

The Problem with Double Dipping: Ma'areh Shenit in Dyeing Tekhelet

By: BARUCH STERMAN

Introduction

Close to 30 years have passed since one of the most remarkable and unique events in halachic history took place: Rabbi Eliyahu Tavger succeeded in producing the first threads of *tekhelet* in over 1300 years. This circumstance exposed a singular situation within Jewish law, since it was a unique case where a mitzvah was completely lost to *mesorah*, to Jewish legal tradition, and then reinstated. As such, it has generated a substantial amount of halachic literature and debate.¹ Virtually all of that discussion has focused on two areas, the first being whether Rabbi Tavger is correct in his assertion that the *Murex trunculus* sea-snail is the genuine *chillazon* of the Talmud.² A second area of contention has been the method of tying

¹ It has also been the subject of many secular papers and books relating to all aspects of murex dyeing from its use and importance in the ancient world to the dye chemistry of the substances obtained, the anatomy of the snail, the methods the ancients may have employed and even the physics of generating the color blue in the universe. One thing, however, seems to be a consensus within the scientific community, perhaps most aptly put by Nobel laureate Prof. Roald Hoffmann, “There is no question in my mind, nor in the minds of leading scientific authorities... that [those who dye with *Murex trunculus*] have rediscovered *tekhelet*.” (Prof. Hoffmann, in a video lecture at Cornell University that can be seen here: <https://youtu.be/NAhOlvSnus> at 27:15).

² One might claim that there are really two questions here: 1) is the murex indeed the authentic *tekhelet-chillazon*, and 2) even if that is the case, can a halacha be reinstated given the loss of a direct *mesorah*. In fact, however, virtually all treatments of the topic mix these two questions to some degree in that the latter is seen as an issue primarily because there seems to be some uncertainty regarding the former. See, for example, the writings of Rabbi Shlomo Aviner, one of the strongest proponents of the *mesorah* requirement. Though making the case that *mesorah* is essential, he restricts this to cases that, by their very nature

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tekhelet tzitzit, taking into account the three-way *machloket* amongst the Rishonim as to the ratio of *tekhelet* to white strings, along with the less critical question of how precisely to arrange the various knots, twists, and groupings in the macramé-like tying of the *tzitzit*. To hazard a prediction, both of these questions will most likely be decided as per Hillel Hazaken's recommendation, "Leave it to the Jewish people; if they are not prophets, then they are the sons of prophets" (*Pesachim* 66a).

In this article, I would like to address a different class of halachic problem relating to *tekhelet*, one that has received virtually no treatment hitherto, namely issues relating to the actual production and preparation of *tekhelet*, in particular, the question of *ma'areh sheni*, the "second dipping" of the wool into the dye vat and its permissibility for use as kosher *tekhelet*. This is not merely an arcane or academic discussion, but rather has immediate and far-reaching ramifications regarding the efficiency of production and the amount of murex-*chillazon* snails required, which ultimately affects the price of the *tekhelet* strings.

What is *Ma'areh Sheni*?

The primary source for this issue is the Gemara in Menachot (42b)

אמר ליה אביי לרב שמואל בר רב יהודה הא תכילתא היכי צבעיתו לה אמר ליה מייתנין דם חלזון וסמנין ורמינן להו ביורה [ומרתחינן ליה] ושקלינא פורתא בביעתא וטעמינן להו באודרא ושדינן ליה לההוא ביעתא וקלינן ליה לאודרא שמע מינה תלת שמע מינה טעימה פסולה ושמע מינה דבעינן צביעה לשמה ושמע מינה טעימה פסולה היינו טעימה פסולה היינו צביעה לשמה אמר רב אשי מה טעם קאמר מה טעם טעימה פסולה משום דבעינן צביעה לשמה כתנאי טעימה פסולה משום שנאמר (שמות כח, לא) כליל תכלת דברי ר' חנינא בן גמליאל רבי יוחנן בן דהבאי אומר אפילו מראה שני שבה כשר משום שנאמר (ויקרא יד, ד) ושני תולעת.

Abaye said to Rav Shmuel bar Rav Yehuda: This *tekhelet*, how do you dye it? He answered: We take the blood of the *chillazon* and ingredients, and we put them in a pot and boil it up. Then, we take a little bit [of the liquid] in an eggshell and test it with a tuft of wool. Then we throw away the eggshell and burn the wool.

