

ENGLISH ABSTRACTS

(all articles are in Hebrew unless noted otherwise)

WITNESS COMBINATION – MATHEMATICAL ASPECTS

Ron Adin and Yuval Roichman

A halakhic ruling in *Shulchan Aruch* regarding the combination of testimonies on distinct sums is based on sophisticated mathematical calculations. This paper deals with various aspects – algebraic, combinatorial, geometric, and probabilistic – of these calculations, as well as with relevant complexity theoretical issues. In particular, it is shown that there is no practical difference between the algorithms suggested by Nachmanides and Nimukey Yoseph; both algorithms are essentially identical with the modern Karmarkar-Karp differencing method.

THE CASE OF A BULL AND A MAN WHO PUSHED SOMEBODY INTO A PIT

Daniel Michelson

We discuss the problem of how to split the damage caused by several parties, provided that there is a rule pertaining to how the damage should be split between each pair of parties. We suggest several solutions, one of which is an iterative process in which each pair randomly meets and divides their common share according to the known rule. An average of this process converges to a limit that can be computed using Markov chains. The discussion is based on the case studied in the Talmud Baba Kama 53b, and the different rabbinical opinions on this subject.

A MATHEMATICAL DESCRIPTION OF THE DEBATE OVER THE HALAKHIC DATE-LINE

Ronen Katsir

Determining dates on earth, and the need for a date-line, have been important issues for humanity in general, and for Jewish law in particular. In this article, we will try to mathematically describe the problem of determining dates on earth, and on this basis will try – using mathematical tools – to explain the different

opinions in Jewish law regarding this question. This article also includes a brief description of some basic concepts in topology that are required for the mathematical description.

DEFINITION OF THE DISCUSSION “SPACE” IN A TALMUDIC
DELIBERATION AS A TOOL FOR TALMUD STUDYING –
A CASE STUDY, USING THE “KARNAUGH MAP”

Gabi Glasser

Many deliberations in the Talmud are conducted in a standard, structured manner. This article presents an approach to studying Talmudic deliberations while being cognizant of their logical structure and “space,” facilitating a better understanding of the text. An example is presented employing an analytic method adapted from the discipline of Hardware Engineering, known as the “Karnaugh Map.” This method is used in order to define the “space” of the discussion. It enables the student to achieve an in-depth understanding of the deliberative process, and leads to identifying a lacuna in the discussion that can be discussed by the Talmudic commentators.

DO WE HAVE TO RETURN TO *KIDDUSH HACHODESH* ACCORDING TO
EVIDENCE?

Yoel Yehuda Lange

The issue of returning to *Kiddush Hachodesh* according to evidence (KHAE) has been discussed in the past in only a few forums. This article investigates the different ancient views dealing with this matter. The article begins with the words of the Gemara in tractate Beitza relating to the existence of a second Yom Tov, and concludes that since the Sages were uncertain about returning to KHAE, they deliberately avoided conditioning the existence of a second Yom Tov on a return to KHAE.

The article then shows that the issue of returning to KHAE is related to the question of the mechanism that allows the dramatic transition from the spontaneous to the calculated calendar. The article discusses the various mechanisms that were proposed to explain this transition and, taking these explanations into account,

examines the possibility of maintaining the present calendar. It is shown that Maimonides, Nachmanides, and Tashbatz's opinions were that returning to the spontaneous calendar is obligated, although the mechanism suggested by Nachmanides actually allows the calculated calendar to be kept.

The article then continues to discuss the ordination debate that aroused deliberations over the calendar, and presents the opinion of Ralbach, who claims that returning to the evidenced calendar is obligated, and the opinion of Mahari Beirav, who claims that keeping the present calendar is possible.

EXPERIMENTS FOR COMPARING HALAKHIC PRINCIPLES AND EMPIRIC REALITY REGARDING ABSORPTION AND EMISSION IN UTENSILS

Yair Frank, Lavi Schiller, and Dror Fixler

The subject of this study is the absorption into and emission from modern utensils in the context of *hilkhot haksharat keilim* (i.e. the laws of koshering utensils). The research consists of an empirical-experimental section, which includes practical experiments in a wet laboratory. These experiments examined the absorption and emission using scientific methods. The reason for such a study stems mainly from the fact that, today, a person eating food from a certain utensil does not usually sense the flavor of foods previously cooked in it. In addition, the manufacturing methods and materials used in utensil production have changed over the years, and it may be said that utensils today are less porous and therefore absorb less or do not absorb at all. Moreover, there is a wide use of materials today that did not exist at the time of *Chazal*, such as plastic, silicone, etc.

