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The Anatomy of Prayer⁴⁶

The organs that You set within us, and the spirit and soul that You breathed into our nostrils, and the tongue that You placed in our mouth – all of them shall thank and bless, praise and glorify, exalt and revere, sanctify and declare the sovereignty of Your name, our King. For every mouth shall offer thanks to You; every tongue shall vow allegiance to You; every knee shall bend to You; every erect spine shall prostrate itself before You; all hearts shall fear You, and every stomach and kidney⁴⁷ shall sing praises to Your Name, as it is written: “All my bones shall say, *Hashem*, who is like You.”

(*Nishmat* prayer from *Shabbat Shacharit*)⁴⁸

The inspiration for this essay is drawn from two articles that appeared neither in the midrashic literature, nor in any rabbinic or halakhic source for that matter, but in the academic medical literature. In fact, both articles appeared in the same premier publication, the *Journal of the American Medical Association*, though separated by some eighty years. The first, by Dr. Charles Spivak, entitled “An Anatomic Prayer,” was published in 1916; the second, by Dr. Kenneth Prager, entitled “For Everything a Blessing,” in 1997. Though disparate in time, they share the same core Jewish tradition about a key element of prayer. Both of these illustrious Jewish physicians reflected on the relationship between prayer and the human body. It is this dimension of prayer, its relationship to the human body, that we will superficially dissect in this brief essay.

The association of prayer with the anatomy of the human body is found both explicitly and implicitly in a number of prayers. Some have even suggested the very architectural design of the *Mishkan*, the conduit for our earthly prayers, is patterned after the human body.⁴⁹ The idea is most succinctly encapsulated in the phrase from *Tehillim*,⁵⁰ uttered as part of the *Nishmat* prayer on *Shabbat*, “*kol atzmotai tomarna ‘Hashem mi kamokha’*” – “all my bones shall say ‘*Hashem*, who is like You.’” This phrase, at once poetic and halakhic, has served as the title of a beautiful poem on prayer by Avraham ibn Ezra,⁵¹ as well as the source for the required movement of the spine during the recitation of the silent *Shemoneh Esrei* prayer.⁵² Below we discuss a number of prayers where either the recitation, or content, of the prayer is specifically related to human anatomy.

THE 248 EIVARIM (LIMBS)

Charles David Spivak, originally Chaim Dovid Spivakofsky, fled Russia in 1882 and became a prominent physician and leader in the treatment of tuberculosis. He helped found the Jewish Consumptive Relief Society (JCRS) in 1904. His contribution to the field of Judaism and medicine is reflected in his work, *The History of Medicine in the Bible and Talmud*.

⁴⁶. This article is dedicated to the memory of my dear father, Barukh ben Yitzchak Isaac, *a”h*, who was *oleh le-olam ha-emet* during the writing of this article. *Yehi zikhro barukh*.

⁴⁷. I deviate here from the Artscroll rendition, “all innermost feelings,” and offer the literal translation, to preserve our anatomical focus.

⁴⁸. Translation adapted from the *Artscroll Siddur*.

⁴⁹. For discussion of this idea, see audio lecture, Hanan Balk, “The Mishkan as an Expression of the Human Body,” <http://www.yutorah.org/lectures/lecture.cfm/733493#>.

⁵⁰. 35:10.

⁵¹. Published online by the Ben-Yehuda Project, http://benyehuda.org/ibnezra_a/78.html.

⁵². *Yerushalmi Berakhot* 4:3.

On September 30, 1916, in anticipation of the upcoming holiday of *Rosh Ha-Shanah*,⁵³ the *Journal of the American Medical Association* published an article by Dr. Spivak titled “An Anatomic Prayer: A hymn based on an ancient fragment of osteology.” Dr. Spivak’s contribution is a translation and explanation of a *piyut* (hymn) that is part of the *Rosh Ha-Shanah Musaf* service. Despite the appearance of this unique *piyut* in the ubiquitous *Artscroll* High Holiday prayer book, albeit in the supplementary section, I suspect its existence, and content, has escaped most of us.

The *piyut* is introduced as follows:

O deign to hear the voice of those who glorify Thee with all their “*eivarim*” (limbs), according to the number of the two hundred and forty eight positive commandments.

The poet then proceeds to list ceremonial tasks that are performed for the new year whose numerical value correspond to the groups of limbs in the human body. Thus, for example:

In this month they blow thirty sounds of the *shofar* according to the thirty limbs in the sole of the foot; there are ten additional sacrifices of the day (*Rosh Ha-Shanah*) corresponding to the ten limbs in the ankles.

