

## **The Unification of Torah and Science: Basic Principles and a Case Study on Electromagnetism**

### **Part 4--Mistakes, the Hallmark of a Messianic Path**

In order to achieve the desired union between Torah and science, every person involved should be prepared to take the kind of risks that a top-level scientist takes when beginning research on a new theory. Any new theory is likely to make or break his scientific career, which demands a certain amount of potential self-sacrifice. As the Rebbe used to say, based on a dictum of Chassidut concerning the act of Pinchas, one does not always have the luxury of passing over "an iron bridge." Sometimes a person must take the chance of passing over a bridge so flimsy that it may collapse under his weight, placing his life in jeopardy. Nonetheless, since the Torah is absolutely true, most Torah scholars demand the safety of an "iron bridge" and are not prepared to take the chance of making mistakes. However, the places that must be reached in order to bring Mashiach, do not always have an iron bridge leading to them. Only a flimsy bridge separates between Egypt and the redemption. If one chooses to remain in a state of captivity, even one in which everything one does is in complete sanctity, then redemption can never be reached. In order to reach redemption, one must have the self-sacrifice that enables him to pass over the flimsy bridge, which in our case

is to be willing to take the chance of being proven wrong. One clear example of such self-sacrifice is Nachshon ben Aminadav, who walked into the Red Sea up to his nose before the sea finally split in two. Being proven wrong is definitely a great hazard, whatever occupation one may undertake. We are all human beings, and we are all liable to make mistakes, just as King David and even Einstein made mistakes. There is even a prayer by Nechuniah ben haKaneh<sup>1</sup> that a teacher says before entering the classroom, praying that he should not be embarrassed in front of his pupils by making a mistake.

An important verse which expresses this thought is the verse in Psalms,<sup>2</sup> "Who can understand mistakes? From hidden things cleanse me." The simple interpretation of this verse is "cleanse me of those factors of which I am not aware which may cause me to err."<sup>3</sup> However the word used here for "hidden things" (נסתרות) appears in another verse, elsewhere, "The hidden things [הנסתרות] are for God our God, and the revealed things are for us and for our children."<sup>4</sup> Interpreting these verses by juxtaposing them, we can learn that if a person wishes to always remain correct, he should keep to "the revealed things."

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<sup>1</sup> Mishnah Berachot, 28b

<sup>2</sup> Psalms, 19:13.

<sup>3</sup> See Rashi to Psalms 19:13.

<sup>4</sup> Deuteronomy, 29:28.

Only if he is willing to take the chance of being proven wrong may he enter into God's hidden realm.

Such audacity to break into a realm of God's hidden secrets is exemplified by the following story:

*The Alter Rebbe had a box that he kept locked at all times, into which he placed the writings that he had inherited from the Ba'al Shem Tov. On the box he inscribed a message that anyone who would open it without his permission would be excommunicated. At a certain stage, the box was burned in a fire and the Alter Rebbe deeply regretted the fact that he had not had the opportunity to reveal these writings to his son, Rabbi Dovber (the Mittler Rebbe), as he had intended eventually to do. However, upon contemplating this for a moment, he realized that his son's love of Chassidut had certainly overcome his fear of excommunication. A huge smile began to spread over his face as he said, "Berele hot gezen!" His son, Berele had already seen them!*

The Mittler Rebbe's audacity could have led to his excommunication, God forbid, had the Alter Rebbe discovered his act earlier. However, this very audacity which stemmed from his great love of Chassidut, earned him the privilege of seeing writings which otherwise would have remained unobtainable. This type of

love is referred to in the verse, "In her love you will always err."<sup>5</sup> This is an idiom for the deepest Torah mysteries. Stepping into the unknown may cause a person to err, and ultimately enable the cleansing of his soul.<sup>6</sup>

In order to achieve the courageous, Messianic feat of unifying Torah and science, we need to develop a technique that will take us into a new dimension where no contradiction exists between the two. This dimension is the point at which the higher waters (Torah knowledge) meet the lower waters (scientific knowledge). Kabbalah teaches us that the point at which this meeting occurs is at the horizon, where the heavens kiss the earth. This point can be reached by finding the point at which the most profound Torah ideas merge completely with the most modern theories of science.

