

## **Expanding the borders of language:**

By Yehuda Yifrach

Rabbi Shabtai Rappaport, Head of the Beit Midrash in Bar-Ilan University and a descendant of the Rabbi of Kotzk, believes that love of G-d is achieved through science and that via research modules, you can deepen halachic discussions.

We covered subjects such as determining time of death; quantum mechanics and innovative technologies that were unavailable to the halachic decision makers, and the halachic dilemmas that cyborgs present.

I began my interview with Rabbi Shabtai Rappaport, in his home in Bayit V'gan Jerusalem, with a heretical question. His life's work is synthesizing Torah and Science, an old concept from the days when many young adults were having difficulties reconciling the story of creation in Breishit and Darwin's Big Bang theory. The question of whether the world was created in 6 days or developed over millions of years was a question of life and death for many. The answers that they received, or didn't receive made the difference between complete faith and utter heresy. Today, in the psychological existence in which we live, almost no one will return to Judaism or become an atheist based on those kinds of questions.

That is why I was surprised to discover that Rabbi Rappaport also isn't interested in those kinds of questions. " I think those topics were already rehashed many times over in the 60's and 70's . Darwin's Theory of Evolution was published in the middle of the 19<sup>th</sup> Century, and many theological discussions ensued. People joined or left religions for various reasons, and religious conflicts were not always at the top of the list. If we still want to delineate the discussions of Science and Torah I would divide it into 3 periods.

The first deals with discrepancies between biblical descriptions and the scientific version.

This was the part of the basis for the Haskala movement and biblical criticism.

The second started in the 80s with the advent of new technologies.

The Torah observant scientists realized that with the progress of technology, they needed to rethink how to synthesize Torah and science in an ever developing world.

We are now in the third period, which focuses on an educational revolution studying in depth the world of Halacha.

The studios and halachic rulings

Rabbi Shabtai Avraham Hacoheh Rappaport (66) is a descendant of a prominent rabbinical family. on his father's side, he is a direct descendant of the Shach and his mother is the great-granddaughter of the Rabbi of Kotzk as well as the daughter of the second Admor of Suchtchov , Rabbi Shmuel Borenstein, well known for his rabbinical book series "Shem Mishmuel" . After learning at Yeshivat Netiv Meir in Jerusalem, he learned in the Mir under the Head of Yeshiva , Rav Haim Shmuelevitz and Rav Nachum Persovitz. During this time, he also finished his degree in mathematics. Following this, he married Rivka, the granddaughter of Rav Moshe Feinstein, who granted him Rabbinical Ordination. For twenty years, he was the Rosh Yeshiva of the Shvut Yisrael Hesder Yeshiva in Efrat. Since 2008, he is the head of the Beit Midrash in Bar-Ilan University. As part of his position, he started "Forum Nitzotzot" , which pairs Torah and Halachic figures with scientists in different fields.

Rav Rappaport, a Talmid Chacham and very learned man, had difficulty reconciling the Brisk learning methods which is the main method of the Chareidi Lithuanian Yeshivot. He is very critical of this method. The Brisk learning method is brilliant, but it can lead to a place where the Torah ideas seem very formal and far from simple human logic.

**The result is scholastic terminology that is reminiscent of the play on words of Wittgenstein, a closed logical system, that is not in touch with reality and doesn't attempt to be realistic.**

You are correct. A person that learns Torah must learn the internal logic as well. The problem is that you cannot criticize this language because its meaning is from within. This process influences the learned people in that it distances them from giving Halachic rulings. Dr. Michael Avraham says that whoever has a sharp analytical mind can never make halachic decisions, because he understands both sides, as the saying goes- a decision maker is the one who decided to stop thinking. This is of course a mistake, so we decided to create programs with new ideas in order to better explain Halachic logic.

**The source is the mind**

**What is the source of the other ideas? And who can guarantee that the end result won't be a closed logical system that negates another closed logic system?**

The original source of ideas is the human mind. When I speak about the human mind I don't mean the assumptions that people can just say, rather to deep understanding that developed through the sciences, there the human mind can reach its' full potential.

When I speak about science, I am referring to all the branches, natural sciences, exact sciences and humanities. The models that are developed there are not a special internal jargon. In order to not make speculations, which don't have a strong foundation, I purposely chose not to delve into theology or questions of thought and ethics, rather to verify the scientific paradigms with hard core Halacha.

The idea is to synthesize a new language from meeting between Halacha and science, in a way that someone from the outside world and doesn't understand the Halachic lingo can still understand what we are discussing. This is a breakthrough that is beneficial to everyone".