This *piyut* indicates that every limb of the body has its corresponding *mitzvah*, an idea that is reflected in the fact that the number of positive commandments is identical to the number of limbs listed in the *Mishnah*.⁵⁴ In fact, while many assume that the establishment of the number of positive commandments as 248 predates the enumeration of the 248 limbs, some have argued the opposite – that the tradition of the number of *eivarim* is ancient, and later authorities endeavored to correlate the number of positive commandments to the pre-existing known number of limbs, each in his own way.⁵⁵

The structure of this *piyut* is clearly based on the *mishnah* in *Ohalot*⁵⁶ which enumerates the 248 limbs in the body. The very definition of the halakhic term “*eiver*,” the identification of each of the enumerated *eivarim*,⁵⁷ and the correlation with our modern understanding of anatomy have challenged rabbinic authorities and scholars for centuries with no definitive resolution.⁵⁸ For our purposes, we will use the term “limbs” and “*eivarim*” interchangeably. The focus of this essay, however, is to highlight the areas in *tefillah* where this number is reflected or incorporated, the aforementioned *piyut* being one clear example. While this *piyut* is the most famous, there are a number of other *piyutim* that use the mishnaic list of limbs as the backbone, or spine, of their literary structure.⁵⁹

Parenthetically, Dr. Spivak’s preoccupation with the 248 limbs extended even after his death, as he bequeathed his body to science for the purpose of medical dissection.⁶⁰ Most rabbinic authorities would only allow dissection of

⁵³. While the date of publication is September 30, and the first day *Rosh Ha-Shanah* was September 28 in 1916, medical journals are typically released prior to their publication date. In this case, it would have been in advance of the upcoming *Rosh Ha-Shanah* holiday.

⁵⁴. *Ohalot* 1:8.

⁵⁵. David Margalit, “*Pirkei Anatomiyah Lefanim Be-Yisrael Ve-Hayom*,” *Koroth* 1:11–12 (June–July, 1957), 378–391. With respect to this specific *piyut*, Margalit points out that the author includes non-osseous organs that are not included in the mishnaic list. He uses this as a support for his thesis to redefine the understanding of the term “*eiver*,” and to correlate the mishnaic list with our modern anatomical understanding.

⁵⁶. 1:8.

⁵⁷. For a discussion on the halakhic definition of “*eiver*,” see *Entziklopedia Talmudit*, s. v. *eivarim*.

⁵⁸. On the 248 limbs, see Fred Rosner, trans. and ed., *Julius Preuss’ Biblical and Talmudic Medicine* (New York: Hebrew Publishing Co., 1978), 60–67; Y. L. Katznelson, *Ramach Eivarim* (St. Petersburg, 1887) (note that the Hebrew date of the publication was 5648, the last three letters of which spell “*resh*,” “*mem*,” “*chet*,” or *ramach*, as in *ramach eivarim*; I wonder how long the author waited, or perhaps rushed, to achieve this publication date); R. Yair Weinstock, *Sefer Mareh Ha-Adam* (Jerusalem, 5755) (I thank Menachem Butler for this reference); Meir Bar-Ilan, “Medicine in the Land of Israel in the First Centuries CE” (Hebrew) *Cathedra* 91 (*Nisan*, 5759), 31–78; R. Kippervasser, “*Ramach Eivarim*,” *BDD* 8 (Winter, 5759), 29–64; Edward Reichman, “The Anatomy of the Human Body in Rabbinic Literature,” in Fred Rosner, Henri Goldstein, Edward Reichman, eds., *Studies in Jewish Medical Ethics* (Denmark: Hojers Forlag, 2008), 84–91.

⁵⁹. See Malakhi Beit Aryeh, “*Birkhot Eivarim*,” *Tarbitz* 56 (5747), 265–272, esp. note 8 on page 267. I thank my dear friend Jay Zachter for this reference. The relationship of the limbs and prayer in the works of the Roke’ach, and in particular in the prayer *Anim Zemirot*, will be addressed by Zachter in his forthcoming work.

⁶⁰. The paragraph of his will dealing with the disposition of his body reads as follows:

I request my wife and heirs to permit of the disposal of my remains after my death in this way: The body should be embalmed and shipped to the nearest medical college for an equal number of non-Jewish and Jewish students to carefully dissect. After my body has

the body after death for an immediate life-saving purpose,⁶¹ thus precluding its use in routine student dissection, though some authorities have permitted donation of one's body to science.⁶²

Below we discuss other prayers wherein the 248 limbs find their expression.

