

248 IN NATURE AND IN MAN – PART 1

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Introduction

In this lecture, we will discuss the significance of the number 248. Many of us are probably aware that the number 248 has tremendous significance in Torah. First, 248 is the number of positive commandments in the Torah. In total, the Torah contains 613 commandments of which 248 are positive (and 365 are prohibitive). The sages also teach us that the 248 positive commandments correspond to the limbs of the human body. A limb is defined in *Halachah* (Jewish law) as a bone around which there are sinews and flesh. What this means is that according to *Halachah*, in the human skeleton there are 248 basic components.¹

The reason that we have chosen this topic is because it has relevance to a theory that was recently developed in physics. The theory we are focusing on is speculative and has awakened a great deal of controversy; even outright rejection by some physicists. Nonetheless, others see in it positive prospects for constructive research in the future, especially once the new Large Hadron Collider at CERN goes online next year.

The theory that we are referring to is not based on String Theory but on Quantum Mechanics as known to date. It is based on a mathematical group called the E_8 Lie (pronounced: Lee) group. This theory predicts that our universe has 248 elementary particles. Whether it is proven fully or not, in any case many physicists feel that the E_8 Lie group is one of the most beautiful mathematical structures. If this structure can indeed be used to correctly describe all of the particles and the four forces, it will truly be an amazing thing. Such a level of unification in physics has not been achieved by any theory to date.

248 Particles

Before we begin let us share a beautiful observation. In the past, long before this theory was introduced, we ourselves thought that the number of elementary particles in the universe should be 248. Why is this? Because, by Divine Providence, in Modern Hebrew the word for an “elementary particle” is חֵלְקִיק (pronounced: chelkeek), whose numerical value is 248. This word is based on the Hebrew word for “part” (חלק), to which the two-letter suffix קי, which indicates extreme smallness are added, meaning together “a very



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In Modern Hebrew, this word does not only mean an “elementary particle.” It is also used to denote any very small entity or unit. One of the most common uses of this word is חלקיק שנייה, meaning “an infinitesimal part of a second,” like an eye blink. In the Torah, the second smallest unit of time is called a “part,” (חלק), the original base word of חלקיק. There are 18 such parts in a minute, meaning that each “part” is the equivalent of three and a third seconds. There is also a smaller unit of time called a *rega* (רגע), which literally is translated as “moment.” A *rega* is 1/76th of a “part,” which works out to about 1/23 of a second. In any event, because the smallest measure of time that we usually use is a second, the idiom חלקיק שנייה, “an infinitesimal part of a second,” is a way to express the smallest unit of time.

We already know that the numerical value of the word חלקיק (small part) is 248. But, amazingly, the second word, “second” (שנייה) is equal to 365, which is the number of prohibitive commandments in the Torah, the number that in Torah is the complement of 248. So the value of the full idiom, חלקיק שנייה is 613. The image that this idiom summons is of the entire Torah captured and encapsulated in one particle of a second. Now, what exactly is a particle of a second, or a particle of time? In quantum theory like energy, time too is quantified, meaning that it can be broken down into basic units and no further. In other words, time is not continuous but discrete. The best way to describe the smallest quanta of time would therefore be this Hebrew idiom חלקיק שנייה. In Kabbalah, time is considered even more primary than space and matter. According to Kabbalah, time is a masculine entity that enters space, which is feminine. So in a certain sense the seed of reality is a quantized instant of time, a particle of a second, which as we said is equal to 613.

This was an example of how Divine Providence works in Modern Hebrew.

Let us now go on to how this number, 248, appears in the Torah. What we are going to now look at are a name and an idiom whose numerical value is 248.

From Abram (243) to Abraham (248)

The most important name in the Torah that equals 248 is the name of the first patriarch of the Jewish people: Abraham (אברהם). Originally, Abraham’s name was Avram (אברם) whose value is 243. But, when Abraham was 99 years old, God commanded him to circumcise himself and added a letter *hei* (ה) to his name, whose numerical value is 5, thus bringing the full numerical value of his name to 248. Now, we would like to try and understand: why it was that Abraham began with a name that equaled 243 and then had

The answer given by the sages is that before his circumcision, Abraham had complete control over 243 limbs. He served God, that is, he chose to do only that which was proper in God's eyes with 243 of his limbs. (We should note that in this teaching of the sages the definition of the term "limb," *evav* [the first three letters of Abraham's name], is not identical with its definition as a basic part of the skeleton that we saw above. Here it appears in the sense of "organ," though not necessarily excluding the presence of a bone within an organ. Later on, we will see that the concept of 248 limbs exists on two different planes, one physical, and one spiritual that are meant to be united. In the enclothment process [of the spiritual entering the physical], the 248 reflects itself as the number of the body's organs [such as the eyes into which enter the spiritual power of sight]. By circumcising, Abraham gained control over five more organs: his two eyes, his two ears, and his procreative organ—the organ of circumcision. Normally, the experiences that these 5 organs are sensitive to are not voluntary. Likewise, you cannot always choose what to see, or what to hear; even though the sages say that a person cannot inseminate without willing it, sexual arousal itself is not always voluntary. But, through the act of circumcision, God gave Abraham super-natural control over his eyes, ears, and procreative organ. Once Abraham was circumcised and had control over his entire body, he was fit to truly procreate and give birth to the Jewish people.

Another explanation for Abraham's change of name that changed his value from 243 to 248 is based on the Book of Formation (*Sefer Yetzirah*), the first Kabbalistic work attributed to Abraham himself. There we find that reality comprises 5 dimensions, known by their Hebrew acronym *Ashan* (אשן), which stands for space (עולם), time (שנה), and soul (נפש). Since there are three spatial dimensions, one time dimension, and one soul dimension, we have altogether 5 dimensions. By definition, every dimension is a coordinate that has two extremes (called "depths" in the Book of Formation). The three spatial dimensions are drawn between high and low, north and south, and east and west. Time runs from the past to the future. The soul dimension's two extremes are good and evil.

