

# Lecture 6

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The first line on the board contains the first few words of this week's Torah portion:

אדם כי יקריב מכם קרבן ליהוה, "A man who sacrifices from you a sacrifice to God."

The sages state that the word "a man" (which in Hebrew is "Adam") alludes to the rectification of Adam, the first man.

As explained in Chassidut, the word "from you" means that the sacrifice has to be from one's self. As the Alter Rebbe explains, this means that in order to properly bring a sacrifice, you first have to have the intent that you are bringing yourself (i.e., your own animal soul) and sacrificing it, and only then can you bring an actual animal sacrifice to place on the altar, where this animal then comes as a substitute for your own animal soul, which you are ready to sacrifice. This is similar to the second level of love, "with all of you soul," which we discussed earlier.

In Kabbalah, when considering the symmetry of words or phrases, we first count the number of letters in the word or phrase. When there is an odd number of letters, there is a letter in the middle, which can be seen as the axis of symmetry, and we say that this word or phrase exhibits *male symmetry*. But, if there is an even number of letters there is no middle letter that can serve as an axis of symmetry, therefore the symmetry of the word or phrase reflects around an imaginary axis of symmetry (between the two middle letters). We say then that a word or phrase comprising an even number of letters exhibits *female symmetry*.

This first phrase that we quoted has 6 words in it. Of these 6, four have an odd number of letters, so four of them have a middle letter. In Kabbalah, many times, when there are middle letters, we focus on these letters in themselves.

The middle letter of אדם is ד.

The middle letter of יקריב is ר

The middle of מכם, is כ.

Finally, the middle letter of ליהוה is ה.

Together, these letters spell the word: דרכה, which means "its [feminine] way."

In the language of the sages, this word *דרכה* appears often, especially in the context of "the way of Torah."<sup>47</sup> But, interestingly, this word appears only once in the entire Bible. It appears in a verse in the 28<sup>th</sup> chapter of Job.

The 28<sup>th</sup> chapter of Job is such a unique and important chapter that the sages had a special name for it (there is no other chapter in the Bible that they gave a name to). They called it "the chapter of wisdom." Wisdom obviously refers to the wisdom of creation, as another verse states: "You created everything with wisdom."<sup>48</sup> Even the first word of the Torah, "In the beginning," alludes to wisdom, as in the verse "The beginning of wisdom..."<sup>49</sup> One of the most important and famous verses from this chapter is: *החכמה מאין תמצא ואי זה מקום בינה*, "Wisdom is found from nothing and where is the place of understanding."

Towards the end of the chapter we find this verse, which again is the only time in the entire Bible that the word *דרכה* appears. This verse is: "God [and God alone] understood *her path* [the way of wisdom, wisdom is a feminine word in Hebrew], and He [and He alone] knows her location."<sup>50</sup>

There is a verse that describes wisdom as one's sister, "Say to wisdom you are my sister,"<sup>51</sup> meaning that a person should relate to wisdom as one relates to one's sister, in a very close and intimate way. Even one's spouse is sometimes called one's sister.<sup>52</sup>

Again, we came to this verse because of the middle letters, the letters that act as the axes of symmetry of the opening phrase of the *parshah* of *Vayikra*.

Let us just for a moment give a numerical allusion here, which is very beautiful in and of itself. The value of the entire phrase "A man who sacrifices from you a sacrifice to God [*Havayah*]" (*אדם כי יקריב מכם קרבן לי-הוה*) is 905. If we subtract the symmetry axes letters that spell *דרכה*, we see that the numerical value of the remaining letters equals 676, which is  $26^2$ . 26 is of course the value of *Havayah*, God's essential Name.

Since this word *דרכה* appears here in a very interesting way, in our meditation on the verse we would seek to find where else the Torah relates to this verse and how does that help us understand its meaning better. There is a simple principle that there is nothing that is not alluded to in the Torah. So again, the word

<sup>47</sup>. *Avot* 6:4. See also Rashi to *Gitin* 17a.

<sup>48</sup>. *Psalms* 104:24.

<sup>49</sup>.

<sup>50</sup> Job 28:28, *א-להים הבין דרכה והוא ידע את מקומה*.

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**דרכה** appears only one time in the entire Bible. As we have already said we find it at the climax of the chapter of wisdom in Job.

