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A Logical Approach to *Kavu'a*

INTRODUCTION

Suppose you live in a town with ten stores, nine of which are kosher and one of which is not: Is a piece of meat of unknown origin assumed to be kosher? The Talmud draws a seemingly arbitrary distinction between two very similar cases: If the meat is found, then you can assume it is kosher, because the majority of stores are kosher. However, if you bought the meat and simply cannot recall from which store, the Talmud treats it like the chances are equal, and you cannot assume the meat is kosher. The Talmud labels the former case "*parish*" and the latter case "*kavu'a*" (*Pesahim* 9b).

The Talmud invokes *kavu'a* in other (seemingly different) contexts: If someone throws a stone into a group of ten people consisting of nine Jews, whose murder is a capital crime, and one *Kuti*, whose murder is not, and one of the ten people dies from the thrown stone, the stone thrower is not killed. Again, the Talmud invokes *kavu'a* (*Ketubbot* 14b-15a). *Kavu'a* is also applied to illegitimate children, accidental marriages, rape, and other situations (*Id.*; *Nazir* 11b-12a; *Kiddushin* 73a).

Given the diverse Talmudic invocations of *kavu'a*, Jewish scholars have long struggled to understand and define *kavu'a*. The Ran and others include *kavu'a* in the Talmudic category of "*hiddush*," laws that appear illogical and therefore cannot be extended beyond the circumstances where originally invoked.[1] The Ran is not alone in struggling to find a common thread between the various Talmudic applications of the law of *kavu'a*.[2] In a number of recent articles, Dr. Moshe Koppel has tried to

present a holistic approach to *kavu'a*, but even he admits that his approach is "somewhat counterintuitive" in many applications.[3]

This article proposes that there is an intuitive approach to *kavu'a*: The Talmud invokes *kavu'a* where the simple statistical heuristic of following the majority fails because of the interference of human bias.

To wit: Normally, in cases of risk, the majority is predictive of outcomes. If you have a box with nine red balls and one black ball, and you close your eyes and pick one, there is a 90% chance that you will have a red ball. Halakha recognizes as much. Relying on the biblical rule that you follow the majority, "*Aharai rabim le-hatot*" (Exodus 23:2), the Talmud rules that in the case of a town with nine kosher stores and one non-kosher store, a randomly found piece of meat is assumed to come from the majority of stores and is kosher (*Pesahim* 9b).

However, once the question involves peoples' perception, recall, or intent, the simple statistical heuristic fails. If my son is running around with nine other children, and I throw a football "randomly" to the children, I might be more likely (consciously or subconsciously) to throw towards my son. Or, if I am upset with him, perhaps I might throw away from him. The likelihood that any given child will catch the football therefore is not necessarily 10%. My son's likelihood could be significantly higher or lower, and, correspondingly, other children's could be significantly lower or higher. Likewise, if my son is hanging out with nine other children, and my son says something rude, I might convince myself that it is unclear who said it—a phenomenon known as selective perception. Or, I might later selectively forget that my son was the one who made the rude comment—recall bias.

In a town with nine kosher stores and one non-kosher store, if the person cannot recall which store he went to, then there is no reason to assume that there is a 90% chance that he went to a kosher store. The probabilities are affected by what causes him, consciously or subconsciously, to go to one store over another or to remember or forget which store he went to: Perhaps he is more likely to forget that he went to the non-kosher store because that will allow him to eat the meat; perhaps he is more likely to forget in cases where he went to the kosher store, because that is his normal behavior.[4] That 90% of the local stores are kosher

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is insufficient to determine the probability. That is why the Talmud treats this case as one where the chances of the meat being kosher or not are equal (*Pesahim* 9b).

The distinction between *kavu'a* and *parish* in Talmudic terms maps onto the distinction that the economist Frank H. Knight draws between "uncertainty" and "risk." Knight contrasts a person who reaches into a box of black and red balls and knows how many of each there are ("risk") with a person who reaches in and has no idea how many of each there are ("uncertainty"). In the former case, the person can evaluate the probability of pulling out a ball of a given color. In the latter case, one does not know the probabilities, and, "practically, if any decision as to conduct is involved," a rational person "would have to act on the supposition that the chances are equal."[5] But, as Knight recognizes, there can be "uncertainty" even where the various outcomes are knowable, so long as "the results show 'bias.'" For example, say you know that 70% of the balls are red, but the black balls are somewhat stickier, then you do not know the probability of getting any specific ball. As Knight summarizes:

> The practical difference between the two categories, risk and uncertainty, is that in the former the distribution of the outcome in a group of instances is known (either through calculation *a priori* or from statistics of past experience), while in the case of uncertainty this is not true, the reason being in general that it is impossible to form a group of instances, because the situation dealt with is in a high degree unique.[6]

Replace Knight's "risk" with the Talmud's "*parish*" and Knight's "uncertainty" with the Talmud's "*kavu'a*," and you have the Talmudic approach. Where you know that the distribution of outcomes is random, the Talmud assumes the outcome will follow the majority. But where there is bias in the distribution—e.g., because it depends on people's perception, recall, or intent, which are biased—the distribution of outcomes is not known, so it is *kavu'a* and the Talmud acts on the supposition that "the chances are equal," exactly as Knight suggests.