**What are you trying to achieve with this strategy?**

"The goal is quite simple: As the Rambam said, the way to love Hashem, is to recognize his revelation in this world. According to him, love of Hashem is not an emotion, it is doing what is right, simply because it is just, via recognition of creation. The Rambam often went according to this idea as we see in his discussions of cosmology in "The guide to the Perplexed". He believed that in order to understand Halacha you must learn cosmology".

**Are you saying that this methodology always existed?**

Yes, but sometime it was beneath the surface, for example with Rabbi Shlomo Zalman Auerbach, who stated the exact temperature of Celsius with the halachic ruling of "The withdrawn hand"( from something hot, to determine if an item/utensil became unkosher etc.), according to scientific experiments. Another example is the Halacha which states that the dough of the matza must be kneaded with water that was drawn the night before during Bein Hashmashot (time between the end of the day and the start of the night) and was kept overnight. The sages of Ashkenaz stated that during the night, the sun is under the earth

and below the water sources and heats them up therefore if the water is drawn in the morning, it will be warm and the possibility of leavening is greater. They were of the opinion that at the end of the day was the optimal time for the coolest water . The Sage, Maharam Chalawa, lived in a time period where it was already known that the sun does not heat up from below the earth and therefore gave a different explanation. He stated that the water in the morning is cooler but that cool water is what heats the flour. How did he come to this strange conclusion? It's very simple . He saw that if you put your hand in cold water and the hand becomes cold and you then touch flour, you will feel that it is warm. The revolutionary idea of Rav Auerbach is the actual measuring of something that was never measured before. Why did he think it was logical to do this? Because the lingo in our lives has changed . We are living in a world that is able to be more measured and exact. We cannot accept Maharam Chalawa's version, because the entire idea of thermodynamics are so imprinted upon us and we know that cold water cannot heat flour. He did not have the knowledge of thermodynamics".

### **Finding order in a casino in Nevada**

Rabbi Rappaport started his position as the Head of the Beit Midrash in Bar-Ilan University 8 years ago and started joint projects with different academics until the forming of the Nitzotzot Forum. Until today they have produced 58 conferences. Prior to each one, representatives of the Machon Gavoha L'Torah meet with researchers and brainstorm together until they formulate the entire program for the conference. A portion of the projects are in the final stages of being published as a book. Another project he works on is the courses for doctoral students, who develop new tools for Halachic discussions using methodology from their areas of research. Among the filmed classes you can find a presentation of a complicated algorithm that Prof. Moshe Kopel developed in order to analyze passages in the Scriptures as a way of dealing with Biblical criticism; classes on the Torah view on the fight against terrorism; the question of free will in a situation where a person is under duress , from the view of Neuroscience; models of Prof Eli Marzbach which deal with the halachic term of "Chazaka"; the definition of insanity in psychology and Halacha etc. In addition, the Machon has developed courses in law and in life sciences.

### **Do the models you develop bear any influence when deciding Halachic dilemmas such as determining the time of death, for organ transplation?**

We do not issue Halachic rulings, rather we delve deep into Halachic discussions , but if you are asking regarding the determination of life, the answer is affirmative. This topic is connected to another narrative that we are discussing which is the relation between information and meaning. We are living in an age of information overload, where everything is defined by computer terms which if we simplify it into initial components, we find a string of bytes that each one says either 'yes' or 'no'. The whole binary language of computers, is attempting to make order from disorder, to differentiate between planks of wood on the floor and a table. In the technical world we want to be able to measure everything , but this misses the point because having access to the information doesn't always guarantee its' significance.

Take for example the preface of the Ramban to the book of Breishit. He describes the Torah as a string of letters in which are encoded all the secrets of creation. These words are like

the language of the Kabbalists , which have no linguistic significance , rather they are a code which works in reality only when in a particular order. How can you see the importance of information even if it has no significance? When a letter is missing from a Sefer Torah , the whole Sefer Torah is invalid, even though the meaning hasn't been affected. Take a byte out of a computer file and you won't be able to open it.

### **How is all of this related to the determination of the time of death?**

Because with the advancement of information analysis , we have a greater understanding of the mechanism that creates order and we can refine the biological and physiological definition of life. Life, in connection to organisms, is defined today as the bodies way of creating order from disorder. The order is not always visible and sometimes is even in a state of entropy and disintegration you can discover internal order.

