

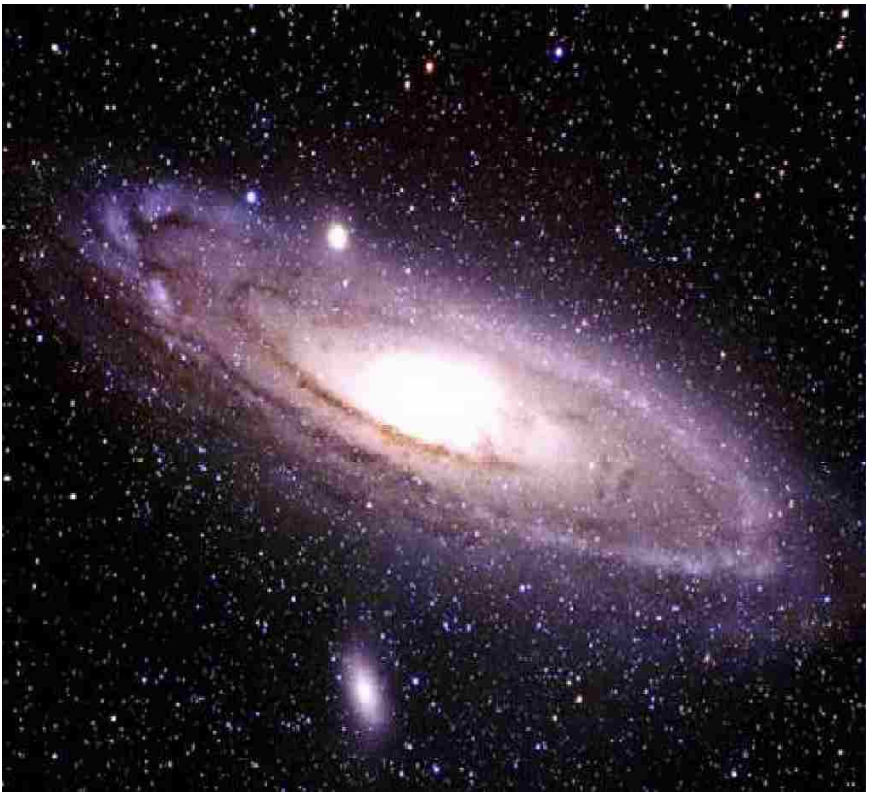
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The Age of the Universe A Torah-True Perspective

by
Aryeh Kaplan



Introduction and footnotes by Reuven Meir Caplan

Introduction

The following is a lecture that was given at the Midwinter Conference of the Association of Orthodox Jewish Scientists on February 18, 1979.

It was originally titled Kabbalah and the Age of the Universe. I have changed the title so as to not invoke a negative reaction to what I believe to be the best description of a Torah true cosmology, one that is in-line with modern scientific discovery as well as extrapolated theory.

Since this lecture was given over as a speech, and not intended for publication, it was not edited with a reader in mind. Therefore this transcription composed at the lecture may have structural errors. However, I chose not to alter the original text (except for minor corrections, such as spelling), in the interest of authenticity.

This talk has been re-written into a smaller, less detailed, but more readable form in the book titled Immortality, Resurrection and the Age of the Universe published by Ktav Publishing House. In the book, certain topics that are mentioned in this lecture were taken out (such as extraterrestrial life), and certain scholarly details were omitted. I am producing this copy because I feel that it is important to read the lecture in its (most possible) original form in order to gain clarification on this important topic.

I have added a few footnotes of my own personal observations. You can (and perhaps should) ignore these, as I am in not an authority on such matters.

I would like to greatly thank Rabbi Yosef Gavriel Bechhofer for letting me borrow his photocopy of the talk's transcription.

Reuven Meir Caplan

THE AGE OF THE UNIVERSE

A Torah-True Perspective

By Rabbi Aryeh Kaplan

February 18, 1979

I would like to begin by stating that the main thrust of my discussion will not involve Kabbalah. My main reason in bringing Kabbalah into the question at all is that there are very few books that discuss hashkafah (Jewish thought). Among the sum total of books that discuss hashkafah, a large percent would be considered sifrey Kabbalah.

One must realize that most Kabbalistic texts not only discuss mysticism, but also discuss many other areas of hashkafah that are very important to all of us. Therefore, I am not speaking of Kabbalah per se. Rather more correctly, I am speaking of the age of the universe as discussed in Kabbalistic literature.

I will begin with a kasha, a question that has been around for almost a century. It involves the age of the universe, and it is a classical kasha.