The body of this article analyzes the Talmudic discussions of *kavu'a*. Before launching into all the various relevant texts, it is helpful to examine three strong proof texts—which also represent the three types of discussions of *kavu'a* in the Talmud. The first text, described above, is the case of ten stores. Even where you know the distribution of stores, i.e.,

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[5] Frank H. Knight, *Risk, Uncertainty, and Profit* (Boston, MA: Hart, Schaffner & Marx; Houghton Mifflin Company, 1921), 219.

[6] Knight, 233.

9:1, where you do not know the "distribution of outcomes," as Knight puts it, the case is *kavu'a*. Since forgetting is itself not random, the fact that you forgot itself biases the results.

The second proof text requires understanding two background precepts of Jewish law: (1) the murder of a Jew is a capital crime, but the murder of a *Kuti* is not, and (2) capital murder requires intent. Despite the requirement of intent, the *Hakhamim* believe that if a murderer tries to kill one Jew but instead kills another Jew, there is what American law describes as transferred intent, and the murderer is killed. However, relying on the intent requirement, the *Hakhamim* rule that if the murderer throws a stone into a group of ten people, nine Jews and one *Kuti*, the stone thrower is not punished with death, because the case is *kavu'a* (*Ketubbot* 15a).

The case of throwing a rock into a group of people is analogous to the football example above. There is no reason to assume that a person who throws a rock into a crowd has equal intent for every member of the crowd. The person may be specifically biased for or against *Kutim* generally or for or against one of the other members of this group in particular. Accordingly, courts cannot simply assume that the person intended to kill someone from the majority of the people in the crowd. Thus, the case of throwing a stone is analogous to the other cases of *kavu'a* as it, too, involves bias.

The third proof text relates to a group of animals where all but one is fit for a sacrifice. It is not clear from the Talmud why, but this original mixture of animals is *kavu'a*, and, therefore, none can be sacrificed. The Talmud rules that one can remove the *kavu'a* status by moving the animals around (*Zevahim* 73b). Both Tosafot and the *Shita Mekubetset* interpret the Talmud as requiring that the animals move when no observer is looking. This approach is consistent with the framework presented above. By having the animals run around behind an observer's back, the observer loses any subconscious information he might have had, thus converting a question of memory and bias into a simple statistical question where one follows the majority.

This article proceeds to analyze all the discussions of *kavu'a* in the Talmud in the order they appear and shows that they can be understood with the framework described above. The final section shows some difficulties with Dr. Moshe Koppel's recent attempts to make sense of *kavu'a*.[7]

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[7] It is worth noting that some of the Talmudic discussions of *kavu'a* relate to areas of Jewish law that are deeply problematic to modern sensibilities. This article is interested only in trying to interpret the texts on their terms.

THE SCOPE OF THIS ARTICLE

This article tries to find an internally consistent explanation for every Talmudic discussion of *kavu'a*. The article posits that the intuition described above is the through line for all the Talmudic discussions. In analyzing the Talmudic passages, the article selects an explanation consistent with this intuition. Frequently, that explanation is found in Tosafot (although not in *Yoma*, as discussed below), suggesting that Tosafot's view of *kavu'a* is similar to the approach described above. In some cases, there are other interpretations that are also consistent with the approach that is proposed. At the same time, the author recognizes that other *Rishonim* and *Ahronim* read or apply some Talmudic discussions of *kavu'a* in a manner that is inconsistent with the approach outlined above. This article's goal is not to provide a unifying theory that explains every *Rishon* or *Aharon*—only every relevant Talmudic passage.

THE TALMUDIC DISCUSSIONS OF *KAVU'A*

Berakhot 28a

Initially, R. Gamliel was the head of the Talmudic academy, but he was deposed and Rabbi Elazar ben Azaryah was put in his place. The Talmud recounts numerous episodes that occurred on the day of R. Elazar's ascendance, one of which is from a Mishnah in *Yadayim* 4:4:

> On that day, Yehuda, the Ammonite convert, came before (the Rabbis) and asked: Am I allowed to marry a Jew? Rabban Gamliel said no, but Rabbi Yehoshua said yes. Rabban Gamliel asked Rabbi Yehoshua, "Does it not state: 'An Ammonite and Moabite shall not enter into the congregation' (Deuteronomy 23:4)?" Rabbi Yehoshua responded: "Are Ammon and Moab in their original places? King Sanheiriv already scrambled the nations" (so that we do not know which nation is which)... (The Talmud explains that) "anyone who comes out (from Ammon and Moab is assumed to), come from the majority."