From this we learn three things: We learn that the wool used as a test is unfit [for *tzitzit*]; we learn that we require dyeing with the proper intention [for the mitzvah]; and we learn that the dyeing in order to test renders the entire vat unfit [if done directly in the vat].

(such as those based on historical evidence), cannot be settled with accurate scientific research. (This position is clearly stated in a fascinating series of letters between Rav Aviner and Rav Shmuel Ariel which can be found at: <http://tekhelet.com/pdf/Aviner-Ariel.pdf>, in Rav Aviner's second response.)

Isn't the statement that wool dyed as a test is unfit equivalent to the law requiring dyeing with the proper intention?

Rav Ashi said: [The two are indeed related in the sense of] what is the reason?: What is the reason that wool used to test is unfit? Because we require dyeing for the proper intention.

As was disputed by Tannaim: Dye used for a test is unfit since it is written: *kelil tekhelet* (completely *tekhelet*). These are the words of R' Chanina Ben Gamliel. R' Yochanan Ben Dahavai says: even the second appearance (*ma'areh sheni*) is fit, since it is written: *and a thread of red (shani) wool*.

Explaining this Gemara in chronological order, there is a record of an argument between two early Tannaim (late first – early second century) with respect to the permissibility of dipping a second, new batch of wool into the *tekhelet* dye vat. R' Chanina ben Gamliel (the older brother of R' Shimon ben Gamliel the II) held that the words of the *pasuk* referring to the *meil* of the *Kohen Gadol*, “*kelil tekhelet*”—translated as “completely *tekhelet*,” indicate that dipping wool into the dye vat to test the suitability of the dye renders the entire vat unfit for subsequent use. Presumably, this implies that kosher *tekhelet* must come from the first use of the dye liquid.³ R' Yochanan ben Dehavai (a relatively obscure Tanna) argues that the word שני, which in the simple meaning of the text is read as *shani*—crimson, can be read as *sheni*, second, thereby allowing a second batch of wool (and presumably multiple batches) to be dyed with the same liquid previously used.

The Gemara goes on to say that in later times, the common practice for dyeing *tekhelet* was in accordance with the views of R' Chanina ben Gamliel, and strict measures were taken in order to avoid dipping the wool more than once in the dye vat. Abaye (fourth century) who lived in Bavel, far from the *tekhelet*-dyeing centers which lie along the Mediterranean coast,⁴ was eager to interrogate R' Shmuel bar R' Yehuda coming from Eretz Yisrael as to the exact process involved in making *tekhelet*. He related that a procedure was employed for testing the readiness of the dye by separating out a small portion of the dye liquid from the main vat into an eggshell (the ancient equivalent of a disposable paper cup) and conducting tests on that isolated dye in order to ensure that the dye used for *tzitzit*

³ Tosafot point out that the texts in question actually refer to laws relating to the use of *tekhelet* for the *bigdei kehuna*, the clothes of the Kohanim. Nonetheless, they say, the argument as a whole can be applied to *tzitzit* as well (Menachot 42b end of the gloss titled *Mishum*).

⁴ צידי חלזון מסולמות של צור ועד חיפה (שבת כו.) - Trappers of the *chilazon* from the cliffs of Tyre to Haifa (Shabbat 26a).

not be contaminated by the introduction of wool in an illegitimate manner. The crux of the issue seems to center on the question of לשמה—the proper intention, but as we shall see, not all the *meforshim* agree with that premise.

The underlying reason for the prohibition of multiple immersions

The most straightforward interpretation of this Gemara and the motivation for the careful steps employed while dyeing *tebbelet* is given by the Rambam (*Hilbot Tzitzit*, 2;3)

התכלת של ציצית צריכה צביעה לשמה. ואם צבעה שלא לשמה פסולה. והיורה שיש בה הצבע אם צבע בה מעט צמר לבדקו אם הוא יפה אם לאו נפסלה היורה כלה. אלא כיצד יעשה. לוקח הצבע מן היורה בכלי קטן ומניח בו צמר שבודק בו ושורף את שבודק שהרי נצבע לבדיקה. ושופך הצבע שבפלי שבודק בו שהרי טעמו ופסלו. וצובע התכלת בשאר הצבע שלא נפגם :

The blue thread of the fringes must be dyed with that express intent. If it has been dyed without this intent, it is unfit for use. If a little wool was dyed in the cauldron containing the coloring material as a test, in order to ascertain whether the color is good or not, the entire content of the cauldron becomes unfit. How then is one to proceed? A small portion of the cauldron's contents should be removed into a small vessel. In this, the wool used for testing should be placed, and subsequently burnt, because it was dyed for testing purposes. The dye in the vessel used for testing is also poured away because its being used for testing has rendered it unfit to be used for dyeing the blue thread. The wool that is to serve as the blue thread is dyed in the rest of the dye that has not been spoiled.