What is the meaning that there is a soul dimension in addition to space and time? At every point in space and time there is also a soul coordinate, which means that at any time and place, we can, by our actions plot our location on a good-evil continuum. The fifth coordinate is invisible to most of us and where you are on that coordinate of the soul, whether you are good or evil, depends on your free will, so in a sense, this is the free-will coordinate that exists at every moment and in every place that you may find yourself. Though our regular human experience recognizes 4 dimensions (3 spatial and 1 temporal), Abraham dedicated his life to teaching us about this fifth dimension that science has not yet recognized.

Now, just as the 5 dimensions of reality are divided into 3 categories (space, time, and soul) so everything that God created, and the human body exhibits this the most, every entity is divided into three. In the human body, every limb is divided into three segments: every finger is divided into three, the arm, the leg, the body itself, etc. God divides everything in reality into three. The human body is a microcosm that exhibits this idea. How is this division into 3 and the five dimensions all hinted to in Abraham? Abraham's original name, Avram אַבְרָם, which is equal to 243 is also 3 raised to the power of 5, or $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 = 243$!

What then did Abraham gain by his circumcision? He gained an awareness of the consummate wholeness, of the very essence of each of these 5 dimensions. God revealed to Abraham the essence of each of the five dimensions, which is implied by the increase of the value of his name from 243 to 248.

If we take these two explanations—the one offered by the sages and the one that is derived from the Book of Formation—and add them together we come to the conclusion that the two eyes, the two ears, and procreative organ correspond to essence of the five dimensions of reality. Each of these organs is sensitive, so to speak, to the essence of one of these five dimensions. Clearly, the procreative organ corresponds to the good-bad, the soul dimension.

248 and circumcision

We began with this new physical theory that maps all of the elementary particles onto the E_8 Lie group. The fact that this group has 248 points encourages us to look for a connection between 8 and 248. Indeed 248 is a multiple of 8. This is important because Abraham attained complete control of his 248 limbs on the day of his circumcision, which is normally carried out on the baby's eighth day. Whereas the number 7 represents the consummate state of everything that is natural, 8 represents that which is beyond nature. The number 7 is immediately associated in our minds with Shabbat, the seventh day. But, God commanded that we circumcise our children on the eighth day because circumcision connects the child with the supernatural, i.e., with his soul root. Indeed, the sages teach us that circumcision transcends Shabbat so that it is permitted to circumcise a child on the eighth day even if the eighth day falls on Shabbat.

So we have that the value of Abraham's name, the first person to perform circumcision, is a multiple of 8: $248 = 8 \cdot 31$. Isaac, who was born in virtue of Abraham's own circumcision, was the first person to be circumcised on the eighth day. The numerical value of Isaac (יצחק) is 208, also a multiple of 8: $208 = 8 \cdot 26$.

26 and 31 are the numerical values of two of the holy Names of God. 31 is the value of the Name *Kel* (אֵל), which corresponds to the *sefirah* of loving-kindness, as implied in the verse: "The loving-kindness of God [*Kel*] lasts all day." Abraham is indeed the archetypal soul of loving-kindness. This verse also implies that it is through loving-kindness (through Abraham) that God recreates the world all day long, meaning

Let us also add that 31 is a prime number. In fact, it is the 12th prime number. As we shall see shortly, 12 is considered one of the sources of 248 in the Torah and is the secret of the highest state that Abraham achieved in his life.

So far, we have analyzed the number 248 in two different ways:

- $248 = 3^5 (243) \pm 5$
- $248 = 31 \cdot 8$

248 in creation

The name Abraham is alluded to already in the Genesis account of creation. Genesis includes two accounts of creation. The first runs from chapter 1 verse 1 to chapter 2 verse 3 and the second begins with chapter 2 verse 4. However, sometimes chapter 2 verse 4 is considered the final verse of the first account of creation. This verse reads: “These are the chronicles of the heavens and the earth when they were created, on the day that God made earth and heavens.” In the original Hebrew, the words “when they were created,” are a single word: **בהבראם**. This is a very special word because it is the first time that a typographically minor letter appears in the text of the Torah: the second letter of this word, the *hei* (ה) is this letter. Thus, in the Torah scroll this word is written something like this: **ביבראם**. But, this word is also special because when permuted it spells **באברהם**, which means “with Abraham.” The sages learn from this that all of creation was created in the merit of Abraham.²

What does this mean? One of the basic tenets of the Ba’al Shem Tov’s teachings is that in order to sustain creation, God has to recreate it at every single moment. He does so through the channel of Abraham’s soul root—loving-kindness—or, through what can be called the power of love.³

What does the minor letter *hei* (ה) in this word symbolize? Grammatically, the *hei* in this word makes the word a reflective past tense verb: “when they were created.” But, more deeply, the small *hei* alludes to Abraham’s letter *hei* lying originally dormant and invisible in his original name Abram (**אברם**). Abraham’s hidden potential for giving birth to the Jewish people lay concealed until he was 99 years old and received the commandment of circumcision. This is also the way that the Torah stresses that it is specifically the *hei* in Abraham’s name, that is the essence of his soul root’s ability to act as the conduit through which the world is continuously recreated. And so the sages read the word “when they were created” as “with [the letter] *hei* He created them.”