For all practical purposes, the Torah seems to teach that the Universe is no more than 6000 years old. There are many people who would say that anyone who believes that the universe is more than 6000 years old is an apikores. I've heard this from many people.

On the other side of the kasha, there is almost overwhelming evidence¹ that the universe is more than 6000 years old...maybe even millions of times more than 6000 years old. This is the kasha.

¹ This includes both terrestrial evidence (such as radioactive dating, fossil records, ice core samples, and geological layering), as well as astronomical evidence (such as the Cosmic Microwave Background, red-shifting of galaxies, and parallax distance calculations of nearby stars and galaxies.)

There are many approaches to resolving this kasha. A number of them are cited in the book *Challenge*, recently published by the AOJS. And there are many other approaches. But the question is not just how to resolve this question, but how to resolve it in a satisfactory manner.

Before we can begin to even try to resolve the kasha, we must begin with a few introductions.

The first introduction is probably the most important. In any discussion of hashkafah, one must know what the sources say. It may be very nice to build up ideas logically on the basis of limited knowledge: many people are guilty of this. But if one really wants to develop a hashkafah, one must know what all the Torah sources say about it. Otherwise, one can very easily end up with haskafos that are totally wrong.

A case in point: About eight years ago, I recall, there was a question about extraterrestrial life. I remember my children coming home from yeshiva and telling me that they had been taught that anyone who believes in life on other planets is an apikores. I also heard this from a number of other people. This disturbed me very much. It disturbed me for the very simple reason that it placed Saadia Goan, Chasdai Crescas (author of *Ohr HaShem*), Rabbi Yehudah Barceloni (who is quoted in *Tsafos*), and the author of the *Matteh Dan* (better known as *Kuzari Sheni*) in the category of apikorsim. I did not consider that very proper.

In one of my early articles in *Intercom*, I wrote about extraterrestrial life. Instead of holding forth with s'varos (original ideas), I quoted what the sources say. I wrote what Saadia Goan (quoted by Rabbi Yehudah Barceloni), the *Kuzari Sheni*, and Rabbi Chasdai Crescas (at the end of *Ohr HaShem*) say about it. I also quoted *Sefer HaBris*, who brings strong evidence regarding extraterrestrial life from the Gemara itself:

The Gemara in Moed Kattan 16a quotes the verse in Devorah's Song, "Cursed is Meroz, cursed are its inhabitants." The Gemara then cites an opinion that Meroz is a star. The Sefer HaBris says that if Meroz is a star; the verse explicitly speaks of "its inhabitants."

In any case, after the article was published, I made sure that most principals and yeshivas got their hand on it. People were then much more circumspect in using the term apikores when discussing life on other planets.

So the first principle is that, in any question of hashkafah, one must go back to sources. If a person wants to develop a hashkafah, this is the way it must be. A person must be careful to make sure that the great gedolim of the past did not say the opposite.

The second introduction is a principle (klal) that the Rambam makes in his Perush HaMishnayos. When one has a question of historical fact or hashkafah – there is no p'sak.

In a question of halachah, after there is a discussion of different opinions, we must come to one conclusion. Anyone not abiding by that conclusion is going against halachah – ke-neged halachah. However, in the case of hashkafah, or historical questions, this is not true.

The Rambam makes this point in his Perush HaMishnayos on Shavuos, at the end of Makkos, and in a few other places in Shas. Of course, there are allusions to it. The Gemara in Menachos and other places speaks of hilchasa le-meshicha – "a law pertaining to Moshiach." The Gemara says that we do not posken halachos for Moshiach.

A paradigm of this is the concept of "These and these are the words of the Living G-d." It is speaking of a case where there is a dispute – and the Gemara says

that both are correct. The Gemara uses this expression in two places.

The Gemara uses this expression at the beginning of Gitten, where it is speaking of the Pilegish killed in Givah. You are probably familiar with the story, how this pilegish (concubine) was killed by the tribe of Benjamin, and how they were put into cherem, so that no one was allowed to intermarry with this tribe. Finally the cherem was lifted, and this was one of the reasons that Chamisha Asar B'Av was made a yom tov.

The Gemara asks why this concubine's husband put her away. What did he have against her? One opinion is that he found a fly, and the other opinion is that he found a hair. Rav Avyasar asked Eliahu what HaKadosh Baruch Hu was dealing with, and Eliahu answered the Pilegish in Givah, and that He agreed with both opinions. When Rav Avyasar asked, "How can there be a question in Heaven," Eliahu replied, "Both are the words of the Living G-d." He just said these words and no more.

