

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

Part 2: How to Study Science

One of the principal opponents to the study of secular science is the author of the *Tanya*, who states:

"Occupying oneself with the sciences of the nations of the world is likewise included in the category of engaging in inconsequential matters with regard to the sin of neglecting the Torah, as is explained in the Laws of Torah Study."

Moreover, the impurity of the science of the nations is greater than the impurity of idle speech; for the latter clothes and defiles only the emotions [that emanate] from the holy element of spirit [חַוָּה] within his Divine soul with the impurity of the shell of Nogah [that is] contained in idle speech, as mentioned above.

Idle speech does not, however, [defile] the levels of the intellectual faculties in his soul, for it is but words of foolishness and ignorance, since even fools and ignoramuses can speak that way.

Not so in the case of the science of the nations; thereby one clothes and defiles the intellectual faculties of his Divine soul with the impurity of the shell of Nogah contained in those sciences, into

which they [the sciences] have fallen, through the shattering of the vessels, out of the hinder-part of wisdom of holiness, as is known to those familiar with the hidden wisdom."

"As is known to those familiar with the hidden wisdom," alludes to those who study the writings of the Ari, who teaches that there are three levels to the breaking of the vessels: flaw, nullification and death.¹ The flaw is in the super-conscious crown and is relatively very small; the intellect does not die, but merely suffers paralysis, it falls into a coma of nullification; death is in the emotions, just as the heart dies when it stops beating.

The flaw in the super-conscious crown is not as significant as the nullification of the "back" of the intellectual powers. This can be explained by the fact that the flaw has not yet been defined as existing; rather it is an expression of existential doubt regarding reality. In the super-conscious crown there is supra-intellectual certainty of God's existence and when doubt penetrates that state, it undermines the certainty of God in the super-conscious.²

¹ The back of *nehi* of *keter* of *nekudim* were damaged, the back of *chochmah* and *binah* were nullified (but did not fall into the lower worlds) and the seven lower *sefirot*, (in general, without mentioning the difference between the six extremities and *Malchut*) died, meaning that they fell into the lower worlds and were buried there until the revival of the dead.

² As we shall see below, the numerical value of the Hebrew word for "doubt" (ספק) is equal to the numerical value of the Hebrew word for "iron" (ברזל) when the additional unit (the *kolel*) is added. Iron represents the rectified attitude between Torah and science, as we shall see, therefore, studying science

The Lubavitcher Rebbe has pointed out that since the *Tanya* is referring to the shell of *Nogah*, it is referring to general science books and not to books on scientific philosophy, which are, for all intents and purposes heretical, and whose source is in the three completely impure shells. The study of general science is problematic from a Torah perspective, because it creates a very strong consciousness in the psyche towards the existence of reality. From the perspective of science, the universe exists as something separate from God, a world in which God has no place. The more the scientist studies reality, the more strongly its existence as an independent entity is fixed in his mind. This is the impure side of the shell of *nogah*, which taints the Divine soul by giving credence to the existence of something apart from God.

Although in the World of Chaos, nullification is negative, Chassidut sees it as a very positive concept. The undesirable effects of studying science for its own sake are a factor of negative nullification, but someone who has reached a state of positive self-nullification is naturally suited to studying and rectifying science. Only someone who has this quality is capable of truly studying science for the sake of Heaven.

according the method outlined below in reference to iron, has the power to clarify the doubts which are generally apparent in scientific studies.

Nonetheless, the Alter Rebbe offers two ways (the second way is divided into two, bringing us to a total of three ways) that can justify studying science.

Unless one employs them [these sciences] as a useful instrument [lit: "a pickaxe to cut with"], i.e., as a means of earning a more affluent livelihood with which to be able to serve G-d, or [unless] he knows how to apply them in the service of G-d or to [his better understanding of] His Torah.

This is the reason why Maimonides and Nachmanides, of blessed memory, and their peers, engaged in them.

The first reason is studying science in order to earn a livelihood that will aid him in his service of God.³ Since the study of science is from the *shell of nogah*, the shell which contains some good, the desire to learn it in order to earn a good livelihood is enough to justify its study, for this intention releases the positive energy hidden therein. The Alter Rebbe writes, "a more affluent livelihood," referring to someone who is capable of earning a livelihood even without such study, but who wishes to serve God even better through affluence, which would allow for ample time

³ One may not justify transgressions with this same logic, however.

for Torah study and generous philanthropy to the needy.⁴ Thus, even though not a *mitzvah* in itself, and merely assists him in doing a *mitzvah*.

The Alter Rebbe mentions a second reason to justify the study of science: in order to serve God and to better our knowledge of Torah. This is somewhat closer to a Chassidic perspective. The physical act of doing a *mitzvah* and the material accessories associated with it create a vessel that is able to contain Divine energy, which otherwise would not have been able to safely enter the lower worlds. Nonetheless, in this case, we learn that even a "not-*mitzvah*" can become a *mitzvah*, as in the Chassidic interpretation of the phrase, "in all your paths, know Him."⁵ Since true knowledge is a type of marital bonding, the way to achieve it is by uniting our intentions with our actions, as we find in the Kabbalistic prayer said before performing a *mitzvah*, which expresses the intention to join in union the Holy One and His Divine Presence. In this way, by thinking holy intentions while doing even menial tasks, we can make mundane acts into *mitzvot*, achieving a union of the heavens and the earth at every moment.⁶

⁴ In this explanation, the Alter Rebbe specifically uses the expression "a pickaxe to cut with." Rabbi Levi Yitzchak Schneerson, the father of the Lubavitcher Rebbe, said that the Alter Rebbe chose this phrase even though the original phrase is "a pickaxe to dig with" since cutting is a reference to the Divine Name that is produced from the final letters of the three words which begin the verse, "Open Your hands and satisfy all desire" (Psalms, 145) which is related to earning a livelihood.