SHEMA

The recitation of one of the most central and fundamental prayers in our entire liturgy is governed by the need for its word tally to arrive at the anatomical number of 248.⁶³ The custom to say 248 words when reciting the *Shema* is found in the *Midrash*:⁶⁴

The recitation of *Keriyat Shema* should not be considered light in your eyes, as it contains 248 words, and there are 248 *eivarim* in the body. *Hashem* said, "Watch over that which is Mine, and I will watch over that which is yours."

In reciting the *Shema* the *chazan* repeats the words "*Hashem Elokeikhem emet*" – "The Lord your God is true" at the end. The sole purpose of this repetition is to complete a total of 248 words. Indeed, when the prayer is recited without a *minyán*, an additional three words, "*Kel melekh ne'eman*," are added at the beginning of the prayer to accomplish the same numerical objective.⁶⁵

This simple three-word phrase inserted to achieve a numerical objective has generated some halakhic discussion regarding the appropriateness of its position in the order of prayers.⁶⁶ For example, Ramban⁶⁷ considers the prayer immediately preceding the *Shema*, *Ahavat Olam*, a *birkat mitzvah*, a necessary prefatory blessing prior to the *Shema*. As such, utterance of "*Kel melekh ne'eman*" – "God, faithful King," the equivalent of saying *amen* (the acronym for these three words), would constitute a clear *hefsek* (legal interruption) and would be prohibited.⁶⁸

The Me'iri records that the custom of inserting "*Kel melekh ne'eman*" was widespread amongst the Sages prior to Ramban, and he defends the practice as a fulfillment of *hoda'ah* (praise), being -consonant with the theme, and an integral part, of *Shema*, consequently not constituting a legal interruption.

The *Kaf Ha-Chaim* states in the name of Rama that the recitation of "*Kel melekh ne'eman*" presents three problems: (1) It is an interruption between the *berakhah* and recitation of *Shema*. (2) It constitutes saying God's name

been dissected the bones should be articulated by an expert and the skeleton shipped to the University of Jerusalem with a request that the same be used for demonstration purposes in the department of anatomy.

The will was reportedly executed as written and Dr. Spivak's body was delivered to the University of Colorado for student dissection (*Jewish Daily Bulletin*, November 2, 1927).

⁶¹. For a general discussion on the laws of autopsy and dissection, see Avraham Steinberg, *Encyclopedia of Jewish Medical Ethics*, Fred Rosner, trans. (Jerusalem: Feldheim Publishers, 2003), s.v. autopsy.

⁶². R. Dr. Immanuel Jakobovits, in his classic *Jewish Medical Ethics* (New York: Bloch Publishing Co., 1959), 150, quotes R. Herzog, "The Plenary Council of the Chief Rabbinate of Israel... do not object to the use of bodies of persons who gave their consent in writing of their own free will during their lifetime for anatomical dissections as required for medical studies, provided the dissected parts are carefully preserved so as to be eventually buried with due respect according to Jewish law." See also R. Asher Grones, *Peri Asher* 3.

⁶³. For discussion on this topic, see, Macy Nulman, *Encyclopedia of Jewish Prayer* (New Jersey: Jason Aronson, 1993), s.v. *Shema*, and Refael Avers, *Ve-Shav Ve-Rafa* 2:7.

⁶⁴. *Midrash Tanchuma, Parashat Kedoshim*. On the origins of the association of the *Shema* with the number 248, see, for example, Shmuel Mirsky, *Talpiyot*, Year 1, 2:1 (*Tevet-Adar*, 5704), 239–244; Yisrael Ta-Shma, *Minhag Ashkenaz Ha-Kadmon* (Jerusalem, 5749), 285–298. On numerology in general and its impact on *tefillah*, see Daniel Sperber, *Minhagei Yisrael*, 2 (Jerusalem: Mosad HaRav Kook, 5751), 157–188 and idem., *Minhagei Yisrael*, 4 (Jerusalem: Mosad HaRav Kook, 5755), 291–299.

⁶⁵. On the origins of the recitation of "*Kel melekh ne'eman*" see Yisrael Ta-Shma, "*Kel Melekh Ne'eman: Gilgulo Shel Minhag*," *Tarbitz* 39:2 (*Tevet*, 5730), 184–194, and follow up comment on Ta-Shma by Shlomo Zalman Havlin in *Tarbitz* 40:1 (*Tishrei*, 5731), 107–109.

⁶⁶. For the following I rely primarily on Avers, op. cit.

⁶⁷. Commentary on *Berakhot* 11b.

