

Baking the Lechem HaPanim – Emor

[Shiurim Main Menu](#)

וְלִקְחֶתָּ סֶלֶת וְאָפִיתָ אֹתָהּ שֵׁתִים עֶשְׂרֵה חֲלוֹת שְׁנֵי עֶשְׂרִינִים הֲיִהָה הַחֲלָה הָאֶחָת.
וְשִׂמְתָּ אוֹתָם שֵׁתִים מְעַרְכוֹת שֵׁשׁ הַמְעַרְכֶת עַל הַשִּׁלְחָן הַטָּהוֹר לִפְנֵי ה'. וְנָתַתָּ עַל הַמְעַרְכֶת
לְבִנָּה זָכָה וְהִיָתָה לְלֶחֶם לְאִזְכָּרָה אֲשֶׁה לָהּ. בְּיוֹם הַשַּׁבָּת בְּיוֹם הַשַּׁבָּת יַעֲרֹכְנוּ לִפְנֵי ה'
תְּמִיד מֵאֵת בְּנֵי יִשְׂרָאֵל בְּרִית עוֹלָם. וְהִיָתָה לְאֶהָרֹן וּלְבִנָּיו וְאֶכְלָהּוּ בְּמִקּוֹם קָדֹשׁ כִּי קָדֹשׁ
קָדָשִׁים הוּא לֹא מְאֻשִׁי ה' חֶק עוֹלָם. (ויקרא כד, ה-ט)

In this week's parsha we find the "recipe" for the Lechem HaPanim. I write "recipe" in parentheses, because it is not much of a recipe. If any baker would look at this recipe, they would not have a clue how to bake the Lechem HaPanim. The Torah tells us the bare minimum. Lechem HaPanim is made from solet (semolina), it is baked in an oven, there are twelve loaves and each loaf is made from 2 isaron measures (of solet).

Try this at home. Take two isaron measures of solet (approximately 3.9kg). Place it in a pan. Put the pan in the oven and bake it. Do you think the result is going to be a loaf of Lechem HaPanim?

So, you can say "This is the Torah, the Torah gives highlights, it doesn't go into detail. Take Tzitzit for example, does the Torah tell you how many threads, how many knots, how many windings? If you want to find details, you go to the תּוֹרָה שֶׁבְּעֵל פֶּה, *there are all the details*".

OK, so we go to the Mishna, the Gemara and ... practically nada. Only scant details on how to bake it are given. The Mishna and the Gemara tell us that the bread is kneaded, where it is kneaded (outside the Azara), that it is baked in a pan and rises in the oven when it is baked (עִי"א, מנחות צד), it tells us the shape (עִי"ב, מנחות צד). And if you think the Rishonim and Acharonim are going to help out, forget about it.

The reason we know exactly what Tzitzit and Tefilin are, what they look like, all the technicalities etc. is because the Gemara and the commentaries go into great detail about them (incidentally Tzitzit and Tefilin appear also in masechet Menachot - there is a connection between them and the Lechem HaPanim – which you can read about in sefer Meir Panim). The reason there are very few (to no) details about the preparation of the Lechem HaPanim, is because the tradition was *lost*. It was lost and not passed on, because Beit Garmu refused to reveal it to the sages (עִי"א, יומא לח).

In this shiur I would like to take you behind the scenes, into the innermost chambers of Machon Lechem HaPanim and give you a fascinating glimpse into

the world of modern Mikdash research, that will hopefully take your breath away. To share with you some of the highlights of the thousands of scientific experiments and voyages of discovery we have undertaken over the last decade, the results of many which appear in sefer Meir Panim.

Here I will be sharing exciting stuff that does not appear in Meir Panim, which is a sefer kodesh and not an adventure novel, so many of the riveting moments and behind the scenes material is not recorded there.

As you all know, I am a master baker. Over the decades I have mastered the secrets of all the primary ingredients, flour, water, salt, yeast etc. I know them as if they were my own children. I have learned to combine them in countless variations like an artist dips their brush into paint on a palette and paints a masterpiece, with infinite shades and contours.

My novel approach to the Lechem HaPanim research was initially that of a *baker* and not a talmid chacham. All researchers of the Lechem HaPanim to that point had been talmidei chachamim approaching the Lechem HaPanim from a "lomdishe" direction. I began at the *opposite* end "How would I bake this bread as a baker?" At the end of the day, there is a "product" that has to be produced, a *finite* product with finite parameters and characteristics.