THE SCIENCE OF THINKING AND TORAH COMMENTARY: THE PLACE OF COHERENCE AS A REASONING PROCESS IN THE FORMATION OF TORAH COMMENTARY

Daniel Raviv

In general, Torah commentary may be regarded as the adding of information to basic written Torah sources, with the aim of dealing with a lack of coherence. Apparent inconsistency is reflected in questions or problems arising when reading

the text, and the commentary aims at establishing coherence.

Since the science of thinking studies issues of consistency as an act of reasoning related to the production and formation of new knowledge, using the science of thinking can contribute to our understanding of the formation and development of Torah commentary. This paper examines the research of the development of Torah commentary by utilizing the science of thinking, and suggests a new research method for examining the ways in which Torah commentary was created.

THE CRUSE OF OIL: ON MIRACLES AND NATURAL LAW IN THE PHILOSOPHY OF SHMUEL ALEXANDROV

Israel Rosenson

Shmuel Alexandrov (1865-1941) was a Talmudic scholar and an innovative philosopher. He was inspired by Haim Zelig Slonimski (1810-1904), an active philosopher and a scientific scholar. Concerning Slonimski's attitude toward the miracle of Hanukah in particular and other miracles in general, he held the view that the miracle of the cruse of oil was actually not a miracle at all, and that the division of the oil into eight portions was the work of the priests. This was an extreme, rationalist approach relying on Maimonides, and it was difficult for the religious people of the time to accept. Alexandrov, on the other hand, relied on aggadic sources, and emphasized the symbolic significance of the oil as a source of learning, a symbol readily accepted as tradition in Judaism. In parallel, one may add to this approach the symbolic principle of oil as spreading an eternal message. This symbolism fits well with the principles of Alexandrov on the eternal value of Torah study. In his article about "the cruse of oil," Alexandrov pointed to a series of midrashim ascribed to the Sages.

To summarize, in contradistinction to Slonimski, who supported a rationalist and scientific explanation, Alexandrov put forward the principle of symbolism.

*JOIE DE VIVRE** AND THE APPRECIATION OF GOODNESS AS A WAY
OF LIFE

Avraham Gottlieb

The pace of modern life is very demanding and requires endless commitment. Most people struggle continuously in their search for the true essence of their *joie de vivre*. Some find it easier to define, yet many do not clearly specify or acknowledge what happiness is in general, and, particularly, what defines real joy for them.

The following discussion will endeavor to delineate the terms “joy” and/or “happiness” in a universally accepted terminology and to address these terms from the Jewish perspective. The following discussion will elaborate on the expression *joie de vivre* from our vantage point, which deems it to be a mode of behavior predicated on an “appreciation of goodness” by the individual, using the Positive Psychology approach, as we consider it to be a beneficial and recommended way of life.

*The French phrase *joie de vivre* is the classic translation of *simchat chayim* = תהמם מייח in Hebrew: a cheerful enjoyment of life; an exultation of the spirit; a carefree way of living – not necessarily a negative approach involving a lack of civic or moral responsibilities, rather a lighter attitude toward life.

THREE HALAKHIC METHODOLOGICAL NOTES

Daniel Sperber

My intention is to give three different examples of how an academic approach to rabbinic sources can change traditional halakhic rulings, or give greater and deeper understanding to existing ones. The first example demonstrates how a close textual analysis of a certain halakhic issue leads to a lenient ruling rather than the accepted stringent one. The second example shows how a ruling in the Tur Hoshen Mishpat 303 is actually the result of a defective text in which a section of the original sources is missing, but can be reconstructed from manuscript versions recorded by later authorities – leading to a different conclusion. The third example explains a strange ruling found in Shulhan Aruch Orah Hayyim 550:3, reflecting a gaonic response to Karaite halakhah.

LUHOT HA-IBBUR PART II: RABBI RAPHAEL HA-LEVI FROM
HANOVER'S TABLES OF INTERCALATION – CALCULATION OF THE
MOON'S VISIBILITY ACCORDING TO MAIMONIDES (English article)

J. Jean Ajdler

The second part of Hanover's tables is devoted to the calculation of the moon's visibility according to the method adopted by Maimonides in his *Hilkhot Kiddush ha-Hodesh*. Hanover followed Ptolemy's methods of ancient astronomy and Maimonides' criterion of visibility. In contrast to Maimonides, who used simplified and approximate methods, Hanover tabulated – with great precision and exactitude – the true astronomical model of Ptolemy, corresponding to Maimonides' exact model.

As clearly stated by the author in the introduction, the book describes the method of calculation in great detail and precision, without giving any explanation or justification. The explanations, proofs and justifications of the described method were to be gathered in a third part of the book, which was never published.

In the present paper we explain the meaning of the different tables and we expound the formulas that enable their construction and accuracy. It appears that Hanover was indeed the first to master completely the calculation of the moon's visibility according to Maimonides' astronomical model without any simplification or approximation.