Now, let us look at this verse. What is the first thing that comes to mind when relating this verse to our topic of modern science and its relationship to our service of God. Quantum mechanics postulates that it is impossible to simultaneously know both the path (which implies the momentum and the velocity) and the position of a particle at the same time. This is called the uncertainty principle, the deepest principle of quantum mechanics, and the bottom line of this whole theory. Yesterday we explained that this is not just a problem with the observer's measuring capabilities, this is something inherent in nature. It is simply impossible to know simultaneously both the path (the trajectory) which implies the momentum and velocity vector of a particle and its position.

Now, what is this verse saying? Actually, it is saying exactly what Einstein said when he heard that the uncertainty principle was somehow inherent to nature: "God does not play dice with the universe." It did not sit well with him that God cannot see beyond the uncertainty principle. Little did Einstein know that he had a verse in the Bible to support his intuition that God does know. This is the climatic verse of the chapter of wisdom that states exactly what he felt. Indeed, it says that God does know, indeed God is the only one who knows both the "path" and the "place," i.e., the location.

Now, in this verse, God is referred to by the Name *Elokim*, which we know refers to nature as it is the Name used in the story of creation in Genesis. *Elokim* refers to the Divinity that is inherent within nature. And what this verse says is that *Elokim*, and only *Elokim*, understands the path and knows the position of wisdom (every elementary particle of nature is a point of Divine wisdom) simultaneously.

Let us say something further about the implications of *Elokim* knowing the path and position simultaneously. Before the primordial sin, Adam was likened to *Elokim*. Mankind was destined to reach the level of consciousness of *Elokim*, as the verse in Psalms states: "I said [i.e., I desired] that you [mankind] be *Elokim*."<sup>53</sup> But, because you ate from the Tree of Knowledge of Good and Evil prematurely, you fell to the level of just being a mortal man. Had you waited a mere three hours until the beginning of *Shabbat Kodesh*, then it would have been permissible for you to eat from the Tree of Knowledge. That is what it says in Kabbalah. It would have been the "*oneg Shabbat*" (the special pleasure of Shabbat) to eat from the Tree of Knowledge then. (Even though now

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<sup>53</sup>. Psalms 82:6.

in the *Shulchan Aruch* it says that there is a special *mitzvah* to taste the Shabbat dishes before Shabbat, in regard to the Tree of Knowledge God explicitly forbade this.) But because man (Adam and Eve) ate from the tree prematurely, it resulted in the fall of mankind. The continuation of the same verse from Psalms, which refers to this fall says: "Yet, like a man you shall be mortal." Meaning, again that God had in mind that we should attain the level of *Elokim*, but because of the sin we became mortal. This is referring to the human condition.

Now, Heisenberg said that the inability to know the path and velocity of an elementary particle is not just a problem with the observer, with the "human condition," if you will, but it is a limitation within nature itself. In Kabbalah, we learn that when Adam fell from his original state, not only did his human psyche fall, but all of reality, all of nature, collapsed and descended 14 degrees. It is like there was a wave collapse of all of reality when Adam sinned. And this introduced a mortal consciousness into nature, one that does not allow path and position to be known together. Again, originally, before the primordial sin, nature did not limit the observation of a particle's path and position simultaneously.

Now it is even more interesting that this verse is not just telling us that there exists a potential state of consciousness where one can know both path and position simultaneously, it is also telling us how to reach that state. As we shall explain in a moment, symmetry plays a key role in achieving this state of consciousness. If one is perfectly symmetric, one indeed becomes like *Elokim* (as God had initially intended). To see this we first have to look at the Masoretic note on this verse, a note that was left to us by the last editors of the Bible who lived in the Land of Israel some 1200 years ago, in the time of the *Ge'onim*. They are known as *ba'alei hemsorah*, the masters of the Masoretic tradition. They finalized the Bible in regard to every word's vocalization (*nikud*, in Hebrew) and cantillation marks (*trope*, in Yiddish, or *ta'amim*, in Hebrew). These sages also wrote notes regarding the text of the Bible. These notes are mostly about the frequency of rare words in the Bible. But, on a few occasions they alert us to some very unique phenomena in the Bible, phenomena that no one would ever think of pointing out.

One such example, perhaps the most beautiful, is found on this verse. The Masoretic sages noted that there is a phenomenon in this verse that is repeated three times in the Bible, once in each part of the Bible: once in the Five Books of Moses, once in the eight books of the Prophets, and once in the eleven books of the Writings. What is the special phenomenon? It is that these three verses comprise 7 words each and all three are symmetric

around the same middle word, "and he" (והוא). So the structure of these three verses is "word<sub>1</sub> word<sub>2</sub> word<sub>3</sub> והוא word<sub>5</sub> word<sub>6</sub> word<sub>7</sub>." What these three verses represent are instances of perfect symmetry. The verse that we have been looking at is the last, the one from the Writings.