The Rambam clearly and unequivocally attributes the need for separating out a small amount of liquid and conducting tests on that dye to the requirement that *tebbelet* be dyed לשמה, prefacing the halacha with the words התכלת של ציצית צריכה צביעה לשמה. The problem to be circumvented, therefore, is the dipping of wool into the vat without the proper intention—namely for testing purposes instead of for the purpose of the mitzvah. What then would be the halacha regarding using the same dye vat twice, if both times the wool was introduced with the proper intention? One would assume, based on the words of the Rambam, that there would be no problem with this since the first dipping, having been done לשמה, did not in any way render the vat unfit.

Indeed, Tosafot understand the Gemara's motivation in the same way that the Rambam does and address the above question explicitly.

דאפילו מאה פעמים לשמו משמע דכשר דהא כליל תכלת קרינן ביה אבל כשטעם
הרי יש צבע שאינו ראוי לתכלת ולכך קרוי מראה שני (תוספות מנחות מב: ד"ה
משום)

Even if one dyed a hundred times [in the same vat, each time] with the proper intention, it would apparently be acceptable, since the phrase “*completely tekhelet*” would still apply. But if one tested [the dye], that would result in dye that is unfit for tekhelet, and therefore it is called “*ma'areh sheni*.” (Tosafot, *Menachot* 42b)

Rashi, however, has a completely different interpretation of the *sigya*, and, in fact, the Tosafot just quoted is a rejection of Rashi's opinion. Interestingly, Rashi makes his comments on the latter part of the Gemara in the presentation of the position of R' Chanina ben Gamliel, and not on the description of the dyeing with the eggshell. He states:

משום שנאמר כליל תכלת - כל תכלת בעינן (כליל) שיהא כל עיקר מראה החלזון
בצמר שלא יהא דבר אחר צבוע בה מתחילתה. (רש"י מנחות מב: ד"ה משום)
Since it is written: 'completely techeiles'—All-*tekhelet* is required (*kelil*). Such that there be the entire essential part of the appearance of the [dye obtained from the] *chillazon* within the wool, that nothing else shall be dyed with it beforehand. (Rashi, *Menachot* 42b)

Rashi introduces a new concept and requirement—**כל עיקר מראה**—which might best be understood as the full potency of the dye. Thus, according to Rashi, the problem with testing the dye involves the possibility of adulterating it or mitigating its potency.⁵ Such being the case, the ramification would be that a second batch of wool dyed in a previously used vat would be absolutely unacceptable for the mitzvah of *tekhelet*. And this is precisely how Tosafot (*ibid*) understood Rashi's position:

משמע דאם צבע בה שני פעמים זה אחר זה פסול אפילו לשמו.

⁵ The *Chidushei Harashbab* (ד"ה וקשיא) (מנחות מב:; ד"ה וקשיא) raises a strong challenge to Rashi's position. (Actually, the *Chidushei Harashbab* on *Menachot* is often attributed to R' Yeshaya di Trani (d. 1240)). If Rashi requires that the full strength of the dye obtained from the *chillazon* be transferred to the *tekhelet*, how can he allow some of that dye to be poured into an eggshell? The answer suggested is that the strength of the dye is determined by the ratio of dye to water. The relative amount of dye in the liquid is maintained even if some of the solution is taken out. Another challenge raised is that Rashi should allow the dye in the eggshell to be returned to the dye vat after the testing since such a small amount would surely be *batel b'rov*—nullified by the overwhelming majority of permissible dye. The Radzyner (פתיל תכלת, עב) suggests that *bitul* would not apply in this case based on the principle of *ein mevattlin issur l'chatchila*—one may not intentionally nullify a minority amount of a prohibited substance.

It is apparent [from Rashi's words] that if one dyed twice [in the same vat] one after another, it would be unacceptable, even if [both dips] were done with the proper intention.