⁵ Proverbs 3:6.

⁶ See *Ohr Torah*, 373.

In fact, this second reason for permitting the study of science is divided into two separate reasons: either the person studying science knows how to apply it in the service of God, or he does so in order to improve his understanding of Torah.

Knowing how to apply the study of science in the service of God can be interpreted as Maimonides writes, that through studying and meditating upon the wonders of nature, one comes to love God and to fear Him. This type of study does not view nature as an entity that is separate from God. Instead, it reorients the student to focus on God the Creator, and arouses her to come closer to Him.

The Ba'al Shem Tov teaches us a tremendous innovation which has become the basis for the entire Chabad tradition. He teaches that since love is a spontaneous emotion, and therefore not something that can be commanded, the actual *mitzvah* of loving God is achieved through contemplating those things that arouse love. This means that the definition of the *mitzvah* of loving God is none other than meditation upon those things that bring us to love Him. According to the Rambam, this would mean that a person must deeply understand and appreciate the wonders of nature as revealed by science.

One might expect that Truth be accessed more readily by studying the “Torah of Kindness” than by study of Science, which, as stated previously, sees the mind/universe as something existing in its own right, and which comes from the side of judgment/gevurah.

However, a Jewish, Torah-oriented study of science uses the faculty of judgment in order to encounter the Godly love implanted in the universe. Thus the scientific method becomes one of judgment tempered with mercy, bringing us to the central pillar of universal Truth within nature.

Another use for science in God's service is studying in order to become a doctor. The student wishes to actualize the quality of compassion he has for the pain of his fellows, by studying medicine in order to heal. Indeed, both Maimonides and Nachmanides, who the Alter Rebbe mentions, were great doctors in their times.

Beyond the application of scientific knowledge in our *service* of God is the study of science in order to improve our *understanding* of Torah. Interpreters of the *Tanya* explain that this refers to the study of fractions in order to be able to accurately calculate the permitted range that one may walk on Shabbat. The Lubavitcher Rebbe offered the example of someone who studies astronomy in order to understand the secrets of

calculating the Hebrew calendar. It could also refer to someone who studies agriculture in order to learn how to cultivate a kosher, unblemished *etrog*.

God is Nature

Regarding studying science to serve God, Maimonides explains⁷ that through realizing and meditating upon the wonders of creation, one comes to love and stand in awe of the Creator. According to Maimonides, science and nature are identical to the esoteric level of the Torah called *ma'aseh bereishit*, which is far deeper than all of the laws of the Torah. However, now this most profound aspect of creation has fallen into scientific speculation and has become apparently secular. In fact, science has become such a secular pursuit that it seems to contradict our faith that everything in the world is a reflection of the Divine plan for creation as transmitted in the Torah.

In order to correct this un-rectified state wherein nature is seen as secular, our purpose must be to see how God "looked into the Torah and created the world." This we can achieve by finding the Torah-roots from which even the most modern scientific theories stem, and by discovering how God's presence manifests in all natural phenomena.

⁷ *Sefer Madda, Mishneh Torah l'Rambam*

Indeed, one of the oldest numerical equivalents of Hebrew words (*gematria*) expounded in Kabbalah is the numerical value of the Divine Name *Elokim* (א-להים) as being exactly equal to the numerical value of the Hebrew word for "nature" (הטבע). Thus, in its true form, the scientific study of natural phenomena is the study of the Name *Elokim*, the Name of God used in the Torah's initial account of creation.⁸ This is an important point to note, because in today's scientific world, many of the world's top level scientists do not admit to believing in God at all—to the extent that historians of science even attempt to interpret Einstein's profuse use of God's Name to mean that he is referring to Nature in general. Yet, this severance of God from Nature is based on a non-Jewish perception of a God who is distinct and different from nature and from the physical, measurable investigations of the exact sciences. Their belief is that, since creation, God has done little more than occasionally intervene in the course of history.

In contrast, the Jewish view of God is that He is a personal God to whom one can pray for intervention on one's behalf to change the natural course of history when necessary, and yet, together with this quality, He is also the God of Nature. This concept was the innovation of

⁸ In the first chapter of Genesis, the chapter of creation, the Name *Elokim* appears thirty-two times, reflecting the thirty-two pathways of wisdom mentioned in the beginning of *Sefer Yetzirah*, which are comprised of ten *sefirot* and twenty-two Hebrew letters.

Abraham, the first forefather of Judaism, who called God: *Havayah Kel-Olam*. *Kel-Olam* does not merely mean "the God of the Universe," but "God-Universe."⁹ Abraham preceded the phrase *Kel-Olam* by the Name *Havayah* because ultimately, *Havayah* is *Elokim*, meaning that *Elokim*, the God of Nature, is the self-same God as *Havayah*, the God who transcends nature and can therefore intervene and change the course of nature.

Ironically, even though many scientists may not be aware of it, science itself is beginning to come closer to a stage at which perceiving nature merely as a strict regimen of laws and mathematical formulae is no longer acceptable. This new perception is paramount in the concept of "intrinsic fuzziness," which has been adopted to describe the phenomenon of distorting the topology of an object or a concept without breaking it, to the extent that a certain characteristic of the object may seem to disappear completely. This innovation, an integral part of Edward Witten's M Theory, has in fact distended science to such an extent that there are those who claim that the theory is not scientific

⁹ This is understood in Chassidut to mean that in truth God is the world and the world is God. "God is All, and All is God"

at all, but philosophical, since by its nature, it cannot yet be proved nor disproved. M Theory has stretched science to its greatest limit, giving scientists a fuzzy glimpse of a God who is beyond *Elokim*.