Once I was in a casino in Nevada and I asked myself "the gamblers always lose all their money in the end, therefore, technically all the casinos should close down because in the end none of the gamblers have any money left to gamble. But then you go to the second floor and you see exclusive shops , with outrageously expensive jewelry and watches for sale , and unbelievably, it is the gamblers who are up there purchasing these items. How is this possible? The casino has a method whereby they have more profits than losses, part of the people win and it gives others motivation and sometimes people that lose a little bit , leave before it's too late. This is an example of entropy , of something that is meant to disintegrate , but upon further in depth analysis you discover order in the disorder. "and here is where we get to the question of determination of life or death. In the 60s the physicians spoke about the reversibility of the comatose state. They said that if the comatose state is irreversible than the person is considered dead. Today, on the other hand, we know that a person can be "conscious" even in a comatose state, similar to sleeping. When I sleep at night, there is neural activity which influences what I will do or not do afterwards, which means that there is order being created . After that, they spoke about cardiac activity being the determination of life . However, today we know that the heart is autonomous tissue matter and can even be kept alive, by itself, in a cooler . A person can be on a respirator and still be alive. In Halacha, breathing is the most important parameter, as it symbolizes the oxygen molecules coming into the body. Then we discovered the children with cerebral palsy, who died from being unable to breath and modern medicine managed to revive them by respirator and to continue their brain activity. There are instruments that can translate brain waves into speech. Due to scientific research some of those who issue halachic rulings started discussing brain activity and determine the time of death as the moment when the brain stem is ruined beyond repair. This is the stage when there is no more creation of order, but this is not the final stage as in the future, this order can be achieved again through the transplantation of a silicon chip. "

### **Signed on an organ donor card**

### **You speak about the halachic dilemmas regarding cyborgs, which are half human and half robot?**

Even without further technology we already have many complex Halachic dilemmas today created by technology, like the issues of fertility. A child born to a surrogate mother, whose child is he? The woman whose ovum he comes from or the woman that carried him? We are in contact with scientist who can write DNA, implant it into cells and create new amino

acids. There are scientists who can create chocolate milk from genetically engineered bacteria. They chose chocolate milk because the cocoa trees are the most difficult to domesticate and to program. In the universities in America, you cannot receive your second degree in bio-engineering until you are able to write your own DNA and use it to create yeast in a laboratory. At this rate, in the very near future, we will be able to write all the genetic information in the sperm cell. So who will be the father of this child, the scientist who wrote the code?

### **The bottom line is, are you signed on the organ donor card?**

"Yes", says Rabbi Rappaport, laughing.

### **Determination of life is also a big factor in the abortion dilemma. In the US there is a great conflict between Pro-choice and Pro-life. This topic is as much in the headlines in Israel, but there is still great pressure being applied on the medical committees to allow late term abortion. What is the influence of science on the Halachic discussion?**

Here is use quantum mechanics. This is a complex theory, but the crux of it is that an object can be a wave and a particle, and both are probable, just like Schrodinger's cat that can also be alive and dead. In the tractate of Yevamot there is a dilemma of a man who performed Chalitzah (a ceremony whereby he refuses to marry his deceased childless brother's wife in order to bring progeny to his brother's name) and the wife was pregnant and miscarried. This is a disagreement between Rav Yochanan and Reish Lakish, about a man who died, leaving a pregnant widow. The brother of the deceased decided to perform a refusal ceremony and then she miscarried, so the question arises whether she has to undergo another refusal ceremony as she doesn't need to undergo this if she has a child. The Amorites opinion is divided. Reish Lakish says that when she was pregnant she was not even meant to undergo Yibum (get married to the brother) therefore the Chalitzah ceremony is invalid and she needs to undergo an additional Chalitzah ceremony. Rav Yochanan said that when she miscarried, it was retroactively discovered that she was a candidate for Chalitzah, therefore, she is not required to undergo another Chalitzah ceremony. The Achronim had issues with the words of the Rambam on this topic and offered cryptic modules as an answer. That is why I use quantum mechanics because although it is not comprehensible, it undeniably exists.

My explanation is that the fetus is in a probable state, he is at once a tissue and a human being. The dilemma in the western world is whether the fetus is part of the mother or an independent entity. The answer to this is that if we take the future into consideration, the fetus has potential for an independent life, but at present he is a tissue with no validity and with this basis you can understand the disagreement: Rav Yochanan says- let's wait for the future and see, if he dies then retroactively it will be clear that he is just a tissue and if he lives, then it will be clear that he is a living being. Reish Lakish says that at the moment he is both because he is in a probable surrounding therefore his mother is at once required and exempt to undergo Chalitza. Therefore, if she miscarries she will be completely required to undergo this, therefore, the Chalitzah now is pointless. So what did I do at this point, I brought about a module from quantum mechanics and used it to explain Reish Lakish's stance. In the case of abortion, this helps understand the position of the fetus, how on the

one hand it is not murder to abort it but on the other hand it is a living being whom I am required to save".

