

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

### Part 5—Mathematics, the Language of Science

Anyone who wishes to truly understand science must first have a good grasp of mathematics. Mathematics is the language of all the exact sciences and is gradually becoming the language of all other sciences too.

Numbers are the "letters" of the language of science. Although every language has its own alphabet, numbers are universal. This makes mathematics a more general and consequently, a more secular pursuit than any other subject. *Sefer Yetzirah*, the earliest Kabbalistic text, begins by stating that there are ten *sefirot* (channels of Divine energy) and twenty-two letters, together which comprise the thirty-two pathways of wisdom by which God created the universe. Here, the number ten, the base of our decimal system, precedes the number twenty-two, which is the number of letters in the Hebrew language, the Holy Tongue, suggesting that numbers, in some mysterious way, are even higher than the *alef-bet*. In fact, the very word for "counting" in Hebrew is ספירה (*sefirah*), identical to the word that defines God's mystical channels of Divine energy.

The ultimate truth is that numbers, as defined in *Sefer Yetzirah*, **are** even more sacred than the Hebrew letters. The *sefirot*, are "lights" while the Hebrew letters contain the lights, making them accessible and coherent to us through words and

speech.<sup>1</sup> Because the origin of numbers is so high, they have descended (or "fallen") lower, becoming more general and therefore more secular than the letters themselves.<sup>2</sup> This is according to the general principle of Chassidut, that whatever emanates from a higher source descends lower into the physical realm. Every verse in the Bible consists of letters, the inner soul of which is the "number" that is concealed within them. This inner soul of the Torah text reveals to us the hidden message about the Creator and His creation that science attempts to convey. So, in order to understand the innate holiness of numbers, they must be garbed in the Hebrew letters and be conveyed to us in the language of the Torah.<sup>3</sup>

### **Seven Ironic Metals**

So far we have only mentioned some of the properties of only one metal, iron. Now, by examining the numerical values of the seven basic metals we will discover that iron is indeed the most general metal. These seven metals are silver, gold, copper, tin, lead, mercury and lastly, iron.

In the chart below, we have listed the seven metals together with their corresponding *sefirot* and the respective numerical values of their Hebrew names.

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<sup>1</sup> As explained in *Tanya* ??.

<sup>2</sup> See also (in Hebrew) *Emunah Ve'mudaut*, pp. 185-188.

<sup>3</sup> In more Chassidic terms, numbers descend from the lights of the ten *sefirot* in the world of Emanation.

**might**

gold (זהב)

14

**loving-kindness**

silver (כסף)

160

**beauty**

copper (נחשת)

758

**thanksgiving**

lead (עופרת)

756

**Victory**

tin (בדיל)

46

**foundation**

mercury (כסף חי)

178

**kingdom**

iron (ברזל)

239

By meditating upon the numerical values of these metals we discover a number of remarkable facts that refer us constantly back to iron. To begin with, the total numerical value of all seven metals is 2,151 which is equal to 9 times 239, the numerical value of iron. This indicates that, in some mysterious way, iron is the all-inclusive and most important metal. This is further illustrated by the

position of iron in the *partzuf* of the seven metals as they are ordered according to Kabbalah. Iron is positioned at the level of *malchut*, which is the all-inclusive *sefirah*, to which the energies flow from all the other *sefirot*.

The first three of these metals<sup>4</sup> are mentioned in the donations that the Children of Israel donated to the building of the Tabernacle in the wilderness. They are gold, silver and copper and do not include iron.<sup>5</sup> Yet, if we take the combined numerical values of these three metals alone, they total 932.<sup>6</sup> When the integers of 932 are reversed, it becomes 239;<sup>7</sup> iron once again! So even though iron is not one of the first three metals, it is intimated by this equality.

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4 Six of these seven metals are mentioned explicitly in the Torah and only mercury, the metal that corresponds to foundation, is hidden and is not mentioned in the Bible.

5 Interestingly, the word *nechoshet*, copper, is the 29th word in this passage, 29 being the atomic number of copper.

6 932 is also the numerical value of, "the Tree of Knowledge of Good and Evil."

7 This method of meditating upon the numerical value of a word or words in its reverse form is a legitimate method, as can be seen from other examples. The Hebrew word *or*, meaning light, for instance, has a numerical value of 207, which when its integers are reversed becomes 702, the numerical value of the word *Shabbat*, the day which reflects light and in which light becomes manifest. Similarly, another classic example is the numerical value of the term *Eretz Yisrael*, the Land of Israel, which equals 832. When the integers of this number are reversed, we arrive at 238, the numerical value of *Rachel*. This alludes to the Kabbalistic concept of the construction of the *partzuf* of *Rachel*. *Rachel* corresponds to transparency, as mentioned above, and the Land of Israel is a land that is transparent to God, which is why ideally all Jews should come to live in Israel. In other lands, at his best a Jew is able to recognize his Divine Source, however, in Israel a Jew can become transparent to God. This is why it is *Rachel* in particular who cries out for all of her children to return to the Holy Land.