Tackling the research from this mindset allowed me to keep an open mind and investigate it without any prior bias. I tried to go back to as close to the source as possible – the psukkim in the Torah and then the Mishna and the Gemara. I deliberately and purposely did not delve into the Rishonim and Acharonim at this point. Only *after* I had reached whatever conclusions I reached as a baker and a scientist, did I then examine the commentaries, many of which (not all) correlated with my unbiased study. This approach enabled me to dispel many incorrect assumptions on the part of the commentators and myths that surround the Lechem HaPanim.

First, I had to learn a new nomenclature – that of Torah measures. In the world of baking today there are two primary systems of measure – weight and volume. Weight is either metric (grams, kilograms, liters, etc.) or non-metric (ounces, pounds, gallons etc.). Volume measures are in cups, teaspoons etc. I had to learn the *Torah* nomenclature of measurement, isaron, log, tefach, etzbah, etc. according to all the different opinions (Rambam, Chaim Na'eh, Chazon Ish) and draw up a conversion table to the more familiar metric system. I had to examine manufacturer technical data sheets, to determine densities and convert them from volume to weight, like the density of durum semolina imported from Italy, the land of the pasta – where most of the high-quality semolina (that we use in Machon Lechem HaPanim) is manufactured. For consistency, in all my experiments I decided arbitrarily to use the shita of Chaim Na'eh for *all* the measurements (perhaps because it is the "middle" measurement, and I am a big chassid of the Rambam's middle path philosophy). After punching in Sgambaro's

(the Italian semolina manufacturer) value for the density into the equation, we determined that according to Chaim Na'eh, 1 isaron of solet weighs 1965 grams. Suddenly I felt a shiver run up my spine. I was born in 1965.

My initial research began with my mentor Professor Zohar Amar's book *חֲמִשֶּׁת מִיְי דָּגָן*, a seminal work, the first of its kind in almost 2000 years, to actually examine the Lechem HaPanim with scientific eyes. I began by duplicating Professor Amar's experiments in my own bakery-cum-lab and using them as a baseline.

To bake any bread, you need a minimum set of parameters – length, width, thickness, shape, texture, basic ingredients, etc. You then fill in the blanks for any info that is *missing*. If the *only* known ingredient is solet (the exact amount is given in the passuk), you know that in order to achieve a bread with those parameters, you will need to *complement* the missing ingredients. Obviously, you cannot bake bread with solet alone, you must mix it with some binding agent. Indeed, the Gemara above states clearly that the Lechem HaPanim was "kneaded". To knead bread dough, you require some liquid. So what liquid was it? Many of the Menachot had oil, perhaps the liquid is oil? Perhaps it is water? (another Mishna *ב מנחות ה*, says *all* the Menachot are kneaded with water). Perhaps both? However, when oil is used, its amount is specifically stated, either in the passuk or in the Gemara. With the Lechem HaPanim no mention of oil is made at all – so scratch the oil. So far - solet and water.

How much water? Is the dough stiff, loose, liquidy? The thickness of the resulting bread will to a large degree depend on how much water there is in the dough (amongst other things).

Was there salt in the dough? A passuk in parshat Vayikra (*ויקרא ב, יג*) specifically says that all Menachot had salt added – but these are salted on the ramp up to the mizbeach. The Lechem HaPanim *never* went on the mizbeach, so was salt added to the dough or not? Bread without salt tastes pretty bland (think of Pesach matza). Was the Lechem HaPanim tasty or bland?

What exactly was the shape of the bread? The Mishna (*מנחות יא, ה*) tells us the length and width and it tells us that the bread was folded on both ends. The Gemara then goes into a long debate how exactly it was folded – into a rectangular-box shape (*teiva perutza*) or a curved-boat shape (*sfina rokedet*). This requires bread pans in that shape. Our first "pans" were makeshift contraptions of crumpled up aluminum foil supported by bricks from all ends to hold the components together and the dough was inserted into this "form" and baked.

The first revelation – the resulting bread was *enormous and heavy* (about 7kg according to the shita of Chaim Na'eh. If we would have gone according to the high-end shita, Chazon Ish, it would have been closer to 12kg). I have never

in my baking career encountered (or handled) breads of this magnitude. Needless to say, it doesn't fit in a home oven. To get them in and out of our huge brick oven requires the sheer muscle strength of a weightlifter. Now, many years later, after we perfected the shape and had professional stainless-steel pans built, the weight of the bread and the pans combined is around 23kg. Imagine taking a 23kg package out of the oven at 380 degrees celcius! I began accumulating a growing series of burn marks on my arms, like a fighter pilot has notches on his airplane for every enemy plane he downs (lehavdil).