The verse from the Prophets is: "A generous person advises generosity and he will stand on his generosity,"<sup>54</sup> or in Hebrew:

וְנָדִיב נְדִיבוֹת יַעֲזֵר וְהוּא עַל נְדִיבוֹת יִקּוּם

The generous person is the description of a person who donated to the construction of the Tabernacle. This verse contains another rare phenomenon: the root for "generosity" (נדב) appears three times. A person who is generous himself gives others the advice that they too should be generous. The root for the word "advice" (יעזר) is related to the word for "tree" (עץ).

Now, the Mashiach is called one who gives wondrous advice (פלא ייעזר). People are always looking for counseling. Today the counselor is called a coach. The purpose of a good counselor is to rectify your tree. The word for "counsel" or "advice" in Hebrew comes from the word for "tree." The most wondrous counsel, the Messianic counsel, is to be generous. The only one who can give this type of advice is a person who is essentially altruistic and generous. Every person has to have a counselor today, which in Chassidut is called a *mashpiah*. Every person today should himself strive to become a *mashpiah*. To be a counselor you have to be a generous soul. It is best to have both physical and spiritual affluence from which to be generous. In any case, in virtue of his generosity and his advice to others that they too be generous, will the generous soul stand up.

"Standing up" here also alludes to the resurrection of the dead (תחיית המתים). Rashi says that his "stand" is his ability to "stand up" in the national sense, the entire Jewish people standing up (ואולך אתכם קוממיות).

Interestingly, in Modern Hebrew, the word for universe is יקום (*yekum*), like the last word of this verse. In Modern Hebrew "world" is translated as עולם (*olam*), whereas "universe" is translated as this word, יקום. Because *yekum* comes from the word קיים, which means "exists," so "universe" is taken to mean "everything that exists." When Adam sinned he fell, and he will stand up to eternal life in virtue of generosity. So this is the verse from the Prophets.

The verse from the Five Books of Moses that exhibits this symmetry is: "From Asher, his bread is fat, and he will give the delicacies of the king," or, in Hebrew:

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<sup>54</sup> Isaiah 32:???

מֵאֲשֶׁר שָׂמְנָה לְחֶמּוֹ וְהוּא יִתֵּן מֵעַדְנֵי מֶלֶךְ

The Lubavitcher Rebbe was very close to this verse because he was born on the day on which the prince of the tribe of Asher, which means happiness, brought its communal sacrifice to the Tabernacle (the 11<sup>th</sup> day of Nisan). The Rebbe explained that the name Asher specifically relates to "commitment with happiness," meaning that accepting the yoke of heaven leads to the greatest happiness. Before passing away, Jacob blessed his sons. This verse is the blessing he gave to his son Asher. Israel, = מאשר, ישראל, so this name is seen to reflect the entire Jewish people. שמנה = נשמה, the second word has the same letters as the word for "soul" (*neshamah*).

This is the verse with which Jacob blessed his son Asher, and which corresponds in the order of the tribes to the 11th day of the month of Nisan.

So these are the three perfectly symmetric Shabbat-like verses with the word והוא in the middle. Now let us make a very beautiful numerical observation:

The axis word is "and he," which is equal to

18 = והוא

But, what happens if we calculate the value of this word's four letters by *mispar keedmee* (מִסְפַּר קְדָמִי), which literally means the "primordial number." In number theory this is called a "triangular number." The *n*th triangular number is the sum of integers from 1 to *n*. To calculate the *mispar keedmee* of an entire word we find the sum of the triangular values of each of its letters. So in this case:

ו = 6, and the triangle of 6, written  $\Delta 6 = 21$ ;

ה = 5, and  $\Delta 5 = 15$ ;

ו = 6, and  $\Delta 6 = 21$ ;

א = 1, and  $\Delta 1 = 1$

The sum of all four triangular values is:  $21 + 15 + 21 + 1 = 58$

As we explained last night, the word for "symmetry" in Hebrew is חן, whose numerical value is 58! So the numerical value of the axis of symmetry of these three uniquely symmetrical verses in the Bible is the same as the numerical value for the word for "symmetry," in Hebrew. We have here a beautiful allusion, and self-reference, to the symmetry inherent in these three verses. In more depth, we might contemplate how these three verses correspond to the three general types of symmetry that we talked about in our previous lectures.