The better known case of this is found in the Gemara in Eruvin, which discusses the dispute between Bais Hillel and Bais Shammai. This machlokes went on for two years, where Bais Hillel said the halachah is like us and Bais Shammai said the halachah is like us. Finally a Bas Kol came forth and said, "These and these are the words of the Living G-d – and the halachah is like Bais Hillel."

In the case of the Pilegish in Givah, there is no p'sak. But in the case of Bais Hillel and Bais Shammai the Gemara says that there is a halachah.

In my opinion, this is one of the sources of the Rambam's principle. In any case, the Rambam says clearly that in questions of hashkafah or history, there is no p'sak. In other words, if an opinion is found in Chazal or in our accepted Torah seforim, one cannot say that we do not posken like that opinion. Thus, the

Rambam often takes a daas yachid (the opinion of just one person) and builds an entire hashkafah on it. He may use this opinion because it fits into his system of logic, even though it may be a minority opinion. He can do this, since the entire concept of p'sak only applies to questions of halachah and not to questions of hashkafah.

The third important principle that I would set forth is a principle in creation.

I remember years ago when some of the first experiments were conducted making amino acids, the basic building blocks of living matter, out of carbon dioxide, methane, ammonia and water vapor, together with spark discharges or ultra-violet radiation. I remember where further experiments were performed, where Professor Fox was able to combine these amino acids automatically to form simple proteins and microspheres, which almost looked like very simple living creatures. When this happened, many religious people were very upset.

Many people saw this as a blow to our tradition. Here we saw that the interface between the living and the non-living was not quite as immutable and unbreachable as people thought it was.

I recall that around that time, people came to me and asked, "Rabbi Kaplan, what do you think about that?" My reaction was "Mah gadlu ma'asecha HaShem" – "How great are Your deeds O G-d."

All this experiment did was show that inert matter and nonliving elements have the ability to actually crystallize into life, producing the chemicals of life. But what does this mean? It means that Whoever created the basic matter of the Universe, created it to be the building block of life. Whoever created the carbon atom, designed it specifically so that under certain conditions, it would build into amino acid and proteins.

The fact that non-living matter can “come to life” is in itself extremely remarkable.

To go a step further, we know that all the chemical properties of matter derive from the properties of the electron. Therefore the One who designed the electron had to design it in such a manner that inherent in the structure of the electron would be all the properties of life, and all the extremely complex chemical reactions that go into living matter.

Therefore, when I see carbon and other non-organic elements crystallizing into organic chemicals and life, my first reaction is “Mah gadlu ma’asecha HaShem.”

Beyond that, I can imagine a series of refinements. I can imagine matter that would support plant life, but not animal life. And I could imagine matter that could support animal life, but not yet be refined enough to support the complex processes that occur in the human brain and the human mind. I feel that the fact that certain configurations of matter can give rise to thought is a highly significant phenomenon.

Therefore, when people ask me for proof for the existence of a Creator, I say, look at matter itself. There is only one type of matter² in the entire universe. Matter could not have evolved, since it is basically immutable. And yet, matter contains all the properties necessary for life and thought. This is a very important principle.

Now let us get back to our kasha. What do we do about the age of the universe?

² There are numerous “types” of matter by scientific definition, such as hadrons, leptons, anti-matter, and the theorized dark matter. However, I believe that in using the term “matter”, Rabbi Kaplan is referring to all of the ultimate fundamental constituents of all types of matter.

One problem is that many people have taken a stand on this. When people take a stand on something, it is very hard for them to change their mind.

Let me give you a good example. If I would poll this audience vary rapidly, how many people here believe in a geocentric universe. That is, how many from people here believe that the Earth is the center of the universe? Not too many! But would you believe that as little as 50 years ago, seforim were published that said that the correct Torah view is that the Earth is the center of the universe, and that anyone who said otherwise was going against the Torah?³. [See Maamar Mavo HaShemesh, printed together with the Sefer HaTechunah, by Rabbi Chaim Vital.]

I make this point, and I feel that it is a very important point. Very often people tend to paint themselves into an intellectual corner. Then, once they find themselves painted in, they have no way out.