Next revelation – the breads baked according to the parameters in Professor Amar's book were thin, flimsy, fragile and broke easily. How do you stack six *humongous* breads like this one on top of another, supported by their own weight on Friday night, until the next morning, Shabbat when they were switched (מנחות צו, ע"א) – without them *breaking* under the sheer weight? How do you carry the new set of twelve loaves to the Shulchan without them breaking in transit?

Masechet Menachot doesn't tell you how thick the Lechem HaPanim is. For that you need to go to a different masechet, Pesachim. There it categorically states that the thickness is 1 tefach (about 8cm). On which daf does this appear? Daf לו. Another shiver up the spine (my English name is Les [pronounced Lez]). Do you ever get the feeling that someone is trying to tell you something?

Baking a bread 1 tefach thick is *trivial* for a baker. You simply add yeast to the dough and let it rise. Unfortunately, however, this is not an option because the Lechem HaPanim is a matza! It is *not allowed to be chametz*.

Prof. Amar, in his experiments (duplicated in our lab), never managed to get to 1 tefach thick. He used baking soda as a rising agent, which made the bread rise a little, but still very far from a tefach.

You cannot simply double or triple the ingredients, thus increasing the bread volume. The Torah specifically says 2 isaron of solet per loaf *only*, so you cannot add to that. You cannot simply increase the water content to supplement the volume, you would need to add so much water that it would be soup, not bread! You cannot supplement the dough with some other "filler" ingredient to increase the volume of the bread, like a spice (garlic/salt/turmeric, etc.) because in order to achieve the required volume, you would have to add so much spice, the bread would be inedible. This bread is not a "bread sculpture", it has to be *eaten* by the Kohanim.

The only way to get the bread to the thickness of a tefach is to inflate it with air. Yeast is the obvious route, but that makes the bread chametz. Scratch yeast. We explored other new-fangled bread technology, like the Chorleywood Bread Process (CBP) which mixes dough in high-powered mixers under pressure, thus aerating the dough. When the pressure is released, the trapped

air bubbles expand instantaneously and the bread rises in seconds. Production line bakeries use this method to accelerate the rising process. Only problem is that 2000 years ago, Beit Garmu did not have CBP mixers, so how did they do it?

After experimenting with countless variations of ingredients that existed in antiquity, like Prof. Amar's suggested baking soda נְתָר, and other rising agents, nothing worked. They all fell short.

There is only *one* way to make bread rise successfully, the way it has always been done, for millenia - by fermentation. There is just no getting around it. But the "non-chametz" clause seems to stymie that option. Or does it? With immense siyata di'Shamaya I suddenly had one of my rare eureka moments. What if there is some way to ferment bread without making it chametz, halachically speaking? If you cannot reinvent the physics and chemistry, perhaps you can find a loophole in halacha that allows you to make bread rise without it becoming chametz?

I needed an expert on chametz, not the chemistry, but the halacha. After a short search, it was clear that the undisputed oracle on the subject is HaRav Shabtai Rappaport שליט"א. HaRav Rappaport is the former head of the מְכוּן הַגְבוּהָ לְתוֹרָה in Bar Ilan University. He is also the grandson of the famous Shem MiShmuel zt"l and is married to the granddaughter of HaRav Moshe Feinstein zt"l. He is without question the leading expert on chametz in the world today. I contacted him and presented my theory and was delighted that he did not reject it on the spot. Instead, he gave me a lot of homework to do. About a year and a half's homework – experimenting in our lab with various concoctions and conditions.

It was perhaps the most fascinating part of our research to date, because it involved an attempt to *scientifically* and chemically define what chametz is. After 18 months of intensive experimentation, we still had not fully quantified chametz scientifically, but we had discovered some interesting "markers" and components that make up the complex puzzle that is chametz. We scientifically proved in the lab the *18 minutes of Chazal* as the yardstick to define when a dough has become chametz. The results of this and other experiments appear in appendices in sefer Meir Panim.

Using the data obtained from this laboratory research combined with HaRav Rappaport's stunning knowledge of halacha, we managed to devise a method to make the Lechem HaPanim rise to the thickness of a tefach, *without it becoming chametz*, according to even the most stringent opinion. It is a given that the Lechem HaPanim rises – it is stated categorically in the Gemara (מנחות (ע"א, ע"ב), except nobody beside Beit Garmu knew how it was done, e.g. the Egyptian bakers from Alexandria (יומא לח, ע"א).

Finally, we had something to work with, a stable, solid bread that stands up to the rigorous realities of the process of the Korban Lechem HaPanim.