Tosafot raise formidable questions as to how Rashi's interpretation can fit into the *sugya* and, as mentioned, ultimately reject his position. Nonetheless, the fact remains that Rashi himself held that way, and so, for nearly 800 years, everyone who read his words was convinced that Rashi would have outlawed the use of double-dipped wool for *tekebelet*.⁶ This view, however, was challenged in the late 1800s by the *Baal HaTekebelet* himself, R' Gershon Henokh Leiner of Radzyn.

The Radzyner's understanding of Rashi

The Radzyner, scion to the Ishbitzer dynasty and grandson of the *Mei HaShiloach*, devoted much of his life and energy to researching *tekebelet*, and travelled across the continent in search of the *chillazon*. He found what he believed to be the authentic source of the dye, the cuttlefish *Sepia officinalis*, and set up a facility to produce *tekebelet*. Though the vast majority of Rabbinic authorities outside Radzyn rejected R' Gershon Henokh's identification of the *chillazon* with the cuttlefish and certainly did not wear the *tekebelet* obtained from it,⁷ his scholarship on the subject stands as arguably the most important and thorough halachic treatment of the various aspects of *tekebelet*. His work includes issues relating to the identification of the *chillazon*, methods of tying *tekebelet*, and, for our purposes most significantly, the halachot relating to the preparation of the dye solution and the process of dyeing the wool and strings.

The Radzyner wrote three books altogether on the topic, *Sefunei Temunei Chol*, *Ptil Tekbelet* and *Ein HaTekebelet*. The third chapter of *Ptil Tekbelet* is titled **בדיני הצביעה**—the Laws of Dyeing, and contains a lengthy treatment of *ma'areh sheni* in general, and Rashi's *shitta* in particular. R' Gershon Henokh reviews all of the difficulties with Rashi's position, starting with Tosafot's objection that the Gemara itself clearly indicates that the problem at hand is one of intention. He comes to the conclusion that Rashi would certainly agree that **לשמה**, the proper *kavanah*, is necessary. But Rashi introduces the additional idea of **כל עיקר מראה** as a

⁶ See for example, R' Avraham Chaim Shor (d. 1632), *Tzvon Kodoshim to Menachot* 42b, and his explanation as to what forced Rashi to adopt this position.

⁷ For more on the Radzyner and his quest to find the *chillazon* and revive the mitzvah of *tekebelet*, see Baruch Serman and Judy Taubes Serman, *The Rarest Blue* (Lyons Press, 2012). For a glimpse into the controversy that was generated surrounding Radzyner *tekebelet* within the contemporary Jewish world, see Gadi Sagiv, *מבט חדש על פולמוס התכלת בסוף המאה התשע עשרה*, *Zion*, Vol 82(1), 2017.

second requirement. The Radzyner explains that the only possible understanding of this latter provision must relate to the strength of the dye color. The problem is a physical deficiency in the appearance of the dye and:

חסרון ממשות מראה הצבע... וכשדבר אחר צבוע בה מתחלתה נחלשה כח הצבע
... thus when something else has been dyed in it (the vat) beforehand,
the potency of the dye (color) is weakened.⁸

The Radzyner then takes the next logical step in the argument. If the issue of *כל עיקר מראה* has to do with the strength of the dye in its appearance, then the measurement for that must certainly be what the eye detects. Therefore, the requirement of *כל עיקר מראה* is really determined not by how many batches of wool are dipped in the dye vat, but rather by whether or not the appearance of the dyed wool is indeed the lustrous color of first-rate *tekhelet*. The Radzyner then draws on his own experience with dyeing and asserts that there is no difference between the first and subsequent batches of wool in terms of the quality of the dye as measured by the eye.

בצבע חמה נראה בחוש שאינו מושך וקולט הצבע בפעם הראשונה ואפילו בפעם
שניה ושלישית צובעת במראה יפה וחזקה כפעם ראשונה ולא הוכחה מראיתה
כלל ואיך שייך לומר דלא הוי כליל תכלת?

With a hot (dye vat) we see empirically that the first batch (of wool) does not absorb (all the dye), and even the second and third times the wool obtains as beautiful and fast an appearance as the first time, and does not look lighter in any way. How is it possible to say (regarding the second and third batches) that this is not *kelil tekhelet*?⁹

Based on this reasoning, the Radzyner *paskens* that it is permissible to dye multiple times in the same dye vat as long as two conditions are met:

1. All immersions of the wool must be done *לשמה*, to meet the requirement of the Rambam and Tosafot.
2. The dye color must remain strong and beautiful (to meet Rashi's requirement of *כל עיקר מראה*).