⁶⁸. At an earlier period in history, the *chazan* would recite all the blessings and the congregation would only recite the obligatory *Shema*. As listeners to the blessings, they could technically answer *amen*. In order to complete the 248 words as mentioned in the *Midrash*, they would say the full words which the acronym *amen* represented, "*Kel melekh ne'eman*." However, it is clear according to Ramban that one who says all the blessings together with the *Shema*, whether *be-yachid* (as an individual), or with the *tzibur* (congregation), should not add any additional words before the *Shema*.

in vain, as the phrase bears no particular relevance to that which comes before or after it. (3) It is an unsanctioned -addition to the prayer.

Based on the above concerns, some suggested another option to complete the 248 words by repeating the phrase “*Hashem Elokeikhem emet*” at the end of *Shema*.⁶⁹ However, the Ashkenazi custom is to complete the 248 words by inserting “*Kel melekh ne’eman*” at the beginning of *Shema* when reciting it independently (*be-yachid*). R. Yaakov Emden, in his *Siddur Beit Yaakov*, recommends reciting the phrase “*Kel melekh ne’eman*” even when reciting the *Shema* with the congregation (*be-tzibur*).⁷⁰

THE “TO’ELET EIVARIM” (FUNCTION OF THE LIMBS) PRAYER

There is a practice described by medieval authorities to recite a list of every limb of the body, along with its purpose or function, the so-called “*to’elet eivarim*,” as a means achieving or enhancing the obligation of “and you shall love the Lord your God.”⁷¹

R. Moshe of Coucy, author of the *Sefer Mitzvot Gadol (SeMaG)*, in his discussion of positive commandment number three, “and you shall love...,” suggests this very approach as a means of fulfilling this obligation. Rambam in his *Moreh Nevukhim* and R. Bachya ibn Pakuda in his *Chovot Ha-Levavot* present the same approach.⁷² Embedding the number of limbs into the very prayer containing “*ve-ahavta*,” “and you shall love,” is an effective means of insuring the proper fulfillment of the *mitzvah*, and perhaps it is possible that the application of this specific anatomical correlation with the *Shema*, the central prayer of belief, is a correlate to the “*to’elet eivarim*” paradigm.

In a similar vein, *Sefer Chasidim* recounts the story of a “*chasid*” who recited a blessing on each *eiver* of the body that it should properly worship its Creator and not be the vehicle of sin.⁷³ While no similar list of blessings has been incorporated into our standard prayer book, a fourteenth-century manuscript of such a rubric has been published. The so-called “*Birkhot Eivarim*,” blessings of the limbs, are stylistically similar to the *Birkhot Ha-Shachar*.⁷⁴

THE HEALING POWER OF SHEMA

The *Beit Yosef* on the *Tur* elaborates on the association of the *Shema* with the anatomy of the human body and cites in the name of the *Midrash Ne’elam* the practical relevance of the 248 words of *Shema*.⁷⁵ Each limb is associated with, and has a corresponding word of, the *Shema*. For one who recites *Shema* with proper intent, each letter will effect a cure to its corresponding limb.

The healing powers and the anatomical correlation of *Shema* are reflected in the story recounted in *Nitei Eitan*⁷⁶ about two rabbinic sages of a previous generation. R. Chaim Aryeh Leib Rottenberg-Mishkovsky, Rabbi of Stavisk (1836–1898), once observed R. Avraham Shmuel of Aishishok, author of the *Amudei Eish*, enter the *beit midrash* with one side of his jaw severely swollen. He inquired of R. Avraham Shmuel as to what had led to this condition. R. Avraham Shmuel attributed his ailment to his lack of proper *kavanah* (concentration) in his recitation of *Shema* in the *Ma’ariv* service the previous night. He hastened to add that he would rectify the situation by reciting the *Shema* in *Shacharit* with additional *kavanah*. And so it was, that after the recitation of the morning *Shema* the swelling of the jaw receded and returned to normal.

⁶⁹. See *Minchat Elazar* 2:28 who quotes the *Birkei Yosef* that this was the custom followed by the Arizal.

⁷⁰. For further discussion see Avers, op. cit., 40.

⁷¹. See Mordechai Meir, “*Minyan Eivarehah Shel Ishah Ve-Hashlachotav Al Nusach Ha-Tefillah*,” *Ha-Ma’ayan* 45:3 (*Nisan*, 5765), 27–37., esp. p. 37, note 62.

⁷². See articles by Shraga Abramson in *Sinai* 80 (5737), 207–216 (in the context of his analysis of the *Sefer Mitzvot Gadol*) and “*To’elet Eivarim*,” *Sinai* 82 (5738), 7–11.

⁷³. *Sefer Chasidim* 155.

⁷⁴. See Malakhi Beit Aryeh, “*Birkhot Eivarim*,” *Tarbitz* 56 (5748), 265–272.

⁷⁵. O.C. 61:3.