I now began devoting my time to resolving a niggling conundrum regarding the shape of the Lechem HaPanim. As you know, there are two opinions of the shape (מנחות צד ע"ב), R' Chanina - a rectangular box-shape (teiva perutza) and R' Yochanan – a ship/boat-shape (sfina rokedet). The Gemara has a long debate over which is the correct shape and finally comes to the conclusion – the shape is the sfina rokedet – the shape of a "dancing ship". This is the *clear*, indisputable conclusion in the Gemara.

If any of you have seen pictures of the Lechem HaPanim, you will know that the shape portrayed in 99.9% of the literature to date is the rectangular box-shape, the teiva perutza! So how can everyone so flagrantly contradict the Gemara? The reason is "because" of the Rambam. The Rambam (הלכות תמידין ה, ט (ומוספין ה, ט), describing the shape says כָּל חֶלֶה מִהֶן מְרֻבָּעַת, it is square/rectangular, which "seemingly" appears that the Rambam is posek lehalacha according to the teiva perutza shape! One of the main perushim on the Rambam, the Kesef Mishneh (written by R' Yosef Karo, author of the Shulchan Aruch) asks "How can the Rambam contradict the Gemara which says that the shape was the sfina rokedet?" and he ends with a צ"ע (צריך עיון), which is a nice way of saying that he *disagrees* with the Rambam and cannot fathom the Rambam's reasoning. This is the בְּעַל הַשְּׁלָחַן עָרוּךְ speaking, the iconic source of halacha!

The Gemara is not the only definitive source that the shape of the Lechem HaPanim was a sfina rokedet. There is also archeological evidence to support this, the pruta coin of Matitya Antigonus II, from the period of the 2nd Beit HaMikdash that clearly shows the Lechem HaPanim was the sfina rokedet shape.

When everything is so clear and simple, how can it possibly be that the "entire world" goes in the opposite direction when all the evidence points to the contrary?

My research has been a learning curve and after resolving the thickness issue (above) I came to understand that the subject of the Lechem HaPanim is fraught with misconceptions and preconceptions. That in a case when everything is clear and obvious but everyone goes in the *opposite* direction, it means that someone is suffering from a misconception. If it is obvious that the thickness of the Lechem HaPanim is 1 tefach (the Gemara says so) and the only way to get to that thickness is via some type of fermentation – but everyone says you cannot because fermentation = chametz, it means that they have a preconception, a misconception of what chametz truly is.

Similarly, here. If all the evidence points to the fact that the Lechem HaPanim shape is the "dancing ship" shape, but the Rambam "seemingly" says the opposite, it is very likely that everyone is *misinterpreting* the Rambam. What happens if the Rambam did not say that the shape of the Lechem HaPanim was rectangular at all? In sefer Meir Panim I indeed provide a lengthy proof that the Rambam did not pasken according to the rectangular shape. So, what about the *מִרְבַּעַת מֵהֶן חֲלָה כָּל חֲלָה מֵהֶן מִרְבַּעַת* statement of the Rambam? Isn't that clear? No! The Rambam was referring to the shape of the Lechem HaPanim dough *before it was folded* into the end shape. The dough indisputably begins as a rectangle – 10 tefachim by 5 tefachim *מִרְבַּעַת*, but after that it is then folded into a different shape. The Rambam does not pasken in the machloket between R' Chanina and R' Yochanan above, either because he simply accepts the Gemara's resolution of the sfina rokedet shape, or because from a halachic perspective, it doesn't matter if it is in the shape of a teiva perutza or a sfina rokedet. In fact, the Chazon Ish says exactly that – it doesn't matter – either are OK!

Meir Panim now has two breakthrough chiddushim so far, regarding the thickness of the bread and the shape, which fly in the face of most of the contemporary literature, but which correlate *exactly* with the Gemara. You can imagine how much flak these "revolutionary" chiddushim have drawn, from leading figures in Mikdash research, including the head of Machon HaMikdash (who gave his haskama to the sefer, despite his disagreement). It is not easy to part from misconceptions that have become so deeply rooted. It takes time, a lot of persuasion and clear, unwavering presentation of hard proofs and evidence.

The sefer has many other chiddushim, regarding how the breads were switched on the Shulchan, how someone could carry a stack of six breads (each weighing 8kg) to the Heichal without them breaking. Meir Panim postulates that they made use of *עֲגָלוֹת* to wheel the breads in, instead of carrying them by hand. Another chiddush regards the *מִסְנָגֶרֶת* of the Shulchan, was it above the table surface or below - it is a (unresolved) machloket in the Gemara (*מנחות צו, ע"ב*). Meir Panim proves that it had to have been *below* and that a shelf was placed on top of the *מִסְנָגֶרֶת* to store the *כֵּלִים* of the Shulchan during the journeys in the Midbar. And there are many others.