To this day, Radzyn dyers (who still use the dye obtained from the cuttlefish), follow R' Gershon Henokh's *psak halacha* and dip multiple times in the same vat.

⁸ פתיל תכלת, דף עז במהדורת ספרי קודש מישור 1990.

⁹ Ibid, עז.

An alternative understanding of the *sugya*

The logical force of the Radzyner's argument is compelling. However, R' Eliyahu Tavger has suggested that there may be another way of understanding the opinion of R' Chanina ben Gamliel, and perhaps that of Rashi as well, namely that the first wool dipped into the dye vat carries an enhanced quality in terms of prestige and not merely external appearance. The dye used for the *bigdei kehuna*—which the Torah describes as *l'chavod ule'tifaret*—for dignity and adornment—and for the *tzitzit* must not only be perfect in its physical excellence, but must evoke the highest level of esteem. *Tekhelet* is described as the *chotam hamelech*, the signet of the King. Kings are not served leftovers; they are presented only with the first-cut. According to this understanding, the halacha of *ma'areb sheni* relating to *tekhelet* fits the pattern of other *mitzvoth*¹⁰ and *halachot*¹¹ which require a “first.”

Tekhelet, as the most precious of dyes, is meant to elicit a sense of distinction and nobility, the aspect of *Malchut*.¹² ומרדכי יצא מלפני המלך בלבוש מלכות, תכלת... (אסתר ח:טו) —“Mordecai left the king's presence in royal robes of *tekhelet*” (Esther, 8:15). One can suggest that this idea is in fact alluded to by R' Chanina ben Gamliel's *drasha* from the text. The law of *ma'areb sheni* is based on the words *kelil tekhelet*. The word *kelil* in context means fully, completely. But in Mishnaic parlance, the word had a second meaning, as in the phrase from the *Shabbat Amidah*, כליל תפארת בראשו, נתת —“a crown of glory You placed on his head.” *Kelil tekhelet* can also

¹⁰ E.g., *Chadash* (the requirement not to eat any grain until the first harvest is offered as a *korban*, the *Omer* sacrifice), *Bikurim* (bringing the first fruits to the Beit Hamikdash), *Bechor* (the special status and laws applied to a firstborn son or animal), and *Reishit HaGez* (the first shearings of the sheep's fleece that are given to a Kohen).

¹¹ For example, the law pertaining to olive oil where only the first drop of oil obtained from the olive is permissible for use in lighting the *menorah*. See Rashi Shemot 37:20. The first drop is not necessarily chemically superior to subsequent drops of oil, nor does its capacity to burn surpass that of other oil. Certainly no one would claim that if oil from a second press were somehow analyzed and shown to be identical molecularly to the first drop, it would be halachically acceptable. Rather there is something special about that first drop of oil in terms of prestige and prominence that makes it alone fit for use in providing light for the *beichal* in the *Beit Hamikdash*.

¹² In Kabbalistic literature, each *sefira* (emanation) is associated with a color. Not surprisingly, the *sefira* of *Malchut* is associated with *tekhelet*. (See R' Moshe Cordevero, *Pardes Rimmonim*, 10: 4. The tenth chapter of the book is devoted to the colors of the various *sefirot* and is called *Sha'ar HaGevanim*, the Gate of Colors.)

hint at *tekhelet* as the “crown” of Hashem’s regency, *Malchut*, and therefore it must adhere to the highest standards befitting that exalted posture. Two midrashim can be cited in support of this interpretation:

ה' ימלך לעלם ועד (שמות טו:יח): איתו ניתן כלייל דרבו בריש פרוקו דהוא מעביר
 ולא עבר דהוא מחליף ולא חליף דדיליה הוא כלייל מלכותא והוא מלך מלכין
 בעלמא הדין ודיליה הוא מלכותא לעלמא דאמי ודיליה היא והיא לעלמי עלמין
 (תרגום יונתן, שמות 15:18)

“The Lord will reign forever and ever: Come, and let us set the crown (*kelil*) of majesty on the head of our Redeemer, who is the mover, yet is not moved; who changes, and is not changed; His is the crown of the kingdom (*kelil malchuta*); and He is the King of kings in this world; and His is the kingdom in the world to come, for ever and ever. (*Targum Yonatan, Shemot 15:18*)

A second midrash discusses the method of covering the *Aron Hakodesh* when the Mishkan was disassembled and the Jews traveled through the desert. The Torah’s description of the *aron* differs from that of the other *kelim* in that the more beautiful covering (in this case, *tekhelet*) was on top of the more rugged covering (the *tachash* skin). The phrase *kelil tekhelet* is also used by the *aron*, but not for any of the other *kelim* whose covering was of *tekhelet*.