⁷⁶. Avraham Zakheim, *Nitei Eitan* (Jerusalem: Chorev Press, 5694), 30.

WOMEN AND RAMACH⁷⁷

While the *Mishnah* lists 248 *eivarim* without differentiating between genders, the Talmud in *Bekhorot*⁷⁸ indicates otherwise. In order to verify the 248 *eivarim* listed in *Ohalot*, the students of R. Yishmael performed a modified anatomical dissection on a woman who had been sentenced to death by the secular authorities. The inspection of the body revealed 252⁷⁹ *eivarim*, an obvious discrepancy from the comprehensive list in *Ohalot*.⁸⁰ The difference is attributed by the Talmud to gender. The dissection was performed on a woman, and a woman has a number of additional limbs not found in a man. This purported difference means that the female body deviates from the number 248, which is the structural foundation for the aforementioned prayers. If so, is a woman obligated to recite these “248” prayers and to conform to this literary structure? Perhaps the number tally needs adjustment if a woman is reciting the prayer?

WOMEN AND THE RECITATION OF SHEMA

As discussed above, according to the Talmud in *Bekhorot*, the female body is not comprised of exactly 248 limbs, but rather of a higher number. The author of *Sefer Leket Ha-Kemach Ha-Chadash*⁸¹ therefore suggests that perhaps women should not add the phrase “*Kel melekh ne’eman*” at the beginning of *Shema*, as they do not have exactly 248 limbs (especially since there are authorities that consider this phrase to constitute a legal interruption). However, the Arizal asserts that the number 248 in the *Midrash* does not correspond to the earthly human body, but rather to the limbs of the spiritual body, “*ze’eir anpin.*” As such, a woman can recite the phrase “*Kel melekh ne’eman,*” as it is just as relevant for her as it is for a man.⁸²

R. Ovadia Yosef was unique in suggesting women make specific additions to the *Shema* so they can say a total of 252 words, corresponding to their specific bodily composition. He suggests this while acknowledging that women are not obligated to recite the *Shema*, though if they choose to, this is the preferred method.⁸³

WOMEN AND THE MI SHE-BEIRAKH PRAYER FOR THE SICK

A similar question is raised with respect to the *Mi She-Beirakh* prayer for the sick. The standard text reads, “and they should have a complete recovery to their 248 *eivarim.*” As women do not have exactly 248 limbs, should this text be amended when reciting the prayer for an ill woman?⁸⁴ Indeed, there are two varying customs today regarding the recitation of the *Mi She-Beirakh*⁸⁵ for women. Some congregations recite one text for both men and women, perhaps based on the position of the Arizal above. Alternatively, R. Shlomo Kluger asserts that when we say the *Mi She-Beirakh*, we invoke the merit of our forefathers, and since they had 248 limbs, it is irrelevant if the person uttering the prayer does not, as in the case of a woman.

⁷⁷. For an excellent article on the impact of the different tally of the limbs of the female body on prayer, see Mordechai Meir, op cit.

⁷⁸. 45b.

⁷⁹. Commentators mention varying numbers for the limbs of a woman, including 251 and 253. See Rambam, *Tumat Meit* 2:7, who mentions that a woman has 251 limbs, and *Kesef Mishneh*, ad. loc. See also, Yisachar Tamar, *Alei Tamar: Seder Nashim* (1981), 211 for a novel explanation of the Rambam.

⁸⁰. For halakhic ramifications and approaches to the discrepancy between the number of limbs enumerated in the *Mishnah* in *Ohalot* and *Gemara Bekhorot*, see Mordechai Meir, op. cit., 30.

⁸¹. 61:12.

⁸². This idea is expressed in *Minchat Elazar* 2:28.

⁸³. R. Ovadia Yosef, *Otzar Dinim Le-Ishah U-Le-Bat* (Jerusalem: *Eish Pituchim* Publications, 5765), 100. Another specific reference to the 252 limbs of a woman is mentioned by the Arizal in his *siddur* at the beginning section of the paragraph in *Shemoneh Esrei*, “*Re’eih na ve-anyeinu.*” He points out that as the beginning letters of these three words are “*resh,*” “*nun,*” and “*bet,*” equaling the 252 limbs of a woman, one should pray at this point specifically for concerns regarding women. See manuscript edition of *Siddur Ha-Ari* from the Chaim Elozor Reich Renaissance Hebraica Collection at <http://hebrewbooks.org/pdfpager.aspx?req=45008&st=&pgnum=119>. R. Shay Schachter cited this reference in his *shi’ur*, “The Proper Way to Daven for a Sick Woman,” delivered August 4, 2013, http://www.yutorah.org/lectures/lecture.cfm/796656/Rabbi_Shay_Schachter/Proper_Way_to_Daven_For_a_Sick_Woman#.