I remember back in Torah V'Daas many, many years ago, we were discussing sending a rocket to the moon. This was long before Sputnik. And I asked one of the people there (I won't mention his name), "What do you think about sending a rocket to the moon?" He said that it is impossible al pi Torah. It is impossible to send anything out of the Earth's atmosphere, because above the atmosphere is the yesod ha-aish (the elemental fire),

³ This opinion is still held by some even today. The justification is that according to the special theory of relativity, there is no preferred reference point between two objects. That is, any point in space and time is as "centered" as any other (although much easier to understand when looked at in some reference frames than others). In addition, according to modern cosmology, every square speck of space was present at the moment of creation of the universe, and therefore every point in space is the "center" of the universe. Since every point is in a way, the center of the universe, the only possible difference between different positions would be on a spiritual level. Therefore, to say that right now, the Earth is the center of the universe could be viewed as a technically true statement.

and anything that goes through that would be burned. They showed me seforim that said that.

Obviously, we know that this was not the correct hashkafah. But once you paint yourself into an intellectual corner, it is very hard to get out. As Torah Jews, we cannot afford to paint ourselves into an intellectual corner, from which we will not be able to extricate ourselves.

This is a particular danger when we get involved in any discussion of the age of the universe. This question is one of the greatest problems facing Orthodox Jewish scientists – and indeed all Torah Jews – today. I remember when I was in Washington, very often at Melava Malka in our home, this problem would come up. What do you do about it?

I know one professor of biology who staunchly maintained that the universe is 6000 years old when he was among frum people. But in class, he teaches evolution like any other professor. This is a schizophrenic viewpoint. When you are with frum people, you believe one thing, but when you are in the outside scientific world, you believe something else. This is obviously not a satisfactory approach.

Another approach is that which many Chassidim have. They say, “What do scientists know? Do they know what’s happening? Do they know what’s going on? They’re a bunch of phonies, a bunch of bluffers, a bunch of stupidniks! Do they really have a way of finding out the truth? They find a bone and they think it’s from a monkey.”

[At this point, I want to emphasize that I am not discussing evolution or its various theories. This is an entirely different and possibly unrelated discussion. Now, I am merely discussing the age of the universe.]

But, I think to somebody who knows what science is, this is a very unsatisfactory approach. We

have some idea of what is involved in paleontology. We have some idea what is involved in geology and in radioactive dating. We have some idea of what is involved in astronomy. We can casually speak about a star being a million light years away, and we do not stop to think, "Well, that's a bit too much!"

So I would say that if someone feels that science is ignorant and false, all well and good. Many people prefer not to accept science as a worthy challenge. But I think that for many of us here, such an approach would be totally unsatisfying.

So we can meet the opposition and face the problem head on. How do we face it? There are several published viewpoints.

One, the very simplest, is that 6000 years ago, HaShem created the universe with a history. There is a certain logic to this, and one may even find a hint of it in the Gemara. If HaShem created a tree, did the tree have rings or not? If it had rings, then it had a history.

This can be extrapolated to all of life. Every creature has to have had a parent, so that we have a history going way, way back. HaShem could have easily created the universe to appear as if it were no more than 6000 years old.

The difficulty is that one could use a similar argument to say that HaShem created the universe five minutes ago. There is no question that an omnipotent G-d certainly could have created us all with our memories, with all the records, and with all our histories. It is very possible to say that the world was created five minutes ago. But this weakens the above argument. If it is possible that HaShem created the world 6000 years ago, then everything is possible.

Of course, it is an irrefutable argument. Therefore, if one feels comfortable with it, I would say all well and good. But I think that it has problems. It

touches almost on intellectual dishonesty and sophism. It presents us with more problems than it answers. It seems to make all of Judaism depend on a glib argument.

But there is an even more serious problem. In no place in Torah literature do we find that HaShem created the universe so that it should appear to be billions of years old. If not for current scientific discoveries, no one would have ever made such a statement based on Torah sources alone. Therefore, this approach is nothing more than apologetics.

There is another approach that I will mention in passing. That is, that each of the “days” of creation was really thousands of years long. This approach is hinted at in Rabbeinu Bechayay, who mentions it only to refute it. He says explicitly that the world was created in six days of twelve hours each, for a total of 72 hours. Moreover, we keep Shabbos because there were six days of creation, where each day was just like one of our days.

Moreover, there is no support in classic Torah literature for saying that the days of creation were more than 24 hours long. Besides this, there is the problem that plant life was created before the sun, moon, and stars, and this would not fit into any accepted scientific cosmology. I will admit that the Zohar states that plant life was created after the sun, moon, and stars, but this raises other difficulties which go beyond the scope of our discussion.

So what do we have left? We are left in a position where we have no choice but to look into our classical Jewish literature, and see what it says about the age of the universe. Is there anything about the age of the universe that has not been discussed properly? Interestingly, we find a highly significant answer.