But, now let us notice that since the numerical value of “Abraham” (**אברהם**) is 248, then the word **בהבראם** also means “with 248”: God created the world “with 248.” This is

Now, if you count, you will see that this word, **בהבְּרָאָם**, is the 474th word in the Torah. 474 is the numerical value of **דַּעַת**, the name of the *sefirah* of knowledge. In many ways, the *sefirah* of knowledge is the most important of all the powers of the soul because it is the power of consciousness. But, there is an additional point that needs to be stressed. In the *Tanya*, it is explained that the *sefirah* of knowledge is the source of power to bind and connect with something. So this word, the 474th word of the Torah, the “knowledge” word of the Torah alludes to God’s power to connect with His creation. And that this word means “with Abraham” reveals that God binds and connects Himself with creation through Abraham, or Abraham’s soul root. As we said, it is through Abraham’s soul root, loving-kindness, that God professes His bond with reality by continuously recreating it. The Torah instructs us to learn from God and to seek to emulate Him. Therefore, our consciousness should also be full of Abraham and we should seek to bind through loving-kindness and love with others. One way to picture this is to say that nature, creation itself reflects the Creator by having Abraham on its mind, i.e., by having 248 elementary particles as its basic building blocks.

In the *Zohar*, knowledge is considered the key that opens up six stores, which symbolize the six faculties of the heart, which themselves correspond to the six days of creation. Thus, according to the *Zohar*, the key to all that was created in the six days of creation is the consciousness of Abraham, the consciousness of the number 248.

The Duality of the Image of God

Let us continue by looking at the most important idiom in the Torah whose numerical value is 248. When the Torah describes how God created man on the sixth day, it also notes the special attribute that makes man different from all other creatures. The Torah relates that man was created “in the image of God” (**בְּצֶלֶם אֱלֹהִים**). The Name of God used in this idiom is *Elokim*, the Name used throughout the first account of creation. The *gematria* of the first word, “in the image” (**בְּצֶלֶם**) is 162; the *gematria* of the second word, *Elokim* (**אֱלֹהִים**) is 86, and together their sum is 248.

This illustrates something very important. Even though God was creating the first human being, Adam, He was creating him in His image, but the value of “in the image of God” (**בְּצֶלֶם אֱלֹהִים**), 248, is itself equal to “Abraham.” This echoes what we saw earlier, that the entire universe was created “with Abraham” (**בְּהַבְּרָאָם – בְּאַבְרָהָם**).

Now we see that even the pinnacle of all of creation, man, was created in “Abraham.” To say it another way, when creating Adam, God was already inspired by Abraham, the first human to seek God’s unity and the first patriarch of the Jewish people.

Since this is such an important idiom and is equal to 248, the question we need to ask is: does this idiom appear elsewhere in the Torah? If we check, we will find that it

appears a second time in the second Torah portion: Noah. After the flood and after God instructs Noah to exit the ark, to renew life on Earth, and to procreate once more, God discusses the responsibility of man over all living creatures. He says:⁴

Be fruitful, and increase in number, and fill the earth. Your fear and dread will fall upon all the beasts of the earth and all the birds of the air, upon every creature that moves along the ground, and upon all the fish of the sea; they are entrusted into your hands. Everything that lives and moves will be for your consumption. Just as I gave you the green plants, I now give you everything. But you must not eat meat that has lifeblood still in it. And for your life-blood I will surely demand an accounting. I will demand an accounting from every animal. And from each man, too, I will demand an accounting for the life of his fellow man. Whoever sheds the blood of a man, his blood shall be shed; for in the image of God He made man.

So the fact that man was created “in the image of God” (בצלם אלקים) is here used to justify the prohibition of murder.⁵

We have seen that this idiom appears twice, once in the context of creation and a second time in the context of the prohibition of murder. Because it appears twice, this must mean that there are indeed two different aspects or planes to the image of God that is within man. Since “in the image of God” is equal to “Abraham” this also means that Abraham himself must have two different aspects to him. Everything that has to do with the number 248 is dual in its nature.

One way to understand the nature of this duality is by reviewing the Ba’al Shem Tov’s interpretation of the verse: “One who has a wise heart takes commandments.”⁶ The fact that the word “commandments” here appears in its plural form, prompted the Ba’al Shem Tov to explain that performing a commandment always involves two aspects: the action itself and the intent of the action. In other words, every action prescribed by the 248 positive commandments of the Torah occurs on two planes simultaneously. If a person has a wise heart, he takes to heart the need to unify his actions on both planes. Thus, one who has a wise heart seeks to clarify his mental intent while performing commandments. What this illustrates is that just as the image of God is revealed in our 248 physical limbs of the body, so it is revealed in our 248 spiritual limbs which are meant to be united by enclothement with our physical limbs.

To more deeply understand the difference between the two instances of this idiom in the Torah, let us note the verb that is associated with it in each context. In the account of creation it says: “...In the image of God He created him [man],” but in *parshat Noach* it says: “...for in the image of God He made man.” The verb used in the first context is “created” (ברא) which in Hebrew denotes creation ex nihilo, i.e., from nothing. But, the verb used in the second context, regarding murder, is “made,” which implies rectification or taking something that already exists and perfecting it by making it better. These are the two verbs that appear in the first account of creation to denote different levels of creation. The third verb “formed” (יצר), that appears in the second account of creation and serves as an intermediate level between “created” and “made,” implies

creation	ברא	something from nothing
formation	יצר	something from something
action	עשה	perfecting something that exists

A beautiful way of understanding the difference in meaning between “created” (ברא) and “made” (עשה) is to compare them to the difference between creationism and evolution. Creationism is the doctrine that everything was created out of nothing. Evolution is the doctrine that already existing matter is continually being perfected to higher and higher levels. For “formed” (יצר) we might suggest the term “formationism.”⁷ The Torah includes both doctrines, meaning that God works utilizing both methods: both creation ex nihilo and evolution (with formation serving as an intermediate stage).

creation	ברא	Creationism
formation	יצר	Formationism
action	עשה	Evolution

When it comes to the image of God, we see that it includes both doctrines of creation and evolution (action). On the one hand, the Torah states that God created man from nothing. But, the justification of the sanctity of human life is that man is a perfected (physical) reality in which the image of God can be reflected. This implies that in respect to the image of God that is in man, God took something that already existed, and then built it up and perfected it so that it could reflect His image (the flood itself was a purification process intended to perfect already existing mankind, Noah and his progeny). This is the reason you are not allowed to murder another human being.