This is a simple case where we follow the majority. We do not know, and cannot know, anything about Yehuda's real lineage—as the fact that he comes from the location of Ammon does not indicate that he is descended from the forbidden Ammonites. Since most people are not Ammonites, simple statistics tell us Yehuda is not one. Thus, there is no reason to apply *kavu'a*, and the Talmud does not. Instead, it uses the

phrase "anyone who comes out" ("*parish*"), which is the opposite of *kavu'a*.

Shabbat 69b

> Rav Huna said: One who is walking in the desert and does not know when Shabbat is, he counts six days and treats the seventh as Shabbat... Rava said: (The person) makes only enough food to survive, except on that day (that he keeps as Shabbat). (The Talmud now asks:) On that day he should die? On the day before he should make enough food for two days. But maybe the day before is Shabbat? Rather, every day he does the minimum amount necessary to survive, even on the day he keeps as Shabbat. How is the day he keeps as Shabbat special? He recites *kiddush* and *havdala*.

Though not expressly stated, the *Rishonim* generally appear to treat the prohibition against doing more work than necessary on any of the days as a simple application of the law that you have to be strict when there is an uncertainty about a Torah law, rather than as some rabbinical prohibition.[8] The Magen Avraham (*Orah Hayim* 344:1) asks why the deserted person cannot assume each day follows the majority of days, which are not Shabbat. He answers, "*kavu'a*."[9] The Talmud does not tie this case to *kavu'a*, but the Magen Avraham's point is well taken. Why not follow the majority? Why not permit work every other day, because most days are not Shabbat? In the paradigm presented here, this is a classic case of *kavu'a*: Since forgetfulness is not random, the person's lack of knowledge is potentially biased, so the deserted person cannot follow the majority.

Pesahim 9a-b

> Mishna (9a): (Once a person has cleaned his house for Passover,) he does not need to worry that a rodent dragged *hamets* from some other house into the house.

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[8] Rambam (*Hilkhot Shabbat* 2:22) describes the prohibition as arising from the possibility of violating Shabbat. Rashi and Ran explain that the person cannot make double the food on the day before he keeps Shabbat, because he might violate Shabbat when he does not need it to save his life (Rashi s.v. *ve-Dilma*; *Ran* on *Rif*, 31a s.v. *ve-Kol*). Ritva (s.v. *ve-Hahoo*) says that, if he can survive, the deserted man may not do any work, because it might be Shabbat, and he is only permitted to do work to save his life. Or Zaru'a (2:15) says the man can carry every day, because the prohibition against carrying in the desert is only Rabbinic. None of these *Rishonim* suggest that any leniency applies on the grounds that the stringency is only Rabbinic. However, Ramban (s.v. *Be-mai*) assumes the prohibition is only Rabbinic.

[9] See also *Bi'ur Halakha* 344 s.v. *Afilu*.

> Gemara (9b): (If there are) nine bundles of matza and one of *hamets*, and a mouse came and took (a portion of one), but we are not sure if it took matza or *hamets*, this is the case of (the *baraita* concerning) ten stores (quoted below). If the mouse took the portion from a bundle that had been previously separated from the others, and then the mouse came and took it, this is the latter case (in the *baraita*). For the *baraita* taught that if there are nine stores selling kosher meat and one store selling non-kosher meat and a person bought meat from one but does not know from which, then the meat is prohibited. However, if he finds a piece of meat, he can assume it came from the majority of stores.[10]

It is unclear from the Talmud what we knew about the mouse. Tosafot (s.v. *Hainu*) note that in *Hulin* 95a the Talmud says that when meat is found in the hand of a *Kuti* we follow the majority. Why then is food in the mouth of a mouse treated as *kavu'a*? Tosafot conclude that we must have seen the mouse take the food from the bundles. Similarly, *Shita me-Kubetset* (*Zevahim* 73b) reads the discussion here as a situation where we know which bundles are matza and which are *hamets* and the mouse took food from the bundles in our presence, but we did not see from which.

Tosafot and *Shita* thus understand the case of the mouse as one where you know which bundle is which and you saw the mouse take food from the bundle—the uncertainty is that you cannot reconstruct in your mind the bundle from which the mouse took the food. That is exactly analogous to the case of ten stores (analyzed in the introduction), just as the Talmud says it should be. It is a case where the uncertainty relates to your consciousness—where there may be perception or recall bias—and the simple heuristic of looking for the majority (of stores or mounds of food) is inappropriate.