## **How does this model assist a Halachic authority when ruling on an abortion ?**

When we look at a fetus during the pregnancy as existing in a reality parallel to a chain of quantum mechanics, where all the possibilities exist and are open, there is no clear line between it being a live human being to being just a tissue. The deciding factor only happens during childbirth or during termination of the pregnancy. For example if we know that a child about to be born will be not be independently viable, this changes the balance of the different positions of the fetus. The halachic authority must weigh each situation separately, if Halachically the fetus is considered more of a tissue, then the pregnancy may be allowed to be terminated . there is still a long road ahead of us, until these modules can be used to decided Halacha , but in the meantime they enhance the discussions and lead to a more enriching thought process" .

## **The temperature for burning metal**

I ask Rabbi Rappaport about social and life sciences, that in contradiction to exact sciences often have qualitative studies and speculations that change from time to time. It appears that he even in these fields he tries to find connections to modules modeled after the exact sciences.

There's a well- known idea in physics : you take individual molecules and you make a sequence between them, like the beads on a necklace, then you string the necklaces together to form a sheet and the sheets you put together to form a cube. The most important discovery in science is that every area has its own rules. The most famous experiment is that you can burn steel wool , but a sheet of aluminum foil, which is thinner, does not burn when it comes into contact with fire. The reason for this is that conduction of heat varies due to the inner surface. The highest temperature required to burn metal varies between two dimensional and three dimensional.

There are phenomena that occur only in three dimensional objects, like a whirlpool.

Magnetization and conduction of electricity doesn't occur in individual particles .

Migrating birds cannot get from place to place without their flock , because there is something unique in a group which isn't present in an individual. This idea that different dimensions have different rules that apply to them, I use in our halachic discussions".

Rabbi Rappaport brings an example the difficult perception of charity in the Halachic rulings of the Rambam ( laws of gifts to the poor; chapter 10) . The first Halacha sounds like a Pashkvil (wall posters put up in public decrying injustices). It says that the religion of truth does not exist except for charity , and Israel will not be redeemed except through charity as it says that Zion will be redeemed via charity. It is strange to find that in these passages he is referring to charity as justice and not alms for the poor.

On the other hand, towards the end of the chapter, the Rambam practically forbids accepting charity : a man should debase himself and refrain from putting himself at the mercy of his fellow man. The sages said a man should live in dirt rather than count on his fellow man. Even if he was a learned man and now has to work , even a not respectable job he should not be a burden on his fellow man'.

"The obligation to work and enjoy the fruits of his labor, is linked to his perception of freedom", explains Rabbi Rappaport "the Rambam obligates man to be free and responsible, my workers are not slaves to slaves. Beyond this is the obligation of man to his fellow man and that is where we find the negotiation. The Halacha can require that man work in good faith, without swindling, but it cannot obligate man to give money without compensation, because the whole market is based on compensation in the form of a product or a service. You sell what you believe people need and the meeting between you creates a gateway. One way or the other, the American Calvinism stops there and therefore doesn't have any room for charity as a deed that is required and can only exist on a voluntary basis.

When there is complete freedom, the individual develops in a perfected manner, but there is no room for the development of the public, in the deeper sense, not just the development of people that need each other but an all-encompassing idea of the public. In Judaism there is room for a third axis, the public axis. In commerce, every payment must receive compensation. But the public can implement morals. The prohibition to accept charity when there is no need, doesn't negate the existence of poor individuals. There will always be people who are unable to work and an exemplary society is one in which the giving of charity is made to be an obligation, not dependent on interpersonal relationships. The public is a new characteristic that is not found in the individual. This is the independent axis".

This module that differentiates between the three axis- vertical- as in man to G-d; horizontal as in man to fellow man and the public axis, Rabbi Rappaport brings into other subjects. He reminds me about the lecture I gave, under the auspices of "Nitzozot" on harmful speech (Lashon Hara) and the media "Lashon Hara is a grave offence that is on the axis of offences between man and fellow man. The media is on the public axis and without it the government would be riddled with corruption. Therefore you cannot compare one to the other as these are different areas".

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