The creation of the image of God in man and its evolution in man correspond to the two aspects that go into the performance of every commandment, as explained above. How so? The plane of intent, the higher plane of action corresponds to creation from nothing. This is because thought has creative power. In Chassidut it is explained that the power of creation is in the mind. But, the physical action plane of a commandment corresponds to evolution because the purpose of every commandment that we perform is to better ourselves and the world. Even though they are Divinely ordained, the positive commandments are constructive acts that battle entropy.

Now that we have seen the significance of the two most important verbs used in creation and how they relate to the idiom **בצלם אלקים**, let us take a deeper look at them:

- The numerical value of ברא, “created,” is 203.
- The numerical value of עשה, “made,” is 375.

The sum of “created” and “made” is therefore 578, which gives us that the average value of each verb is 289. But, 289 is equal to 17^2 , and as we know, in the Torah, a square number represents a perfect state of inter-inclusion. 289 is also the numerical value of the second and third words of the Torah: “God created” **בְּרָא אֱלֹהִים**. This means that if we look at the numerical difference between these two verbs, it is equal to 172, which is also $2 \cdot 86$, or two times God’s Name that implies nature, **אֱלֹהִים**. What this mathematical relationship implies is that hidden underneath all natural processes that improve reality (like evolutionary processes) is the Name of God, **אֱלֹהִים**, *Elokim*, as manifest in the continuous recreation of reality ex nihilo. This is truly an outstanding *gematria* to contemplate.

Creating a man

Let us go back to Abraham, 248 and “in the image of God.” We see that the first three letters of his name, **אָבְרָ** (“limb,” as noted above), when permuted spell the verb **בְּרָא**, “created.” The numerical value of the final two letters, **הָם** is equal to the numerical value of **אָדָם**, “Adam.” So what we have revealed is another allusion to the fact that the creation of Adam was inspired by Abraham’s soul-root because the gematria of Abraham is equal to gematria of “he created Adam.” Abraham thus encapsulates within him the power of creation in general, and the power to create man in particular. Indeed, the Talmud⁸ relates that there were sages who, using Abraham’s *Book of Formation*, would create living organisms. So powerful are the teachings included in this book, that the Talmud relates an event in which one sage, Rava,⁹ actually created a human being.

Reviewing Abraham’s own life, we see that once God added the letter *hei* (ה) to his name, he was able to procreate and essentially create another human being who was in his own likeness, Isaac. In Chassidut it is explained that the power of procreation is the human counterpart to God’s infinite power of creation and that to create in one’s image means that the offspring perfectly resemble the parents, not only physically, but spiritually by possessing the same power to procreate offspring who will possess their character traits. This is the essential difference between Isaac and Ishma’el, Abraham’s first child (from Sarah’s maidservant, Hagar), who was born before Abraham circumcised and received the additional *hei*. While Ishma’el was Abraham’s offspring and even his firstborn, nonetheless, God stressed to Abraham that only “in Isaac shall your seed be carried on.”¹⁰ Only Isaac, who was born once Abraham had revealed the full potential of his creative power, would carry on Abraham’s legacy and beget offspring who would eventually form the Jewish people.

Abraham’s duality

Since there are two dimensions of the “image of God,” we should be able to see the two dimensions in Abraham’s own life. We know that Abraham went through ten trials of faith in his life. These trials were meant to test Abraham’s dedication to God and to

bring out his tremendous potential for commitment and unwavering resolve in the face of adversity.¹¹ The last and most difficult of all the trials is called the Binding of Isaac. Abraham was 137 years old when God commanded that he sacrifice Isaac. As would later turn out, God's words¹² could be interpreted to mean that all that Abraham was to do was to take Isaac and bring him up the mountain and bind him there, but that there was of course no command to slaughter him as a sacrifice. But, Abraham did not know this yet and understood that God was commanding him to sacrifice his son.

When God saw that Abraham was 100% faithful, He called out to him and revealed that by binding Isaac on top of the mountain, Abraham had already performed his command. But, when He called Abraham not to slaughter his son, God repeated Abraham's name twice: "Abraham Abraham." In the entire Bible, there are only four people whose name is repeated twice: Abraham, Jacob, Moses, and Samuel. Abraham is the first. In respect to Abraham, Jacob, and Samuel, the two names appear in the Bible with a Masoretic line separating them. In Kabbalah, this line, called a *psik ta'ama*, signifies not just separation but contraction, that is, a diminishing of the spiritual light between the first occurrence of the name—which represents the person's spiritual self as it is before God—and the second occurrence—which represents the person's physical self, as he stands in the corporeal plane. Thus, there is a difference between the two planes on which Abraham exists, even though both are related to the power of creation. Abraham has both levels of consciousness at the same time, but they are not identical.

Now, recognizing this difference we can appreciate the following *gematria*: **אברהם אברהם** "Abraham Abraham" = 496, the numerical value of **מלכות** "kingdom." Kingdom is the name of the last of the ten *sefirot*. All Jewish souls are involved in building and revealing God's kingdom on earth, which is the final end of all the visions of all the prophets: "And God will be King over all the earth; On that day God will be One and His Name will be One." Thus, in a sense, the name of every Jew is being called out by God at every moment, on two planes simultaneously. This relates to the teaching of the Ba'al Shem Tov. Whenever we perform an action, we need to unify our intent and the action itself, thus answering God's constant call on both planes.