Yoma 84b

> Mishna (83a): If a rockslide falls on a person, maybe he is still there and maybe he (escaped and) is not, maybe he is alive and maybe he is not, maybe he is a *Kuti* and maybe he is a Jew; the debris is removed. If the person is found alive, continue removing the debris. If the person is dead, leave him.

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[10] According to Jacob Epstein, the mouse discussion here is Savoraic. See Jacob N. Epstein, "Remains of a Babylonian Sugya and exchanged Baraitot," *Tarbits* 17:1 (1946), 23.

Gemara (84b): Rav Yosef said in the name of Rav Yehuda who said in the name of Shmuel: One does not follow majorities when it comes to saving a life. What case is at issue? (If it is the case where) there are nine Jews and one *Kuti*, the majority are Jews anyway. If half are Jews and half are not, we would be lenient anyway (even without Shmuel's law that you can ignore majorities). Rather, the situation is where there are nine *Kutim* and one Jew. But this too is obvious, because it is *kavu'a*, and every case of *kavu'a* is treated like a half-half uncertainty? It is necessary for cases where people went to another courtyard. You would have thought that those who left, left from the majority, but (Shmuel's rule) teaches us that you do not follow majorities when it comes to saving lives. But did not Rabbi Asi say in the name of Rabbi Yohanan that if there are nine *Kutim* and one Jew among them in a courtyard and a wall falls on one, then, in the original courtyard, one can save them, but if they are in a different courtyard one cannot? This does not present a contradiction: Here (in Shmuel's case) all the people left the original courtyard, whereas there (in Rabbi Yohanan's case) only some of the people left.[11]

The simple reading of the distinction between Shmuel and R. Yohanan is that if all the people leave the first courtyard and go to the second courtyard we would no longer apply the law of *kavu'a*, and—but for the special law that you do not follow majorities when it comes to saving lives—we would normally follow the majority. The obvious question, asked by Tosafot (s.v. *Ha*), is that once all the people have gone to the second courtyard, how is the second courtyard any different than the first? Tosafot propose reading into the text that everyone but one person also left the second courtyard, and the wall fell on the remaining person. This is a difficult interpretation, as the Talmud expressly discusses people moving from the first courtyard to the second and never mentions anyone leaving the second courtyard.

In the framework of this article, there is a simpler answer. As the *Rishonim* explained in *Pesahim* 9b, we assume the person who is considering removing the wall could have known who was a Jew and who was a *Kuti* in the first courtyard. (Otherwise, how would the person even know the number of each?) After the wall fell on one of the people in the first courtyard, the observer is unsure where the various people had been living. This doubt in consciousness is, like every other doubt, treated as a 50/50 risk because of the possibility of bias. On the other hand, if all the people moved from

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[11] Rambam and Rosh have a different text, where, in Shmuel's case, only one person left the first courtyard to go to the second. This article does not analyze their version.

the first courtyard to the second courtyard, and the wall fell there, then there is no way the observer could have known on whom it fell. The observer never had any information about who was where in the second courtyard. Therefore, we would typically follow the majority and not remove the wall. However, because this case involves saving a life, we do remove it.

This distinction hearkens to the distinction between things that move and things that do not, as Rashi here notes (s.v. *Lo Tserikha*). This will be discussed in greater detail in the context of *Zevahim* 73b, which analyzes moving animals to get rid of *kavu'a*.

As a final point, this is the first Talmudic reference to "*kavu'a*," which literally means "set." Things that are "set" are treated like a 50/50 uncertainty. This means that in situations where the situation is "set" and the doubt arises from an observer's consciousness, we treat any uncertainty as a 50/50 because of the possibility of bias. By contrast, where the situation itself is in flux ("*parish*"), and there is no perception/recall bias, we follow the majority.

Yevamot 16b

> Rav Yehuda said in the name of Rav Asi: If a non-Jewish man marries (a Jewish woman) nowadays, we worry that the marriage is valid, lest the man came from one of the ten lost tribes. However, (do we not have the principle that) anything that comes out, comes from the majority? ("*Kol diparish mi-ruba parish*") (The above ruling only applies where the non-Jew comes from) a place where the lost tribes are situated ("*Kivi'ei*").

Rashi (s.v. *bi-Dukhta*) interprets the answer that the person came from a place where the lost tribes are situated as referring to the law of *kavu'a*. Tosafot (s.v. *bi-Dukhta*) disagree and say that this is not a case of *kavu'a*. Instead, Tosafot interpret the Talmud as saying that the non-Jew came from a place where the majority of people come from the ten tribes, so that it is a simple case of following the majority, because the majority of people in that city are from the lost tribes.