There is a shitah (opinion) known to mekubalim as shittas Sefer HaTemunah – the opinion of Sefer HaTemunah.

First, let me introduce Sefer HaTemunah. It is attributed to Rabbi Nechunia ben Hakane. It is certainly a very important sefer, and it is quoted by the Ramban and by many other very important seforim.

More important, if one looks in the Bais Yosef in Orach Chaim, Siman 36, you will find a discussion of tzuros ha-osios – the forms of Hebrew letters. Often cited is the Baruch SheAmar, which is the most important rishon who discusses this. Very often, he mentions that al pi sod or al pi Kabbalah, a letter should have a certain form. Although the sources are not usually cited, almost every time that a posek mentions that a letter should have a certain form al pi Kabbalah, the source is the Sefer HaTemunah. I just mention this to stress that the Sefer HaTemunah is not an out-of-the-way sefer that no one has ever heard of. It is a very important sefer.

The Sefer HaTemunah speaks about the idea of sh'mitos. The Gemara teaches that the world will last for 6000 years, and in the seven thousandth year, there will be the Sabbatical millennium. Sefer HaTemunah says that this is speaking of just one sh'mitah cycle. Just like in Yovel (Jubilee) there are seven cycles of sh'mitah, so there are seven cosmic sh'mitah cycles, each one being 7000 years long. Hence, the universe, from begging to end, will exist for 49,000 years.

There is a question as to what sh'mitah we are in right now. From the Sefer HaTemunah itself, it appears that we are in the second sh'mitah. [However, this is ambiguous, and is interpreted differently.] In his Drush Ohr HaChaim, the author of Tiferes Yisroel (on Mishnayos) mentions that we are in the fourth sh'mitah, but his source is ambiguous. [I will discuss the Drush Ohr HaChaim later.]

Another shitah is in Sefer Livnas HaSapir, which says that we are now in the sixth sh'mitah. He ties this into the words of the Sefer HaTemunah. He says that this is the simple meaning of what the Sefer HaTemunah says. (The Livnas HaSapir is a Kabbalah sefer from the 13th century). He says that the way you learn the Sefer HaTemunah is not the way it seems at first, but that it really means that we are in the sixth sh'mitah cycle. In other words, the universe is 42,000 years old.

Before going any further, I must mention that most recent Kabbalah texts do not mention the shitah of Sefer HaTemunah. The reason is that two of the greatest mekubalim disputed it. The first was the Ramak, Rabbi Moshe Cordevero, at the end of his sefer, Shiur Komah, who says that we do not follow the shitah of Sefer HaTemunah. Also the Ari in his Likutey Torah on BeHar says that the Sefer HaTemunah is incorrect. In fact, in the hakdamah of Sefer VaYak'hel Moshe, the author says, "Look at the greatness of the Ari. There was a shitah that was upheld by all the early generations of mekubalim, but the Ari said that he was wrong."

But still, as I have said, this involves a question of hashkafah, and no p'sak is possible. Therefore, one has every right to make use of this shitah. And I might mention that among those who support it was the Radbaz, whom Rabbi Chaim Vital called the Ari's Rebbe. Although the Radbaz is most famous for his t'shuvos, he also wrote Magen David, a commentary on Sefer HaTemunah.

There are a number of allusions to the shitah of Sefer HaTemunah in the Midrash. On the verse, "It was evening and it was morning, one day." The Midrash says, "This teaches that there was an order of times before [the creation mentioned in the Torah]." We therefore see that there was a "time" before the creation described by the Torah. [I might warn that Rambam

and the Ikkarim interpret this Midrash somewhat differently.]

There is also another very famous Midrash that says, “G-d created universes and destroyed them.” In most Kabbalah sources since the time of the Ari, this is interpreted to be speaking of spiritual universes. This was the interpretation that the Ari gave to this Midrash. Most people who consider themselves knowledgeable in Kabbalah (having learned the Zohar and kisvey Ari) therefore will say that the Ari says this is speaking of spiritual worlds and go no further. They therefore maintain that this is not speaking of physical universes at all.

However, among the seforim who interpret this in light of the shitah of Sefer HaTemunah is the Maareches Elokus. The commentary on it, Minchas Yehudah by Rabbi Yehudah Chayit (known as “The Chayit”) is cited in many Kabbalah texts. The Maareches Elokus speaks of the shitah of Sefer HaTemunah, and then says that this is the meaning of the teaching in the Midrash that “G-d created universes and destroyed them.” He also says that this is the meaning of the Midrash teaching that “an order of times existed before [our universe].”