⁸⁴. For further discussion, see *Ha-Elef Lekha Shlomo O.C.* 120; *Rivevot Ephraim O.C.*, vol. 3, 200; *Ravaz Y.D.* 111.

⁸⁵. *Ha-Elef Lekha Shlomo O.C.* 120.

Other congregations recite a separate text for women, which contains essentially one emendation. Instead of requesting a complete recovery for the “248 *eivarim*...” it reads “for all her *eivarim*,” as, based on the *gemara Bekhorot*, a woman has more than 248 limbs.⁸⁶

R. Yechezkel Shraga Lipschutz Halberstam⁸⁷ contends that the *Mi She-Beirakh* text should be amended to say “all *eivarim*” for both men and women. He argues that since the limbs mentioned in the *Mishnah* refer exclusively to limbs that have bones, and many of the organs without bones could also be afflicted with disease, a prayer restricted to the 248 *eivarim* would be insufficient to cover all the organs that may be in need of a cure. This logic applies to both men and women.

One authority suggests amending the woman’s *Mi She-Beirakh* to say “for her 252 limbs.”⁸⁸ In sum, in light of the anatomical differences between men and women, virtually every possible permutation of the *Mi She-Beirakh* prayer has been proposed.

ANATOMICAL DEFECTS AND THE MI SHE-BEIRAKH PRAYER FOR THE SICK

It is not only the anatomical composition of a woman that generated discussion about the text of the prayer for the sick. The *Pardes Yosef*,⁸⁹ in his discussion of the commandment to distance oneself from falsehood, responds to a query as to whether one who has undergone a limb amputation can recite a prayer for his recovery that explicitly refers to his 248 limbs. As he in fact does not have 248 limbs, perhaps this constitutes a violation of the aforementioned prohibition? He offers two reasons why such a person can maintain the traditional rubric of the text with no fear of uttering a falsehood. His first suggestion, of a metaphysical nature, argues that the 248 limbs refer also to the “limbs” of the *neshamah* (soul), which remain intact irrespective of any physical amputation.⁹⁰ He also offers a creative embryological approach. While the limb may have been physically amputated, its potential is unimpaired, as evidenced by the fact that his subsequent progeny will possess this limb and it will not be deficient in them.

SHEMONEH ESREI, THE SPINAL VERTEBRAE, AND THE LUZ BONE

In *Berakhot* 28b it states that the eighteen blessings of *Shemoneh Esrei* correspond to the spinal vertebrae, of which, according to the list in *Ohalot*, there are eighteen. There has been debate about the correlation of this number with modern anatomical understanding, the references to which I refer the reader.⁹¹ The contemporary anatomical correlate notwithstanding, the Talmud queries about the later-added nineteenth blessing of *Ve-La-Malshinim*. If each blessing has its spinal companion, what then is the anatomical companion to this later-added blessing? The Talmud answers that there is an additional small nineteenth vertebra which corresponds to the small bone at the base of the spine. While the Talmud does not identify this bone and simply calls it “the small bone in the spine,” it has been identified by many authorities with the bone called “*luz*.”⁹²

According to the *Midrash*, this bone is indestructible and is the bone from which *techiyat ha-meitim* (resurrection) will take place.⁹³ The exact location of this elusive bone and the origin of its mystical powers has been the subject of much discussion. It has been identified as the coccyx,⁹⁴ located in the cervical spine,⁹⁵ or base of the

⁸⁶. This is the suggested text of R. Moshe Feinstein in his *Igrot Moshe O.C. 4:67*.

⁸⁷. *Otzrot Yerushalayim* 105 (5732), 69.

⁸⁸. Mordechai Meir, op. cit., p. 37, note 62.

⁸⁹. *Shemot, Mishpatim* 23:7.

⁹⁰. Similar to the position of the Arizal and the *Minchat Elazar* cited above.

⁹¹. See Preuss and Katznelson cited above. On orthopedics in rabbinic literature, see Irwin M. Siegel, “Orthopedics in the Torah,” *Surgery, Gynecology and Obstetrics* 136 (January, 1973), 107–110; Samuel W. Boorstein, “Orthopedic Passages in the Bible and Talmud,” *Medical Leaves* 5 (1943), 49–55. On the number of spinal vertebrae mentioned in the Talmud, see Robert Shapiro, “Talmudic and Other Ancient Concepts of the Number of Vertebrae in the Human Spine,” *Spine*, 15:3 (1990), 24–25. For a lengthy analysis of the halakhic sources on the vertebrae and ribs, see Nisan Markel, *Binat Nevonim* (Pietrikov, 1927), chapters 27–28.