One of the 72 Names of three letters of the Almighty is אום. These are the initial letters of our three verses. So this meditation is an expansion of that Name. So we can now say that this special Name is an allusion to the three different types of symmetry.

### **Path mentality, position mentality**

The Divinity within nature does simultaneously know the position and path of an elementary particle. This is the rectified state of the Tree of Knowledge. What does it mean that there is a Tree of Knowledge of Good and Evil. Why did Adam lust after this tree? The literal understanding is that if you eat from this tree you can know good and evil, simultaneously. As we will explain, to know good and evil simultaneously opens up a third type of dimension that science is not yet aware of. If science would know about this dimension it would most probably solve many if not all of the outstanding problems in science.

But for our purposes here, what is the difference between the path that something is taking (a particle, or the path of wisdom) and its position? Path implies velocity and momentum, and place implies position. Earlier, we talked about the difference between messenger consciousness and matter consciousness; about whether you are a fermion or a boson. Now we will apply this to something similar. There is a person whose consciousness in his life focuses on path. He is always on the go towards some objective. He is a "walker." A Jewish soul is supposed to be a "go-er," one who is always moving towards a certain goal. This is one of the reasons that *Halachah* is called by this name, because just as much as the law seems to be a fixed statute there is always some inherent flexibility within the law because a law is not static. So this is one type of mentality that people have, being on the go and moving towards a goal.

There is a different mentality of being static, of having a space. A person wants to have his space, and he is happy in his space. The Rebbe Rashab explained that if a person wants no one else to enter his space, this type of mentality becomes baseless hatred (שנאת חיים) and is the reason for us remaining in exile.

So here we have a simple way of understanding why these two, movement and space do not go together. When a person is moving, really on the go, he does not ask himself where he is. Either you're on the go or you're stationary. This is a very simple way of understanding the uncertainty principle. To think about where I am at requires a feeling of self. When a person is on the move he cannot ask himself "where am I." So you cannot really be moving and ask yourself at the same time: "where am I?" Only God can have both attitudes at the same time.

These two attitudes are actually the same as "good" and "evil." Good is "a good path," to be "good" is to be on the path, to be going somewhere. If you are really on the way, you are really not in any particular place. As soon as you are "someplace," you have stopped. That is the "good news" of the one side of the uncertainty principle. If you are on the go, you do

not know where you're at. So not having place is actually a good thing.

But, if you are concerned about where you are at, you are no longer moving, no longer on the way and do not know where you are going. You have lost awareness of your way. To know your way is good, to know where you are at is bad.

So, in this sense, the primordial tree is about knowing "good" and "evil," knowing both where you are at and still knowing where you are going.

The Arizal explains that if Adam would have waited three hours before eating from the Tree of Knowledge, it would have been Shabbat already, and it would have become permissible to eat from the Tree of Knowledge. It would have been a *mitzvah* to eat from this tree. This is because on Shabbat we have Divine consciousness and knowing where you are at (I'm here, but not yet where I should be) actually gives you additional momentum to follow your path in life. In this state, the evil becomes a seat, a foundation for good.

### **Additional curled-up time dimensions**

Let us now discuss the fact that the three symmetrical verses we mentioned earlier each contains 7 words. The first thing that comes to mind when contemplating the number seven in the context of modern physics and all our considerations of time and space is that most of mankind has set the week for some seemingly arbitrary reason as 7 days. Arbitrary, because nobody actually imagines that nature possesses some kind of phenomenon that corresponds to this cycle of seven days that make up each week. A year corresponds to some phenomenon in the natural world (the revolution of the earth once around the sun), so it is not arbitrary. But, going one step further, even a year is arbitrarily man-made, because it a cycle that has meaning only in our solar system. Outside of the earth, if you were living on Jupiter for instance, one revolution around the sun takes a much longer period of time. So in short, we can generalize and say that all our time cycles, days, weeks, months, and years are not considered by scientists to be inherent cycles in the dimension of time. Instead, they record other phenomena like the movement of the earth, etc.