It is true that the Rambam and Ikkarim interpret this Midrash differently, but there is an ancient source which sees it as supporting the Sefer HaTemunah. Among the philosophical seforim who allude to this shitah are the Kuzari and Megillah HaMegillos, by Rabbi Avraham ben Chiyah, a contemporary of the Rif.

Another Talmudic statement that supports the Sefer HaTemunah is the statement in Chagigah which speaks of the 974 generations that existed before Adam. It is derived from the posek, “Something He commanded for 1000 generations.” We know that the Torah was given 26 generations after Adam, by simply counting the generations from Adam until Moses. The 26 times that the expression Ki LeOlam Chasdo occurs in the Psalm allude to these 26 generations. Subtracting 26 from

1000 yields 974. A number of seforim, Maareches Elokus in particular, say that these 974 generations belong to the previous sh'mitah which existed before the creation of Adam HaRishon.

There are also a number of other seforim that speak of the shitah of Sefer HaTemunah. These include Rabben Bachayay in BeHar, the Recanti, the Tzioni, and the Sefer HaChinuch in the mitzvah of Yovel. There are allusions to this shitah in the Ramban and Ibn Ezra. It was a shitah that was well known among the Rishonim.

One of the most recent gedolim to speak about this shitah is the author of Tiferes Yisroel, at the end of Seder Nezikin, in what he called Drush Ohr HaChaim. And I might say that this is very controversial in many quarters. Most people assume that it was written as apologetics to Darwin's theories, not realizing that it was first published in 1834, long before Darwin came on the scene.

This Drush was so controversial, that it is omitted in many editions of the Yachin U'Boaz Mishnayos, which normally contains it. On more than one occasion, I wanted to show someone something in this Drush, only to find that it had been ripped out of the book! This is also why some Chassidic groups do not learn Tiferes Yisroel, even though he was a great gadol.

Of course, one of the main problems is that he does not cite all the sources. He cites the Rabbeinu Bechayay, the Ibn Ezra, and the Ramban. All these are ambiguous if one is not aware of the shitah from its more original sources.

However, the approach of the Tiferes Yisroel is very interesting. He speaks of the idea that there were universes and people before Adam. Then he says, "See how the teachings of our Torah have been vindicated (I'm paraphrasing): In various places in the world, creatures have been found which no longer exist today. In Baltimore, they found a gigantic creature called a

mammoth, which no longer exists today. In other places, they found dinosaurs over 90 feet long, and obviously no such creatures exist in the world anymore. Just look and see the emes of our Torah tradition! Even science shows that there were worlds before ours!”

Such a different approach than people like today! Rather than see paleontology and geology as a challenge to Torah, the Tiferes Yisroel sees it as a vindication of an important Torah shitah.

He goes on to say that mountains such as the Himalayas (mentioned by name) were created by great upheavals. These were the upheavals mentioned in Sefer HaTemunah, since there was great tohu and bohu between each cycle. We can see the truth of this shitah with our own eyes.

This approach is very different than that of many frum Jews who see Torah and science at loggerheads with each other. Many of us feel that whenever science makes any statement with regard to paleontology or geology, we must get our bristles up and fight it. The Tiferes Yisroel, on the other hand, sees it as a vindication of an important Torah shitah.

Another extremely important point is raised by Rabbi Yitzchok deMin Acco. If you look in Shem HaGedolim, you will find that Yitzchok deMin Acco was a talmid-chever of the Ramban. He lived in Acco at the same time that the Ramban was in Eretz Yisroel, and he learned both niglah and nistar from him. Rabbi Yitzchok deMin Acco was considered one of the greatest mekubalim of his time. He is quoted a number of times in Reshis Chochmah.

Rabbi Yitzchok deMin Acco is known for a number of things. Most questions regarding the authenticity of the Zohar were raised by him, since he investigated its authorship. He was a personal friend of Rabbi Moshe de Leon, who published the Zohar. When questions came up regarding the Zohar’s authenticity,

he was the one who investigated, going to the home town of Rabbi Moshe de Leon. The whole story is cited in Sefer HaYuchasin, who abruptly breaks off the story just before Rabbi Yitzchok reaches his final conclusion. Most historians maintain that we do not know Rabbi Yitzchok's final opinion – but they are wrong.