⁹². See, for example, Barukh Shimon Schneerson, ed., *Ha-Roke'ach Ha-Gadol* (Jerusalem, 5727), 218.

⁹³. Avraham Meisels, “*Bi'ur Inyan Etzem Ha-Techiyah She-Shemo Luz*,” *Or Yisrael* 7:2 (Kislev, 5762), 212–226; Edward Reichman, and Fred Rosner, “The Bone Called Luz,” *Journal of History of Medicine and Allied Sciences* 51:1 (January 1996), 52–65.

⁹⁴. Barukh Shimon Schneerson, ed., *Ha-Roke'ach Ha-Gadol* (Jerusalem, 5727), 218.

⁹⁵. Nisan Markel, *Binat Nevonim* (Pietrikov, 1927), 231.

skull, corresponding to the place of the knot of the *tefillin shel rosh*.⁹⁶ The association of the bone with the tail of the spine is preserved in the anatomical name, *os sacrum*, or sacred bone, alluding to its religious significance as the bone of resurrection.

According to our tradition, the bone receives its nutrition exclusively from the food of the *melaveh malkah*.⁹⁷ This bone did not partake in the sin of Adam and did not receive nutrition from the tree of knowledge. It is thus spared the curse of mortality and is the source of the body's resurrection. Even its name is a matter of debate and the bone has been variously referred to as "*luz*," "*niskoy*,"⁹⁸ and "*Betu'el Ha-Rama'*" (or "*Betu'el Rema'ah*").⁹⁹ When Ben Yehuda was compiling his famous Hebrew dictionary, he consulted R. Avraham Yitzchak Ha-Kohen Kook to clarify if these first two were separate terms or synonyms.¹⁰⁰

The identity and properties of the *luz* bone were discussed by physicians, scientists, and theologians over the centuries, including the modern era.¹⁰¹ Riolan, a famous professor of anatomy in seventeenth-century Paris, and contemporary and opponent of William Harvey and his theory of circulation, went so far as to consult the public executioner if in the course of his extensive experience overseeing the combustion of human bodies, he had ever observed an incombustible bone.¹⁰² Vesalius explicitly dismissed the anatomical notion of an indestructible, resurrection bone and left it to the theologians to ponder.¹⁰³ Other cultures have a tradition of a "resurrection bone" as well.¹⁰⁴

ASHER YATZAR

We conclude our survey with a discussion of the *Asher Yatzar* prayer, recited after one performs the normal bodily excretion functions.¹⁰⁵ This prayer explicitly refers to anatomy and physiology and provides a means of appreciating, thanking, and praising God through our understanding of these processes. In Abudirham's classic work on prayer, he uses this prayer as a springboard for an extensive discussion on the physiology and anatomy of the human body.¹⁰⁶

There is a linguistic oddity in this prayer, which has drawn the attention of the commentaries on prayer. It repeats the word *chalulim* (cavities). In explaining the necessity for this repetition, the *Midrash Tanchuma*¹⁰⁷ points

⁹⁶. Aharon Berakhiah Mi-Modena, *Ma'avar Yabok* (Vilna, 5656), 169.

⁹⁷. See, for example, Shmuel Mirsky, *Shibbolei Ha-Leket Ha-Shalem* (Sura Publications, 5726), 428.

⁹⁸. See, for example, *Mishnah Berurah* 300:2.

⁹⁹. The name *Betu'el Rema'ah* is found in the *Zohar, Parashat Toledot*. Some also substitute Lavan for Betu'el. See the *siddur* of R. Yaakov Emden, section on *motza'ei Shabbat*, who thematically links all three names of the bone. For a creative explanation of the association of the bone with Betu'el by a medical historian, see J. Playfair McMurrich, "The Legend of the Resurrection Bone," *Transactions of the Canadian Institute* 9 (1913), 45–51.

¹⁰⁰. See *Assi'a* 59–60 (*Iyar*, 5757), 84–89.

¹⁰¹. See Reichman and Rosner, *op. cit.* For discussions of the *luz* bone by prominent medical historians of the modern era, see Fielding H. Garrison "The Bone Called Luz," *New York Medical Journal* 92:4 (July 23, 1910), 149–151; J. Playfair McMurrich, "The Legend of the Resurrection Bone," *Transactions of the Canadian Institute* 9 (1913), 45–51. Samuel Butler (1612–1680) even used the Jewish *luz* bone as an analogy to the British Parliament in his poem "*Hudibras*."

¹⁰². Andrew Dickson White, "New Chapters and the Warfare of Science: Miracles and Medicine" (ch. 12, part 2 of his serialized essays), *Popular Science Monthly* (June, 1891), 145–167, esp. 157.