Like Tosafot, I do not see how to make this case fit with any notion of *kavu'a*, including the one presented in this article. Thus, like Tosafot, I am forced to interpret this as a case that is unrelated to *kavu'a*—notwithstanding the undertones of the text.

Ketubbot 14b-15a

By way of background to the Talmudic discussion in *Ketubbot*: A woman who has intimate relations with certain men, such as a *mamzer*, is

prohibited from marrying a kohein. The Talmudic phrase for other men, those with whom a woman could have an intimate relationship and not be forbidden from subsequently marrying a kohein, is "*masi'in li-kehuna*." There is a running dispute between R. Gamliel and Rabbi Yehoshua in *Ketubbot* concerning cases where a woman sleeps with a man, and there is no definitive proof about who the man is: R. Gamliel is lenient and Rabbi Yehoshua is stringent. For additional background, see *Ketubbot* 12b and 13a.

> Mishna: Rabbi Yosi recounted an incident where a young girl was raped as she was going to draw water from a spring and Rabbi Yohanan ben Nuri ruled that if the majority of men in the city are *masi'in li-kehuna*, then she is permitted to marry a kohein.
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> Gemara: Rava asked Rav Nachman: Whose view is Rabbi Yohanan ben Nuri following? If it is that of Rabban Gamliel, even if the majority of men are not *masi'in li-kehuna* she should be permitted to marry a kohein; and if he holds like Rabbi Yehoshua's view, a majority should be insufficient. He (Rav Nachman) responded … that (she is permitted to marry a kohein) if the majority of the city (are *masi'in li-kehuna*) so long as the majority of the visitors to the city are also (*masi'in li-kehuna*). We do not follow the majority of the city alone nor do we follow the majority of visitors alone. Why? The Rabbis decreed that one should not permit based on the majority of visitors lest one come to permit based on the majority of the city. And the majority of the city (being *masi'in li-kehuna*) would not be a problem if the man came to her, because anyone that comes out, comes from the majority. The decree is needed in case she goes to the man, whereby he is *kavu'a*, and Rabbi Zeira taught that every case of *kavu'a* is like a half-half uncertainty…
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> How does Rabbi Zeira know (that *kavu'a* applies in every case)? If from the *Baraita* of ten stores (discussed above in the discussion of *Pesahim*) …, but *kavu'a* is a stringency in that case? If from a *Tosefta* that teaches that if there are nine frogs (an animal that is not impure) with one impure *sherets*, and a person touched one but he does not know which, we are stringent and treat it as impure—but this too is a stringency? Rather, from a *Baraita* that holds that where there are nine *sheratsim* and one frog and the person touches one but is not sure which, in a private domain we assume the person is impure, but in a public domain the person is pure.
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> And from where in the Torah do we derive the law of *kavu'a*? Deuteronomy (19:11) teaches that a person who "waits in ambush for *him* and assaults *him*" is killed… The Sages of the house of Rabbi Yanai use this to derive that

a person is not killed for throwing a stone into a group of people. What is the case? … It is where there are nine Jews (whose murder is a capital crime) and one *Kuti* (whose murder is not a capital crime), and the *Kuti* is considered *kavu'a*, and every case of *kavu'a* is like a half-half uncertainty.

There are three relevant *kavu'a* discussions here. The first is that if the woman goes to the rapist, then it is *kavu'a*, but if the rapist comes to the woman we follow the majority. Why does this matter? To understand this, we first need to understand what the uncertainty is: Is it that we do not know who the man is or is it that the woman does not know? The *Yerushalmi* on this Mishna explains that even R. Yehoshua agrees that the woman is believed if she can identify the rapist.

Thus, as Tosafot (s.v. *ke-Man*) note, the situation in *Ketubbot* must be that the woman cannot identify the rapist. The contrast between the woman going to the rapist's house and the rapist going to the woman's house makes sense based on the paradigm presented here. If the woman went to the rapist's house but simply cannot remember where that was and who he was, then there is the possibility of recall bias and we cannot follow the majority. After all, she went to his house once, so she may subconsciously know who he is or at least be able to retrace her steps, and thus determine if the rapist is *masi li-kehuna*. If the rapist came to her, then it is likely she never knew who he was, and she has no way to figure that out now. Therefore, we follow the majority.[12]

The other two cases are explained earlier in the article. The case of nine frogs and one *sherets* is analogous to the case of ten stores in *Pesahim*. The inability to remember if the person touched a *sherets* or a frog necessarily brings up perception- and recall-bias problems, just like in the case of ten stores.

The derivation from the verse in Deuteronomy was analyzed in the introduction. There is no reason to assume that a person who throws a stone into a group of people does not have a specific target in mind. Because intent is involved, the target is not random. Therefore, the simple statistical heuristic of following majorities fails.