Around three years ago, someone came to me and asked me to translate parts of a manuscript of Rabbi Yitzchok deMin Acco, known as Otzar HaChaim. There is only one complete copy of this manuscript in the world, and this is in the Guenzberg Collection in the Lenin Library in Moscow. This person got me a complete photocopy of the manuscript and asked me to translate certain sections. I stated that the only condition I would translate the manuscript is if I get to keep the copy. This is how I got my hands on this very rare and important manuscript.⁴

Of course, like every other sefer in my house, it had to be read. It took a while to decipher the handwriting, since it is an ancient script. One of the first things I discovered was that it was written some 20 years after Rabbi Yitzchok investigated the Zohar. He openly, and clearly and unambiguously states that the Zohar was written by Rabbi Shimon bar Yochai. This is something not known to historians, and this is the first time I am discussing it in a public forum. But the fact is that the one person who is historically known to have investigated the authenticity of the Zohar at the time it was first published, unambiguously came to the conclusion that it was an ancient work written by Rabbi Shimon bar Yochai.

But Rabbi Yitzchok deMin Acco has another important teaching that is germane to our discussion here. He firmly agrees with the shitah of the Sefer

⁴ One can view this manuscript today titled “Otsar hayim [microform]” by Isaac ben Samuel, of Acre, published by Jerusalem: Institute of Microfilmed Hebrew Manuscripts, Jewish National and University Library, 2002. It can be supplied to Yeshiva University upon request for private use.

HaTemunah. He then begins speaking about yomo shel HaKadosh Baruch Hu – “G-d’s days.” It is known from the Midrash and Gemara that one of G-d’s days is equal to 1000 years.

Therefore, Rabbi Yitzchok says, what is one of HaShem’s years? Obviously it is 1000 times $365\frac{1}{4}$, or 365,250 years. [Remember this was written over 700 years ago.] But according to Sefer HaTemunah, the universe is meant to exist for 49,000 years. He says that we should not think that this is a short period of time. These “years” are not human years, but years of HaKadosh Baruch Hu.

He then goes one to say, “le-hotzi mi-liban” – “to refute the opinion of those who say that the universe will not exist for more than 49,000 years. For, he says, the years under discussion are not human years, but divine years. Therefore, go calculate how long the universe will exist.

According to the Livnas HaSapir (which we discussed earlier), the most authoritative interpretation of the Sefer HaTemunah, we are now in the sixth sh’mithah. When Adam was created, the world was 42,000 years old. But before Adam was created, we do not use human years, but divine years. Therefore, the age of the universe is 42,000 divine years.

As we have seen earlier, one divine year is 365,250 human years. Therefore the age of the universe is 42,000 times 365,250 human years. Make the calculation, and you see that it comes out that the universe is close to 15 billion years old!

This is an interesting figure. From most calculations made on the basis of the expanding universe and other aspects of cosmology, this is precisely the age of the universe given by science.⁵ And

⁵ Scientific opinion has no “precise” age of the Universe. The opinions range between 12 and 17 billion years old, with the current top estimate at

yet, this figure is given in a Torah source over 700 years old. No apologetics here!

How does this all fit into the text of the Torah? One approach is that of the Maareches Elokus, which I mentioned earlier. According to this, the Torah begins, "In the beginning G-d created the Heaven and the Earth." Then it does not tell what happened in all the ensuing years, merely saying, "The Earth was tohu and bohu." As the Midrash says, it is speaking of "the Earth which already existed," since "there was an order of time before this." So between "In the beginning G-d created," and "G-d's spirit hovered on the face of the water," there are an undetermined number of years. Perhaps even 15 billion years.

This is not too surprising. In the middle of Parashas Chukkas, between the Parah Adumah and the death of Miriam, there is a hiatus of 40 years, as the Ibn Ezra points out. It may not be as much as 15 billion years, but the principle is the same. This is a very simple approach.

There is also a more sophisticated approach, alluded to by the Shelah HaKadosh and a number of Midrashim.

One of the puzzles of the Torah involves the two accounts of creation. We are not speaking of what Bible critics say, since they are on a completely wrong track, and their opinion has no bearing on our discussion. But in any case, there are two accounts of the creation of man, one in Bereshis Aleph, and one in more detail in Bereshis Bais.

13.7 billion or 15 billion (depending on the method of calculation and the assumed cosmological model). This does not detract from Rabbi Kaplan's point in the least, but I felt I should mention it for completeness. It should also be noted, that Rabbi Yitzchok's calculation has a slight alterable range. For instance, if one uses a "lunar" year of 354 days, one yields an age of approximately 14.8 billion years.

Of course, it has often been pointed out to me that in the 32 middos of Rabbi Yosi HaGalili, this is given as an example of middos, klal achar maaseh. Although one may think that these are two stories, they are actually one.