Since the value of **אברהם**, "Abraham," is 248 or $8 \cdot 31$,¹³ that means that **אברהם אברהם** "Abraham Abraham" (496) is equal to $16 \cdot 31$. But, note that 16 is the middle point of 31. All odd numbers have a midpoint that can be defined as follows:

$$n = \left\langle 2n - 1 \right\rangle$$

where the symbol $\left\langle \right\rangle$ denotes the midpoint. The usual way to write the function of triangular numbers is: $\Delta n = \frac{n(n+1)}{2}$ But, it is easy to see that if n is an odd number, then

$$\Delta n = n \left\langle n \right\rangle$$

Therefore, it follows that $16 \cdot 31 = \Delta 31$. **אברהם אברהם**, "Abraham Abraham" is thus the $\Delta 31$. But, since 31 is the numerical value of **אל**, the Name of God that corresponds with the *sefirah* of loving-kindness¹⁴ and Abraham is the archetypal soul of loving-

Now, let us see what happens when we fill the letters of our idiom **בצלם אלהים**, “in the image of God.” Filling letters means writing out each letter in a word as if it were to be spoken. We have therefore:

$$\text{בית צדי למד מם אלף למד הא יוד מם} = 961 = 31^2$$

This is a beautiful finding, because the value of the original idiom **בצלם אלהים** is $8 \cdot 31$, also a multiple of 31. So filling the letters of the original idiom completes it as a perfect square. But, let us see an every more astounding relationship between 961 and Abraham.

Before Abraham’s circumcision, Sarah’s name was Sarai, spelled **שרי**. The sages tell us that the origin of the additional *hei* given to Abraham was Sarai’s *yud*. From a numerical point of view, the letter *yud* (10) can be divided into two *hei*’s (5 and 5). One *hei* went back to Sarai, making her name **שרה**, Sarah. The other *hei* went to Abraham. Thus, the origin of Abraham’s creative power given to him in the form of the letter *hei* is in his wife. This prompts us to look at the relationship between Sarah and Isaac, her common offspring with Abraham after the circumcision. Indeed, we see that the numerical values of “Sarah” (**שרה**, 505) and “Isaac” (**יצחק**, 208) when added together equal 713, or $23 \cdot 31$; another multiple of 31! And the numerical values of the entire first Jewish family together is therefore $713 \pm 248 = 961$ or 31^2 , which we just saw is the *gematria* of the letter filling of the idiom **בצלם אלהים**, “in the image of God”!

From 12 to 248

Now we will continue with the second part of our meditation. In this section we are going to look at a link that was observed by students of *gematria* in our generation.¹⁵ What this observation says is that if you divide 12 into 2 and 10 and square each component and then square both together, the sum adds up to 248. In other words:

$$2^2 \pm 10^2 \pm 12^2 = 4 \pm 100 \pm 144 = 248.$$

We can generalize this equation if we write it out as a mathematical formula. We define the function F of a number c as:

$$F [a, b] = a^2 \pm b^2 \pm (a \pm b)^2, \text{ where } a \pm b = c.$$

As it is, this is a very nice mathematical relationship, but to have Torah significance we have to be able to find an example of it in the text of the Torah. Indeed, we do find such an example, which as we shall see is directly connected with the word we have been studying **בהבראם** “when they were created,” or when the letters are permuted **באברהם**, “with Abraham.”

As mentioned earlier, the verse: “These are the chronicles of the Heavens and the Earth when they were created...” immediately follows the three verses that describe the

Shabbat. We will copy these three verses here in Hebrew, because we will be interested solely in the Hebrew text:

וַיְכַלּוּ הַשָּׁמַיִם וְהָאָרֶץ וְכָל עֲבָאִם. וַיְכַל אֱלֹהִים בַּיּוֹם הַשְּׁבִיעִי מְלַאכְתּוֹ אֲשֶׁר עָשָׂה וַיִּשְׁבֹּת בַּיּוֹם הַשְּׁבִיעִי מְכַל מְלַאכְתּוֹ אֲשֶׁר עָשָׂה. וַיְבָרֶךְ אֱלֹהִים אֶת יוֹם הַשְּׁבִיעִי וַיְקַדֵּשׁ אֹתוֹ כִּי בּו שְׁבֹת מְכַל מְלַאכְתּוֹ אֲשֶׁר בָּרָא אֱלֹהִים לַעֲשׂוֹת.

These are also the three verses with which we begin the Friday night *kidush* (blessing over wine). If we count them, we will find that there are 144 or 12^2 letters in these three verses.¹⁶ This also means that the letters of these three verses that describe the seventh day, the Shabbat, can be drawn in square form. In an example of self-reference, the numerical value of the first word in these three verses **ויכלו**, is 72, or one-half 144 and also the gematria of **חסד**, loving-kindness.

Now, let us look at the two verses that come just before and just after the three verses of Shabbat. The verse immediately preceding them is the final verse of the sixth day. The verse immediately following is the verse we have been discussing that contains the word **בהבראם** “when they were created.” Both of these verses are summarizing and inclusive verses. But, more importantly, for our purpose, both have exactly 50 letters in their Hebrew original. The verse preceding Shabbat reads, “And God saw everything that He created and He saw that it was very good; And there was evening and there was morning on the sixth day.” Let us write this verse out in the original Hebrew:

וַיֵּרָא אֱלֹהִים אֶת כָּל אֲשֶׁר עָשָׂה וְהִנֵּה טוֹב מְאֹד וַיְהִי עֶרֶב וַיְהִי בֹקֶר יוֹם הַשְּׁשִׁי.

The verse immediately following the three verses describing the Shabbat in Hebrew is:

אֵלֶּה תּוֹלְדוֹת הַשָּׁמַיִם וְהָאָרֶץ בְּהִבְרָאָם בַּיּוֹם עֲשׂוֹת יְהוָה אֱלֹהִים אֶרֶץ וְשָׁמַיִם:

“These are the generations of the heavens and the earth on the day that God created earth and the heavens.”

