in the neighboring countries. Here is the answer to Stainer about “no traces”.

Let me use again Portaleone words:

“That is what I’ve imagined. If you like my idea – I’ll be more than happy. If not – try to find another solution, which will be better and true-er than mine, and that will fit to the citations of the “wise and sapients of the past”. Then, if so, I shall agree to your way, without any shame!”

Appendix – the sheng family

The sheng is a very old, perhaps the oldest reed instrument. With many names (in China they call it Sheng, Lusheng, Hulusi, Yu, Bawu, and Hulusheng, in Japan – Shō, in Thai - Khene, in Korea – Saenghwang).

From a long mouthpiece the air passes to all the pipes. Each of them has one hall, and one reed inside it. When the player closes, with a finger, a certain hall – the reed in this pipe will vibrate. It is possible to close any number of pipes, to play chords or any combination (see Figure 22).



Figure 22. A sheng player in one of the Thai villages.

The “mouth-piece” length does not influence the sound. It can be one meter long, or shorter, or even very short, as there are different shapes and material (coconut, gourd) to combine the pipes (see Figure 23).



Figure 23. A round basis of the sheng pipes (arrow points to free reeds).