Earlier, we noted that when string theorists today add dimensions in order to unify the forces in nature, they only add space dimension. Nobody today entertains the notion of adding time dimensions. Indeed, in passing let us note that in the Torah we find that there is a third type of dimension. If science would consider the existence of this dimension, all the problems with

unifying field theory could most likely be solved. What science knows for sure is that in our world there are three space dimensions and one time dimension.

Now, why do scientists not add time dimensions, only spatial ones? One text even questions this supposition, and indeed asks, why not add time dimensions? The simple answer is that to try to imagine another time dimension is very counter intuitive—much more so than imagining additional spatial dimensions. Since we already have three space dimensions, it's not so terrible to add a few more! In order to explain why we do not experience more than three space dimensions, string theory scientists explain that the additional dimensions are curled up. There is a simple analogy given in books on string theory in order to help us imagine what a curled up dimension might be like. This is called the garden hose analogy. Imagine a garden hose that is strung out between two buildings. If we look at it from a great distance, it seems like a one-dimensional line. But, from the perspective of an ant walking on the hose, there is of course another circular dimension on which it can walk. Now what happens if the ant decides to walk around the hose? From my perspective, from afar, the ant would seem to suddenly disappear; it is as if it went out of existence, because I cannot see that the hose has another dimension. This is the conceptual way that curled up dimensions are described. This is a very simple, *balebateshe* (layman's) explanation.

But now let's think of our garden hose as the dimension of time, not of space. What would it mean to have a curled up time dimension? It would mean that there is some inherent cycle that is running around (or inside) the straight coordinate of time. Maybe this cycle is the week, maybe this is the secret of Shabbat.

Interestingly, the Arizal does not speak explicitly of additional spatial dimensions. However, in the later Kabbalistic writings of the Rashash (who lived in the 18<sup>th</sup> century), he explains that in order to solve some inherent contradictions, which are spatial contradictions in the Arizal's writings, you have to assume that there are indeed more than three spatial dimensions. So the Rashash says explicitly that we have to add *spatial* dimensions to the Arizal's Kabbalah in order to understand it. But, what about time dimensions, the Rashash does not say this explicitly, but actually adding time dimensions in the Arizal's system is much more obvious and natural. This is because the Arizal himself explained that there are different cycles of times, which in the higher worlds are represented by totally different *partzufim* (personas) [and it is only natural to attribute a separate time dimension to each of these cycles].

*Let us stress that in a certain sense, it is much easier to understand that the curled up dimensions required by string theory are time dimensions and not spatial dimensions.* Once more, according to string theory, there are 3 extended spatial dimensions that we experience normally, and an additional 6 curled-up dimensions. But, what it means that these curled up dimensions are spatial, is very difficult to understand. It is so small that you cannot detect it, which is why the garden hose analogy is introduced.

The most important thing about time is that there are cycles of 7; e.g., the seven days of the week, the seven years of the *Shmitah* cycle, etc. This was all parenthetical to our main topic, and we could have dedicated an entire lecture just to this subject of additional time dimensions curled up. It can mean something very obvious: that there are inherent, not just man-made, cycles of time, the most important of which is the Shabbat, which is how the world was created. So there is something about time that is based on the number 7.

Usually, Shabbat is considered the seventh day. Sometimes it is considered to be the first of the seven days, from whose holiness all the other days of the week are blessed. But, most often in the writings of the Arizal, Shabbat is considered to be the 4<sup>th</sup> day of the week. How is this? From Wednesday to Friday we ascend from the World of Action, to the World of Formation, to the World of Creation. Finally, on Shabbat we ascend to the World of Emanation, the highest plane of consciousness (pure Divine consciousness). Then from Sunday to Tuesday, we bring the Divine consciousness of the World of Emanation (Shabbat consciousness) back down into reality. So on Sunday we descend back to the World of Creation, with the blessing received from the Shabbat. On Monday we descend to the World of Formation, again with the blessing of the Shabbat. Finally, on Tuesday, we descend into the World of Action with the blessing of the Shabbat. For which reason, the Arizal explains that a person who is engaged in work in the physical world should, if he can, limit his work to Tuesday and Wednesday. This would thus endow him with an extended weekend, beginning on Thursday and ending on Monday (with the reading of the Torah on the first, middle, and last day of the weekend). Tuesday and Wednesday (the two days that we are in the World of Action) would remain to devote oneself to work in this world.

Now, we let us notice that this order of 3 days, then the highlight of Shabbat, followed by three more days is the same structure as the one underlying the three verses we discussed earlier: three words, then the word "and he" (וְהוּא), and then three more words.