After completing the first part of the sefer which deals with the halachot and technicalities of the Lechem HaPanim, I resorted to what many consider "unacceptable" practice. I began delving into Kabbalistic sources.

The Gemara (*חגיגה יג, א*) categorically states that one should not delve into the *"נִסְתָּרוֹת"* before one is *וּבִסְקִים* - *מִמֶּלֶא כָּרְסוֹ בְּשָׁ"ס וּבִסְקִים* - that Kabbala should *not* be your first "stop". Only *after* you have exhausted the Shas and the poskim, should you approach Kabbala. I cannot say that I have exhausted the entire Shas and all the poskim on *every subject* in the Torah, but I can undoubtedly say that I *have* exhausted every source in Shas and the poskim on the *subject of the Lechem HaPanim* and I was still left with many questions unanswered. I believe

that the condition of the Gemara in this specific case was met and I therefore embarked on an exploration of the subject using the methodology of רמז, trying to decipher the psukim in Tanach relating to the Lechem HaPanim and uncover answers to the many questions. In this respect, I follow in the path of many other great icons in the Torah world, like the Tur, son of the Rosh and author of the seminal ארבעה טורים, upon which the Shulchan Aruch is based, but who also was the בעל הטורים, the famous perush on the Torah which uses תורת הרמז, gematriyot, etc.

This, for me, was the most sublime part of the research, because, unlike the first half of the sefer which was more נתינת דעת oriented, using the skills acquired throughout my life, as an amateur baker, in the field of hi-tech, as a pro-baker, etc. to analyze, deduce and research, this was *not me* at all. When I was pouring through the psukim, applying numerous methodologies of רמז, it *mamash* felt like HKB"H sent Eliyahu HaNavi to reveal hidden secrets to me, that I could *never* have possibly found using my own limited intellect. Why me? It is certainly *not* because I am such a big tzaddik or talmid chacham, I am not. Perhaps ... perhaps it might be because HKB"H saw my תמימים in the subject of the Lechem HaPanim, more than anyone else had done perhaps in the last 1956 years and He had רחמים on me and opened my eyes to things others have not yet found. It appears that HKB"H is particularly fond of the Lechem HaPanim and those who deal with it בתמימות (see the story of the מפורטות and the Lechem HaPanim, as brought by the מהר"ם חגי, משנת חכמים סי' ר"כ).

HKB"H, בתסודו הגדול, revealed to me secrets connected to the Lechem HaPanim that are not limited to baking bread, they touch on the very meaning of life itself and how to live the right way in a materialistic, physical world. They reveal the hidden meaning of the Shulchan and the Lechem HaPanim and why this was such an essential component of the Beit HaMikdash. These revelations form the second part of the sefer.

As a result of this ongoing research, Machon Lechem HaPanim has received worldwide recognition from leading institutions related to the Beit HaMikdash and has become the de-facto Menachot laboratory for leading researchers in the field, including my mentor Prof. Amar, who has used our facilities for conducting his own research and experimentation. HaRav Rappaport, who collaborated with us in our research and has used many of our experimental findings in his own research. Tzvia Savir, the world's leading authority in the field of growing biblical wheat and processing solet suitable for Menachot. Our Machon bakes many of the breads used in Machon HaMikdash's annual tirgulim, like the Shte HaLechem. I have been privileged to join a veritable army of serious researchers who are working round the clock to make the 3rd Beit HaMikdash a reality.

Thousands of tourists from all corners of the globe have participated in workshops in our institute in Karnei Shomron and thousands more school

children, yeshiva bochrim, students in ulpanot, batei kneset, daf yomi groups etc. have experienced the Lechem HaPanim hands on in our mobile workshops.

After 1956 years since it was last baked in the 2nd Beit HaMikdash, the Lechem HaPanim is once again being baked in Eretz Yisrael, not as a curiosity, not as a commodity, but specifically for the purpose of returning it to its former glory and for fulfilling the mitzva of **בְּיוֹם הַשַּׁבָּת בְּיוֹם הַשַּׁבָּת יַעֲרֹכְנוּ לִפְנֵי ה' תַּמִּיד** **מֵאֵת בְּנֵי יִשְׂרָאֵל בְּרִית עוֹלָם**.

Shabbat Shalom

Eliezer Meir Saidel

Machon Lechem Hapanim

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