Nazir 11b-12a

Rabbi Yitshak ben Yosef said in the name of Rabbi Yohanan: If a principal sends an agent to marry the principal to a woman without specifying

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[12] If we do not care what the woman knows then this case is identical to that in *Kiddushin*, discussed below.

which woman, the principal is prohibited from marrying any woman in the world, because there is a presumption the agent did his duty: Since the principal did not provide explicit instructions, he does not know to which woman the agent married him.[13] Reish Lakish questioned Rabbi Yohanan (from the Mishna in *Kinim* 2:1 that provides: When a person sets aside two birds in a coop for sacrifices, one as a *hatat* sacrifice and one as an *olah* sacrifice), if the person had not yet chosen which bird was to be which sacrifice and one bird flew away, got lost with prohibited birds, or died, he can simply take another bird; if the person had already specified which bird was which, then the other bird has no remedy, but all other birds in the world are not prohibited. (Resh Lakish's question is that, according to Rabbi Yohanan,) why do we not prohibit every bird in the world lest it be the one that flew away? Rabbi Yohanan answers: I ruled regarding women who do not move, but your case concerns prohibitions (birds) that do. And lest you ask that women also move, because perhaps the woman was in the market at the time the agent married her, women return to their place of resting, but birds do not return to their coops.

Before delving into the potential issue of *kavu'a*, there is a critical textual question. What happened to the agent in this case? Why can we not just ask him who (if anyone) he married? The Bah amends the text to state that the agent died. This is presumably based on the similar Talmudic discussion in *Gittin* 64a-64b which states:

If a husband says "I gave a bill of divorce to a person to act as an agent and divorce my wife," the agent agrees, and the woman says that the agent delivered the bill of divorce and she subsequently lost it, Rabbi Yohanan says (she is not divorced, because) divorce relates to illicit relations and therefore requires two witnesses.... Why do we not presume that an agent did as he was instructed, as Rabbi Yitshak taught: "If a principal tells his agent to marry a woman without specifying which one, and the agent dies, the principal is prohibited from marrying every woman in the world, because we presume the agent did his duty?" This is only for stringencies, not leniency.

There are three relevant distinctions between these two texts: First, *Gittin* says the agent died, while *Nazir* does not. Second, *Gittin* cites R. Yitshak, while *Nazir* cites R. Yitshak ben Yosef in the name of R. Yohanan. Third, *Gittin* makes no reference to *kavu'a* while *Nazir* does.

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[13] Any woman may be his first wife's relative and thus forbidden to him.

There are three possible resolutions to the conflicting texts: (a) the correct text for both passages should not mention the agent's death; (b) the correct text for both passages should mention the agent's death; or (c) both texts are accurate, and in *Gittin* the agent died, but in *Nazir* he did not.

(a) The agent is alive in both cases

If the agent is alive, why not just ask him? Obviously, he either does not remember or is somehow indisposed. We are therefore left to wonder whether the agent completed his mission at all, and, if so, what woman did he marry? If the agent forgot, then this could be considered a typical case of *kavu'a*. His forgetfulness is potentially biased, and, at least based on the principle of agency, this biased uncertainty is attributed to the principal.

If the agent is indisposed, then this is not the normal case of *kavu'a*, because we have no reason to suspect that the principal or agent have any subconscious knowledge. Tosafot suggest this is only a rabbinic prohibition because this case is similar to the case of *kavu'a* (Tosafot s.v. *Asur*; *Isha*).[14] If a person married a woman, but he was just not sure which woman, it would be a standard case of *kavu'a* because of the possibility that he could just retrace his steps, and any lack of knowledge is subject to bias. See discussion of *Kiddushin* 73a (below). (This argument is not true for pigeons, which move around, where, even if you knew where one was originally, you would have no way to know where it is now.) Though bias does not exist here, rabbinically these cases are treated as analogous. This ends up being a serious stringency, as the principal can no longer get married, but, as Tosafot explain (s.v. *Asur*), this punishment is just. A person should not willy-nilly send an agent to marry a woman with no instructions as to which woman.

(b) The agent is dead in both cases

If the agent is dead, and we never had an opportunity to ask him, it is hard to see this as a case of *kavu'a*. The principal has no way to know to whom he is married. However, as noted above, Tosafot (s.v. *Asur*; *Isha*) read this as only a rabbinic prohibition. Such a rabbinic decree is logical, because this case is very similar to *kavu'a*, as explained above.

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[14] Ramban (cited in the Ran on the Rif to *Gittin* 30a) and the Rosh (*Nazir* 12a) treat this as forbidden from the Torah, based on *hazaka*.

(c) In Gittin the agent is dead, but in Nazir he is not

The last possibility is that both our texts are accurate. *Gittin*, which mentions the agent's death, does not hint at *kavu'a* and is certainly talking about a rabbinic law, as evidenced by the fact that the law would only apply for stringency. In *Nazir*, where the agent is alive, the case is related to *kavu'a* as explained above in subsection (a).