So far we have seen that the 144 (12^2) letters of Shabbat are surrounded by 100 (10^2) letters in the two verses that come before and after.¹⁷ Where is the 2^2 , or 4 alluded to in this structure? The four words that link the end of the description of Friday with the beginning of the description of Shabbat in these verses are “...the sixth day. Thus were completed the heavens.” The initials of these four words spell God’s essential Name, **יהוה**, *Havayah*. In fact, this is the first time that *Havayah* appears in initials in the Torah. The first time that the Name *Havayah* appears explicitly in the Torah is in the verse that follows the three verses of Shabbat, three words after “when they were created.” The essential Name is called “the Name of four [letters],” in Hebrew, or the Tetragrammaton in English indicating that it has four letters. From their location in the structure, we can say that these four unique and important letters are hovering over the entire structure. Not only is *Havayah* the most important word in the Torah, it is also an archetypal symbol for square numbers because according to Kabbalah, its first two letters are a holy Name in itself, which then expands according to the Talmudic rule of “two that are four.”

“In me” and “this”

Now that we have seen that 12 divided into 2 and 10 in the manner described is an origin for the number 248, we are interested in where we find this division in the Torah. The first place that 2 and 10 is alluded to is in the very first word of the Torah, **בראשית**. The first letter of the Torah is a large **ב** which equals 2, the fifth letter of the Torah is **י**, which equals 10. Now, when these two letters are added together they form the simple word **בי**, which means “in me.” The three letters between the **ב** and the **י** spell **ראש**, “head.” Thus the first five letters of the Torah read: “head is in me.” The last word of the Torah is Israel, **ישראל**, whose five letters rearrange to read: “head is to me” (or “I have a head”). This phenomenon reflects the principle taught in *Sefer Yetzirah* that “the end is wedged into the beginning.” From beginning the Torah anew (after having arrived at its end), the “head” (Divine wisdom) that was to me, yet above me, is drawn into me, to become one with me. This is the secret of the first allusion to **בי**, “in me,” in the Torah.

To fully appreciate the spiritual significance of this word, as with any other letter, word, or concept in Hebrew, we have to find its first explicit appearance in the Torah. This is a very important technique for understanding any word in the Torah.

Indeed, the first time the word **בי**, “in me,” appears is at the end of the Binding of Isaac. Just after God calls Abraham by his name, repeating it twice, God says: **בי נשבעתי** **נאם הוי**, “I have sworn in Myself [in my essence] says God, that because you did not spare you son from me, I am now going to bless you with infinite blessing.” As we shall see, the vow that God is giving here foreshadows and is actually the essence of His vow and covenant with Abraham to give him and his offspring, the Jewish people, the Land of Israel forever and ever.

God is referring to Himself with this word, **בי**, which refers to His very essence. Amazingly, the numerical value of the complete phrase describing the vow **בי נשבעתי** **נאם יי הוה** “I have sworn in Myself, says God” is equal to 961 or 31^2 , which is the value of the letter filling of “in the image of God” and the value of the first Jewish family, Abraham, Sarah, and Isaac, as we saw above. The word **נשבעתי** “I have sworn” is composed of the letters of the two words **שבת**, “Shabbat,” and **עין**, “eye.” The *Zohar* explains that the Hebrew form of Shabbat alludes to the eye: the **ש** that has three heads corresponds to the 3 colors of the eye, and the remaining two letters **בת**, which mean “daughter,” correspond to the pupil of the eye, which in Hebrew is idiomatically called the “daughter of the eye,” **בת עין**. What the *Zohar* is implying is that on Shabbat we can attain a level of consciousness that can allow us to see the Divine, something that is very difficult to do during the six days of the week, because during those days we are commanded to toil in the rectification of our lower reality.

Now, let us look at these two components **שבת** and **עין** that make up the word **נשבעתי** “I have sworn” from a mathematical perspective. The gematria of **שבת** is $702 = 27 \cdot 26$. The gematria of **עין** is $130 = 5 \cdot 26$. So both are multiples of the value of *Havayah*, God’s essential Name. Altogether then we have that **נשבעתי**, “I have sworn,” is equal to

The word **בי**, “in me,” appears many times in the Bible; most of the times it is not God speaking. But, there is another very important instance of God saying **בי**. It appears in Psalms 91 in the verses:¹⁸

Because his passion is in Me [**בי**], I will rescue him; I will protect him, for he knows My Name. He will call upon Me, and I will answer him; I will be with him in trouble, I will deliver him and honor him.

These two verses are referring to a *tzadik*, a true believer in God and follower of the Torah. “His passion in Me” implies in God’s very essence; for that reason God promises to always be at his side and save him. “I will deliver him and honor him,” all because “he knows My name.” The first soul whose absolute passion was for God, to know God, and to reveal God, was Abraham. So this verse, with another time that the Almighty says **בי**, “in me,” also alludes to Abraham. A famous parable from the Magid of Mezritch is that God is like a child playing hide-and-seek, hiding from the seeker, and waiting for the seeker to come find him. Abraham was the first person to realize that God, as it were, is hiding in the universe, and actively set out to find Him and to make His Presence known to all people.

Now, the simple *gematria* of **בי**, 12, has a great deal of significance in the Torah. The first thing that a Jew thinks of when he hears 12 are the 12 tribes, the sons of Jacob, from whom the Jewish people came. But, amazingly, the number 12 is perhaps the most important number in all of the Book of Formation. There are 12 tribes, and 12 months, and 12 simple letters, and 12 controllers in the body, etc.

Returning to our verses from Psalms, let us look at the phrase with **בי** in it: **בי חשק** “His passion is in me.” The second word **חשק** “has passion,” has numerical value of 408. 408 is also a multiple of 12! It is the product of 34 and 12. 34 is also a Fibonacci number. Adding the **בי** it follows, that the complete phrase, **בי חשק**, is also a multiple of 12: 420 = 35 · 12.