However, the question in Bereshis Aleph is also raised in the Gemara. In relation to Adam and Chavah, the Torah first says, "He created them male and female" indicating that they were both created simultaneously. In Bereshis Bais, the Torah says that Adam was created first, and then Chavah was created from his side or rib. This is discussed in the Gemara in Berachos, Eruvin, and Kesuvos.

Two answers are given. One is that Adam and Chavah were created as siamese twins, and then separated. The other answer that the Gemara gives is that one account is speaking of thought, and the other of deed. The first account, where Adam and Chavah were created simultaneously occurred only in thought. In action, Adam was created first. In the Gemara in Kesuvos, Daf 7, this makes a difference as to how many sheva berachos are said – six or seven.

According to this, the Torah is actually telling two different stories about the creation of man. One is discussing thought – the planning stage of man's creation and the other is maaseh – deed. Thus, there are actually two accounts of creation.

Tosafos in Rosh Hashanah actually says that there was an entire creation in thought. Tosafos asks a question. We posken that the world was created in Nissan. Still on Rosh Hashanah, we say, HaYom Haras Olam, "Today is the world's birthday." Tosafos answers that in Nissan there was a creation in maaseh, but in Tishrey there was a creation in thought.

It is possible to say that the creation in thought occurred in Nissan over 15 billion years ago. Then, very much later, less than 6000 years ago, G-d created the

world in maaseh. The first account was thus before the first sh'mitah, and the second account in this sh'mitah.

This is also alluded to in another Midrash which asks why the name Elokim is used in the first account of creation, and the names HaShem Elokim in the second account. The Midrash answers, "At first G-d wanted to create the world with Middos HaDin, but then he combined it with Middos HaRachamim." (This is cited by Rashi). Thus, there is one creation with Middos HaDin, and another one with Middos HaRachamim combined.

However, we see that during the entire first account of creation, including the creation of man and the first Shabbos, the name Elokim is used. Thus we must say that Middos HaRachamim was added after the first Shabbos, and that the Torah is speaking of a second creation. But as seforim say, according to the Sefer HaTemunah, the first account is speaking of a sh'mitah of din, and the second one is speaking of our sh'mitah, which is rachamim.

There is another pertinent Midrash. We all learned at the beginning of Mishpatim that the word aleh alone is pose les ha-rishonim – breaks off from the previous narrative. Only where the Torah says ve-aleh, does the narrative continue. But the second account begins with the words, Aleh toldos ha-shamayim ve-ha-aretz, "These are the chronicles of the Heaven and Earth." The Torah uses the word Aleh. The Midrash says that this "breaks off from the previous narrative, since the previous narrative discusses tohu and bohu." Thus, the Midrash indicates that everything before Bereshis Bais is speaking of tohu and bohu. The world had only been created in thought but not in deed, so it was tohu and bohu.

But what is the meaning of "creation in thought"? For this, we must go back to my third introduction, at the beginning of this talk. I said that when HaShem created the universe, He had to create its matter with

very precise and particular properties. At the very instant of creation, at the very beginning, HaShem had to create all the forces and all the properties that matter would have. He created the force of gravity, He created the electromagnetic interaction, which makes most physical and chemical reactions possible. He created the nuclear forces. He created gravity so that water would gather to one place, then He refined matter more so that plant life, animal life, and eventually, human thought, could exist.

The six days of creation therefore speak of the creation in thought, where HaShem adjusted the properties of matter in anticipation of all the things that the universe would eventually contain. Following the Gemara, the creation of man on the sixth day was creation in thought. Therefore, all six days had to be in thought (following Tosafos). This was creation in Midas HaDin, which was called *tohu* and *bohu*. This was the creation in six days that took place at the very beginning of the first *sh'mitah*, over 15 billion years ago. With not too much difficulty, all this can be fitted into the *pesukim* themselves.

The Torah then goes on to speak about the creation of Adam HaRishon. As the Ran says, we begin our calendar with the creation of Adam HaRishon, which took place 5738 years ago (from the time of this talk - *Ed*).

The conclusion of all this is that, if one looks into our *mekoros* and *seforim*, and see what our sages have taught us, we see that Judaism is very much at harmony with the world as science sees it. I am not speaking of scientific theories or philosophy, but of scientific evidence and fact. There are no major problems. The problems have been discussed centuries ago, and as long as we keep a firm grounding in our *seforim ha-kadoshim* and our sacred texts, there are really no conflicts.