Kiddushin 73a

By way of background: Children of certain illicit relationships are *mamzerim* and are forbidden from marrying ordinary Jews. The Mishna (69a) discusses a person who can identify his or her mother but not father. He/she is called a *shtuki/t*. The Mishna implies that a *shtuki* cannot marry an ordinary Jew. The Talmud analyzes this law:

> Rava said: By Torah law a *shtuki* is kosher (to marry an ordinary *Yisraelit*). Why? Most people with whom the mother might have had relations with are not forbidden (and their child would therefore not be a *mamzer*) and only a minority are (forbidden). If the (unknown) father went to the mother's house, anything that comes out, comes from the majority. Lest you say that she went to the father's house, it is a case of *kavu'a* that is treated as a half-half uncertainty, and the Torah only prohibits a definite *mamzer*.

As with the case in *Ketubbot*, we need to first understand the uncertainty. The Ran (page 30b in the Rif, s.v. *Aba*) notes that the woman's testimony is legally irrelevant. Therefore, unlike in *Ketubbot*, the uncertainty here is the court's uncertainty—independent of what the woman knows or claims to know. Correspondingly, Ramban (s.v. *Ha*) explains that when the Talmud discusses the man going to the woman or vice-versa, it is a case where the court saw him. The court, obviously, knows nothing about the man other than what it sees. If it sees the man going to the known mother, then it has no information about the man and it follows the majority. If the court sees the woman going to the man's house, then the court has information about the location of the man. To the extent the court cannot recall this information, the case becomes *kavu'a*, and it is therefore treated as a 50/50 uncertainty because of the problems of recall bias. Ultimately, though, as the Talmud concludes, this does not end up mattering since the child is kosher according to biblical law either way.

The Mishna in *Zevahim* 70b-71b addresses the situation of a "*hatat ha-meita.*" A *hatat ha-meita* is an animal that was designated for a sin of- fering but, for one of several reasons, cannot be brought as a *hatat* and must die. The Mishna, as glossed by the Talmud, rules that if one *hatat ha-meita* gets mixed in with 10,000 kosher sacrifices, they all must die.

> Why are (the *hataot ha-meitot*, which are the minority) not ignored (based on the fact that the majority of the animals are kosher sacrifices)? … Rav Ashi says everyone agrees that animals are important and therefore cannot be ignored. Why not pull one of the animals out and sacrifice it because anything that comes out comes from the majority? If we pull one out it is *kavu'a* and every case of *kavu'a* is treated as a half-half uncer- tainty. So push the animals so they run around and say anything that comes out comes from the majority? … Rava says: (It is a rabbinic prohi- bition) lest you take from something which is *kavu'a*.

This is a difficult Talmudic passage. First, what is the case of *kavu'a* that is being discussed? Tosafot (s.v. *Ela* and *Hulin* 95a s.v. *Sifaiko*) say the whole situation is not really *kavu'a* because *kavu'a* only applies to situations where we know where the forbidden object is. Rather, Tosafot believe it is a rabbinic decree based on the significance of living animals.

Tosafot's definition of *kavu'a* is consistent with the definition of *kavu'a* of this article—*kavu'a* is where you know where the forbidden and permitted groups are and you just cannot recall how the object you have relates to those groups, thus raising questions of recall bias. The dif- ficulty, as Tosafot recognize, is that the fact that the Talmud prohibits running the animals around lest one takes from *kavu'a* suggests the case of *kavu'a* is a Torah prohibition.

I would suggest that this case can be read as *kavu'a*, if you assume the case is one where you saw the *hatat ha-meita* come into the group, but you just cannot recall which animal it was. Or, consistent with Tosafot, the rabbis decreed that we treat this mixture as if you knew and forgot where the *hatat ha-meita* was, because animals are important.

Second, how does it help to run the animals around? Both Tosafot (s.v. *ve-Nikhbeshinhu*) and the *Shita me-Kubetset* say the animals that leave the group of running cattle do so behind our back. These interpretations are consistent with the approach explained above. By making the animals run around behind your back, you lose any information you ever had about them. Thus, what was previously potentially subject to perception or recall bias (or, according to Tosafot, what was previously treated as

analogous to a situation subject to such bias) is now a simple statistical question: There are 10,000 animals and you have no way to know, consciously or subconsciously, which is the *hatat ha-meita*. The normal statistical heuristic of following the majority then applies.

Repeated Talmudic Passages
- *Bava Kamma* 44b and *Sanhedrin* 79a both quote the derivation of the law of *kavu'a* from Deuteronomy (19:11), analyzed above in the discussion of *Ketubbot*.
- *Hulin* 95a and *Nidda* 18a both quote the Baraita about ten stores, analyzed above in the discussion of *Pesahim*. Additionally, *Nidda* quotes the Baraita about ten animals (frogs and *sherets*) analyzed above in the discussion of *Ketubbot*.