The two words in this phrase equal 12 and 408. There is another most important pair of words in Hebrew whose numerical values are 12 and 408, respectively. They are the two pronouns **זה** and **זאת**, which are the masculine and feminine forms of the English “this.” The word **זה**, the masculine form of “this” is a symbol for Moshe Rabbeinu’s prophecy. The sages say that all the prophets would say: “Thus, said God...” indicating less precision and clarity, but, Moshe Rabbeinu would say “This is what God said...” implying that his prophecy was perfectly precise and exact. So between these two pronouns, the feminine form is 34 times greater than the masculine form.

When we add זָה and זֵאת together we get 420, which is the gematria of one of the most perfect unions of male and female in the Torah, that of יַעֲקֹב, Jacob, and רַחֵל, Rachel.

In the word זָה, the masculine form of “this” we have another division of 12, this time into 7 and 5. Placing these two numbers into the function we described above, we get:

$$7^2 \pm 5^2 \pm 12^2 = 49 \pm 25 \pm 144 = 218$$

Instead of 248, we now got 218, which is the numerical value of the union of יַעֲקֹב Jacob (182) and לֵאָה Leah (36).

Since both of these words, “in me” and “this,” have the same *gematria* they must have some special relationship. This relationship can be seen when we look at the letter mapping called אַכְבִּי (pronounced *Achbi*; see addendum). This transformation corresponds to the *sefirah* of knowledge and is created by dividing the *alephbet* into 2 sets of 11 letters and pairing them reflectively into 11 pairs of letters: אַב בִּי גַט דָּה הַז וּפ לָת מַשׁ: עַצ סַק עַז. We see that the second pair spells בִּי and the fifth pair spells זָה. These 11 pairs correspond to the 11 inter-included *sefirot* (counting both crown and knowledge) within knowledge. The second pair בִּי represents the wisdom of knowledge. The fifth pair זָה represents the loving-kindness of knowledge. Wisdom itself is referred to in the Zohar as אֱלֹהֵי אַבְרָהָם, the God of Abraham, and loving-kindness is of course the *sefirah* of Abraham. Thus, in this letter transformation, both בִּי and זָה are related to Abraham.

Now, let us return to the expansion of 2 and 10 using our equation. The three numbers that the equation produces are 4, 100, and 144. Let us take these three numbers and make a quadratic series out of them, using the method of finite differences. We have:

$$\begin{array}{r} 4 \qquad 100 \qquad 144 \\ \qquad 96 \qquad 44 \\ \qquad \qquad -52 \end{array}$$

If we continue to expand this series, we will find that there are only 2 more positive number 136 and 76 in it; all other numbers in this series will be negative:

$$\begin{array}{r} 4 \qquad 100 \qquad 144 \qquad 136 \qquad 76 \\ \qquad 96 \qquad 44 \qquad -8 \qquad -60 \\ \qquad \qquad -52 \qquad -52 \qquad -52 \end{array}$$

Taking the sum of the five positive numbers we see that they equal 460, but since 460 is divisible by 5, this means that the average value of each number is 92. As we have discussed in length in our many classes on the periodic table, 92 is the number of naturally occurring elements.

While we are speculating that there are 248 elementary particles, it is well established that there are 92 natural elements made up from these elementary building

blocks. Without getting into more detail at the moment, let us restate that the number 92 is associated with Abraham's son Isaac. Indeed, going up one more level, from chemistry (elements) to biology, the most important number will be 22 (the number of amino acids that make up the DNA of all life on Earth). 22 is strongly associated in the Torah with Isaac's son and our third patriarch, Jacob.

Let us go back a moment to the word \aleph , "this." Let us see a few very important mathematical relationships that are concealed in this seemingly simple word.

If we square each letter separately, we see that the square of the second letter \aleph , $5^2 = 25$, is the midpoint of the square of the first letter, \aleph , $7^2 = 49$.

Let us ask: when does this relationship happen again with other pairs of integers? The next time is with 29 and 41, after that 169 and 239, then 985 and 1393. The trivial pair is of course 1 and 1. This is a series of pairs of numbers. We can predict the next pair in the series using a central theorem in number theory called Pell's theorem. But, notice that just as 5 and 7 together equal \aleph the masculine form of "this," so another pair in this series, 169 and 239 when added together equal \aleph (408), the feminine form of "this."

Now, what about 2 and 10 as a composition of 12, do they have some special relationship? The answer is that these two numbers produce one of the most important additive series. Additive series are described in length in our forthcoming volume on the Golden Ratio. If we start a series of number by writing 2, then 10, and then the sum of 2 and 10, which is 12, and continue in this fashion, we will get:

2, 10, 12, 22, 34, 56, ..., 618, 1000, 1618

As explained there in length, the two numbers 618 and 1618 are the very foundation of the Golden Ratio. What is the significance of the Golden Ratio in our discussion? Again as explained in length in our forthcoming volume, the image of God is etched into the human form more than in any other part of nature. It was this beauty that the greatest artists recognized and based their art on. Indeed, this is the great signature of God's image imprinted on the human form, and which stems so clearly from this word \aleph , "in me," the number that gives us 248. The golden ratio is the ratio that the eye of man, the eye of Shabbat, has an instinctive passion towards. It is ingrained in the psyche of man.

Additionally, 2 and 10 are the first two double inspirational numbers, again relating them to the periodic table of the elements (as explained elsewhere). The 10 Commandments were engraved on the 2 Tablets of the Covenant (the 10 divided into 5 and 5 – 5 on each tablet – just as the *yud* of Sarai divided into *hei* and *hei*, one for her and one for Abraham, as we saw above).

Conclusion

So we have seen a whole spectrum of phenomena that have to do with the number of limbs of the body and the positive commandments of the Torah, and perhaps even the number of elementary particles in the universe.

In the book of Joshua, Abraham is referred to as the “greatest of all giants of man.” In this sense, Abraham is the most universal man. Just as man is the microcosm and the universe is the macrocosm, Abraham is the great man, the macro of the microcosm making him identical with the entire universe. So however it turns out in the end with regard to 248 elementary particles, 248 figures to be a central number in the structure of the universe.