Someone who is overly cautious of making mistakes will never have the courage to set out for the horizon; nor will he be able to experience the heavens kissing the earth. It is particularly difficult for someone with such a mindset to initiate a totally new endeavor in his field. We must become aware that by stepping out towards the horizon and involving ourselves in the newest, most controversial frontiers of scientific knowledge, we are doing the work of bringing the world to its ultimate state of completion-- even though we are taking the

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<sup>5</sup> Proverbs, 5:19.

<sup>6</sup> In Kabbalistic terminology, the cleansing comes from the level of *mi*, which is *Ima Ila'ah*, from consciously entering into the realm of God's secrets.

chance of making mistakes. Without the ability to reach that level one can have no hope of ever integrating Torah and science because their goals and methodologies are mutually exclusive.

The state of mind necessary for this task is one that stems from "the unknowable head" that is the root of Mashiach. At the horizon of messianic consciousness, there is no problem with being proven wrong, because it is capable of simultaneously containing two mutually exclusive ideas. In modern scientific terms, we would say that it is in a state of absolute fuzziness.

## **Fuzziness and Horizons**

Just like two soul-mates who are attracted to one another until they finally meet and join in marital union, Torah and science are pulled towards one another by some mysterious force, until they will eventually meet and unite. As we have already mentioned, the point at which this meeting occurs is at the horizon.

In mathematics, the concept of the horizon concerns the infinite point of a coordinate system, where dimensions theoretically "kiss" one another. The horizon is the ultimate state of fuzziness, to the extent at which there is a controversy amongst mathematicians regarding the very existence of such infinite points. Most mathematicians believe that these infinite points do exist and indeed, this is in keeping with the teachings of *Sefer Yetzirah* in which the term for

the infinite state of a coordinate system is called "depth" (עומק), e.g. "depth of the south" etc. Each of the ten *sefirot* is one extremity of the five-dimensional space-time system that is presented by *Sefer Yetzira*, in which every coordinate has two infinite points. It is at that infinite point where "kissing" occurs.

The common soul-root of the couple in any marriage is reflected at the horizon. Similarly, when speculating about the connection between Torah and science, the most conducive context in which to experience the kissing of the heavens and the earth is by treating scientific topics that lie on the furthest frontier; the most modern cutting-edge theories that have not yet been proven.<sup>7</sup>

In conclusion: having ascertained that the union of Torah and science is of utmost importance in our quest to bring the ultimate redemption and that there are permitted ways to study science, in the following chapter we will outline the various levels of integration that can be identified in the process of clarifying science until it reaches the ultimate level of unity with the Torah.

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<sup>7</sup> In order to meditate upon a concept we must relate to its Hebrew name. The root of the word for "horizon" (אופק), has a number of other meanings that will illuminate our understanding of the horizon concept. The same root is used in the word meaning "to exert self-control" (להתאפק), which teaches us that one needs self-control when approaching the horizon, otherwise one may go too far beyond. There is a famous story in the Talmud about ben-Zoma, who went insane as a result of his entering the *pardes*. At one point his friends saw him in deep meditation and they asked what he was contemplating. He replied that he was contemplating the distance between the firmaments, "super-symmetry" in outer space. They concluded that he was already "on the other side" and they were correct in their assumption. (Perhaps one could say the same about Witten and his colleagues, perhaps they too have gone through a "black hole" that lies beyond the horizon....)

Another most important use of the root is found in the verse that is written at the top of the marriage contract, "someone who has found a woman has found goodness, he will produce good will from God." The word "produce" (ויפק) in this verse has the same sub-root as "horizon." As we mentioned above, this correspondence suggests that in order to produce good will from God, from Infinity, a well-matched couple must always be living on the horizon.