THE DIFFICULTIES WITH DR. KOPPEL'S APPROACH

In a series of recent articles, Dr. Moshe Koppel has suggested that the principle of *kavu'a* applies where an item is viewed as part of a "set."[15] To illustrate, he considers two examples, in both of which there is a box that contains nine white balls and one black ball. *Example 1*: If you took a ball out and asked what color it was, you could say black or white and you might be right or wrong. *Example 2*: If you ask "what is the color of a random ball in this box?" it does not make sense to say black or white. The set is a mixture (as is a random ball). According to Koppel, cases where the question relates to the set are *kavu'a*. A clean example of this is the case in *Ketubbot* of throwing a stone into a group of people. It is possible the thrower's intent was just to throw the stone into the set of people—and was not focused on any one person.[16] Thus, Koppel sees this as intent to throw the stone into the "set" of people, and the Talmud treats intent for the set as insufficient for capital liability.

Koppel's approach, however, does not fit many of the other Talmudic discussions. The case in *Pesahim* of ten stores, where one buys meat but does not recall from where, is more analogous to Example 1, yet—"somewhat counterintuitively," Koppel admits—the Talmud treats it as *kavu'a*,

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[15] See above n.3.
[16] It bears noting that Tosafot (*Bava Kamma* 44b s.v. *kol*) assume that *kavu'a* would also apply where the thrower was aiming at a specific person in the group, which is inconsistent with Koppel's approach.

because, "prior to its being bought," the meat is part of a set.[17] But why should we look to the moment "prior" to its being bought? And, even on Koppel's own terms, why, when the meat is in the store, do we look at the set of stores? In *Ketubbot*, why do we view a man who rapes a woman in her house as an individual, but we look at the man who rapes a woman at in his house as part of a set?

In his Hebrew articles, Koppel also recognizes that, "on its face," it is more intuitive to read the phrase "*Kol kavu'a ke-mehtsa al mehtsa*, every case of *kavu'a* is like half-half uncertainty," as suggesting that *kavu'a* is treated like a symmetric uncertainty where there are two elements. In Koppel's approach, however, *kavu'a* really means that we consider it as only a single set, not as a symmetric uncertainty.[18]

In sum, Koppel's approach really only explains the case of throwing a stone into a group of people. His interpretations of the rest of the Talmudic discussions of *kavu'a* are, at best, arbitrary—and at times inconsistent with the text.

CONCLUSION

This article explains that the Talmudic concept of *kavu'a* reflects the intuition that people's consciousness is not randomly distributed. As the economist Frank Knight explains, logical people facing uncertainties that are based on consciousness "would have to act on the supposition that the chances are equal," and that is precisely what the Talmud does. The article shows that this logical approach fits with all the Talmudic discussions of *kavu'a* (although, certainly, not with every commentator's gloss of these texts).

Returning to where we began, the Ran (*Hulin* 33b in the pages of the Rif, s.v. *Amar*) rules that a person can follow the majority if he buys meat from a store and later learns that there was a non-kosher piece of meat in the store. (The consequences of a different ruling could be draconian.) The Ran asks why this is not a case of *kavu'a*. He answers that

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[17] Koppel (2003), 37.

[18] Koppel (1996-1997), 49. By contrast, in his 2003 article, Koppel claims that interpreting the phrase half-half as referring to a mixture of equal amounts is "utterly anachronistic" (40). I do not see why. "Half-half" is the simplest way of describing a mixture where half the items are of one sort and the other half are of a different sort. Indeed, in a number of places, such as in *Yoma* 84b (discussed above), the Talmud contrasts cases of 9:1 majorities with half-half situations. Thus, the Talmud itself uses half-half as the paradigm of a symmetric uncertainty.

the law of *kavu'a* is a novelty (*hiddush*) and therefore cannot be extended, even where such extension would seem to be logical. This article avoids relying on the concept of *hiddush*: *Kavu'a* cannot apply where one later learns that there was a piece of meat somewhere that was not kosher. The bought piece of meat remains a random piece.

To be completely precise, in many cases where we follow the majority there is some far-fetched way to tie in the possibility of bias. Perhaps kosher meat is more expensive and people are more careful with it. Thus, conceivably, the chance that a piece of meat is lost is not completely independent of whether it is kosher or not. Perhaps even when the man came to the woman's house she might have known who he was and, because of bias, forgot. But, the Talmud ignores far-fetched possibilities. Memory being biased is not far-fetched at all. Thus, in cases of lost memory, the Talmud does not follow the majority.