¹⁰³. See Reichman and Rosner, *op. cit.*

¹⁰⁴. Willy Schrodter, *Commentaries on the Occult Philosophy of Agrippa* (Weiser, 2000), 46; Brian Stross, "The MesoAmerican Sacrum Bone: Doorway to the Other World," *FAMSI Journal of the Ancient Americas* (August 23, 2007); Zaid Ghazzawi, *Scientific Miracles in the Noble Quran: Resurrection of Humans on the Day of Judgement as Viewed from a Scientific Point of View* (self publication).

¹⁰⁵. For a thorough hashkafic and halakhic treatment of this prayer, see Beni Gesundheit, "*Birkat Asher Yatzar*," *Assia* 16:3–4 (5759), 124–137.

¹⁰⁶. Abudirham, s.v. "*asher yatzar*." Abudirham's entry must be understood in its historical context, as he incorporates a number of scientific theories of the Middle Ages. One such theory is the notion of the seven-chamber uterus. On this notion, see Edward Reichman, "Anatomy and the Doctrine of the Seven-Chamber Uterus in Rabbinic Literature," *Hakirah* 9 (Winter, 2010), 245–265. He also discusses the famous rabbinic notion of reproductive physiology that when a woman is "*mazra'at*" first, she will give birth to a male child. We discussed this notion in detail in Edward Reichman, "*Tazria and Childbirth: An Open and Shut Case*," in Daniel Z. Feldman and Stuart W. Halpern, eds., *Mitokh Ha-Ohel: Essays on the Weekly Parashah from the Rabbis and Professors of Yeshiva University* (YU Press, 2010), 263–276.

¹⁰⁷. *Parashat Shemini* 8 (Warsaw edition). See also *Tur, O.C.*, 6, who cites the association of the word repetition with the 248 limbs. R. Yosef Karo did not copy this statement of the *Tur* in his *Shulchan Arukh*.

out that the numerical value of the two words “*chalulim, chalulim*” equals 248, equivalent to the limbs in the body. While this desire to associate the number 248 with prayer is reflected above, it is all the more relevant in a prayer focusing specifically on human anatomy.

I wish to leave the reader with a thought not on the technicalities of prayer, but on its emotional and psychological impact, specifically related to the *Asher Yatzar* prayer, as so beautifully reflected in an essay penned by Dr. Kenneth Prager, a prominent contemporary physician and ethicist.¹⁰⁸ Dr. Prager discusses the beginnings of his true appreciation of the *Asher Yatzar* prayer during his medical school training, when learning about pathophysiology and how this prayer became an opportunity for him to offer thanks not just for the proper functioning of the excretory organs, but for overall good health. He concludes with a personal story:

There was one unforgettable patient whose story reinforced the truth and beauty of the *asher yatzar* for me forever. Josh was a 20-year-old student who sustained an unstable fracture of his third and fourth cervical vertebrae in a motor vehicle crash. He nearly died from his injury and required emergency intubation and ventilatory support. He was initially totally quadriplegic but for weak flexion of his right biceps.

A long and difficult period of stabilization and rehabilitation followed. There were promising signs of neurological -recovery over the first few months that came suddenly and unexpectedly: movement of a finger here, flexion of a toe there, return of sensation here, adduction of a muscle group there. With incredible courage, hard work, and an excellent physical therapist, Josh improved day by day. In time, and after what seemed like a miracle, he was able to walk slowly with a leg brace and a cane.

But Josh continued to require intermittent catheterization. I know only too well the problems and perils this young man would face for the rest of his life because of a neurogenic bladder. The urologists were very pessimistic about his chances for not requiring catheterization. They had not seen this occur after a spinal cord injury of this severity.

Then the impossible happened. I was there the day Josh no longer required a urinary catheter. I thought of Abayei’s *asher yatzar* prayer. Pointing out that I could not imagine a more meaningful scenario for its recitation, I suggested to Josh, who was also a yeshiva graduate, that he say the prayer. He agreed. As he recited the ancient bracha, tears welled in my eyes.

Josh is my son.

This sentiment is indeed the ideal fulfillment and modern iteration of the “*to’elet eivarim*” prayers – how the appreciation of the function of the human body through prayer is the vehicle through which we can achieve spiritual heights and fulfill the obligation of “and you shall love the Lord your God.”

So concludes our discussion of the surface anatomy of the relationship of prayer to the human body. We leave our detailed analysis and internal dissection of the sources to another time.

¹⁰⁸. *Journal of the American Medical Association* 277:20 (May 28, 1997), 1589.