So this concludes our first meditation on the number 248.

Addendum: Letter Transformations

Letter transformations are one of the least understood methods for analyzing the Torah. They are considered part of the *remez* analysis of the Torah. In the interest of explaining this topic clearly let us write out the different transformations and their correspondence to the *sefirot* and at the end we will point out some interesting things about these transformations.

Crown – אי"ק בכ"ר (pronounced: *Aek Becher*): this transformation takes into account the 5 final letters of the alphabet, מנצפ"ך. The transformation groups thus contain triplets of letters and there are altogether 9 such groups:

איק בכר גלש דמת הנך וסם זען חפף טצץ

Wisdom – אלב"ם (pronounced: *Albam*): in this transformation the *alephbet* is divided into two equal parts with 11 letters in each. The result is 11 pairs of letters. This transformation is considered the soul of the 231 letter pairings which were discussed earlier:

אל במ גנ דס הע ופ זצ חק טר יש כת

Understanding – אתב"ש (pronounced, *Atbash*): In this transformation, which is also called the transformation of reflected light, the first letter of the *alephbet* is paired with the last, the second letter with the second to last, and so on. 11 pairs result as follows:

את בש גר דק הצ ופ זע חס טנ ימ כל

Knowledge – אכב"י (pronounced, *Achbee*): Here the *alephbet* is divided into two parts with 11 letters in each. Then the letters in each half are paired as in *Atbash*, the first with the last and so on. The ו is left over in the first half and the פ is left over in the second:

אכ בי גט דח הז ו לת מש נר סק עז פ

Beauty (*Ze'er Anpin*) – אח"ם בט"ע (pronounced, *Achas Bata*): In this transformation the 22 letters of the *alephbet* are divided into three equidistant groups, with one letter remaining. Thus, altogether there are only 7 transformation groups with 3 or 4 letters in each, as follows:

אח"ס בט"ע גי"פ דב"ץ הל"ק ומ"ר זנש"ת

Kingdom – אטב"ח (pronounced *Atbach*): in this transformation the letters (including the 5 final letters מנצפך) are grouped into three groups of 9 letters. 3 letters, הנך, are left over without a pairing:

אט בח גז דו ה יצ כפ לע מס נ קץ רף שן תם ך

We can now draw the following model of all these transformations:

crown

איק בכר גלש דמת הנך וסס זען חפף טצץ

understanding

את בש גר דק הצ ופ זע חס טנ ימ כל

wisdom

אל במ גג דס הע ופ זצ חק טר יש כת

knowledge

אכ בי גט דח הז ו לת מש נר סק עצ פ

beauty

אח"ס בט"ע גי"פ דב"ץ הל"ק ומ"ר זנש"ת

kingdom

אט בח גז דו ה יצ כפ לע מס נ קץ רף שן תם ן

One of the most important points to be made is that the transformations of wisdom, understanding, and knowledge, the *chabad*, form a mathematical transformation ring. What this means is that if you start with a letter and perform all three transformations (in any order) on it, you will end up with the original letter.

¹. The number of bones in the human body changes over time. Infants start out with less bony material and more cartilage. As the body matures, cartilage solidifies into bone. According to medical studies, at the age of 18, the average male body has 248 bones. As the person continues to mature, the number of bones in the body drops because as more cartilage hardens, smaller bones begin to coalesce, fusing together to create larger bones.

². *Midrash Bereisheet Rabbah* 12:9.

³. See also *Kabbalah and Meditation for the Nations*, p. 101-4.

⁴. Genesis 9:2-6.

⁵. The prohibition of murder is indeed one of the seven universal Noachide laws. For more on the relationship between God's image and this prohibition see *Kabbalah and Meditation for the Nations*, p. 26.

⁶. Proverbs 10:8. See *Keter Shem Tov* 9.

⁷. See our lecture for 24th of Tevet, 5768.

⁸. *Sanhedrin* 65b.

⁹. In Hebrew, Rava is spelled רבא, which is a permutation of ברא, "created." The word for "human" in Aramaic, גברא, also ends with the three letter ברא. The phrase that describes this event in the Talmud plays on this phonetic similarity: רבא ברא גברא, pronounced: "Rava bara gavra."

¹⁰. Genesis 21:12.

¹¹. Moshe Rabbeinu states (see Deuteronomy 13:4) that God's entire purpose in having us overcome hardship in life is that we come to recognize our inner potential.

¹². Genesis 22:2. God's exact words were: "Please take your son... Isaac and go for your own sake to the land of Moriah, and raise him there as an elevated [offering] on one of the mountains, as I will instruct you."

¹³. See also p. שגיא:ה! הסימניה אינה מוגדרת. שגיא:ה! הסימניה אינה מוגדרת.

¹⁴. See *What You Need to Know About Kabbalah*.

¹⁵. This was found by Mr. Tuvia Wexler in connection with Leviticus 24:5-9. In these five verses (which contain 248 letters), the Torah describes the preparation of the Showbread placed on the sanctuary's table every week. The first verse reads: "You shall take fine flour and bake from it twelve cakes: two tenth measures shall be in one cake." The measures mentioned are 12 cakes (or loaves of bread) made from 2 one-tenth (10) measures, yielding the three numbers 2, 10, and 12 that yield the observation we have applied in a different manner to 248.

¹⁶. 144 is also the 12th Fibonacci number, which is the additive series beginning with 1, 1. This is a unique phenomenon in the Fibonacci series.

¹⁷. The structure that we have just described, where the verses of Shabbat are sandwiched between two verses with similar structure echoes the way the manna fell in the desert between two layers of dew. The manna was a blessing of the Shabbat and fell in the merit of keeping the Shabbat. It was particularly in the manna that the double blessing of Shabbat was highlighted, because on Friday, two portions of manna would fall from the heavens for every person.

¹⁸. Psalms 91:14-15.