ועוד בארון נאמר בו: כלייל תכלת, מה שלא נאמר בכלם כלייל תכלת, למה, למה
 חשוב מכל כלי המשכן. רבי שמעון אומר (משנה אבות ד-יג): שלשה פתרים הם,
 כתר תורה, וכתר קהנה, וכתר מלכות, וכתר שם טוב עולה על גביהן. מעשה הארון
 כנגד בעלי תורה, שהם ספונים, שלכד פתב: מלמעלה, שכל הזוכה לתורה כאלו
 זוכה למלכות וקהנה, וכן הוא אומר (משלי ח, טו): בי מלכים ימלכו וגו'. (במדבר
 רבה, 4:13)

Furthermore, regarding the ark it is said: *Kelil tekhelet*, which is not said by them all, *kelil tekhelet*. Why? Because it is more important than all the other vessels in the Tabernacle. Rabbi Shimon says (*Avot 4:13*): There are three crowns, the crown of Torah, the crown of Priesthood, and the crown of Kingship, and the crown of a good name is superior to all. The ark alludes to those who study Torah; they are distinguished, and therefore it is written ‘above,’ for anyone who merits to learn Torah it is as if he merits kingship and priesthood, and so it is written (*Mishlei, 8:15*): *Through me kings reign, etc.* (*Bamidbar Rabbah, 4:13*)

R’ Tavger’s reading of R’ Chanina ben Gamliel’s words may be Rashi’s understanding as well. The full phrase of Rashi’s requirement is that *tekhelet* must comprise *כל עיקר מראה החלזון* which we translated as “the entire essential part of the appearance of the [dye obtained from the]

chillaẓon.” This leads one towards the Radzyner’s understanding that the focus of this requirement hinges on appearance. But that approach is problematical, in that Rashi should simply say “the appearance of the dye.” Instead, he introduces the *chillaẓon*, and therefore a literal translation would more appropriately be “the essential appearance of the *chillaẓon*”—which could also mean *the entire strength of the colorant that the chillaẓon can provide*. In fact, the Radzyner’s interpretation is difficult from a logical standpoint. If the crux of the matter is the appearance of the dyed wool, then there should be some sort of objective measure, a kind of color-depth chart to be compared with.¹³ Every dye bath is different, however, and each varies in terms of color and potency, so why, if appearance is what counts, should a faded, barely blue piece of wool from a first-dipped dyeing be permitted altogether? Yet we find no such prohibition relating to color hue, depth, or strength. If one accepts the notion that *ma’areh sheni* is a function of *יוקרה*, prestige or honor, relating to the first use, then the issue is not an objective measure of some quality or characteristic, but rather a function of the fact that it is first, primary. One does not expect the first fruits of the *bikurim* to be the most luscious of the year’s crop nor does one require that the *reishit hagez* shearings of the flock come from the sheep with the fluffiest wool. Similarly, with respect to *tekebelet*, the only requirement is that full potential of the *chillaẓon* is available—*כל עיקר מראה החלזון*—regardless of the outward appearance of the dyed wool.

Conclusion: Practical ramifications

There is a dispute between the *tannaim* with respect to the second batch of wool immersed in a *tekebelet* dye vat (*ma’areh sheni*): R’ Yochanan ben Dehavai permits its use¹⁴ while R’ Chanina ben Gamliel holds that such

¹³ In a previous footnote, I mentioned the *Chiddushei Harashba*’s conclusion that the dye strength must be a function of the ratio of dye to water in the bath. This is very similar to the Radzyner’s understanding, but it presents a similar logical problem. The true ratio that should be measured is not dye to water, but rather dye to wool. How can one maintain, according to this position, that a tiny amount of wool dipped into a vat of liquid made from thousands of snails is in any way comparable to a huge amount of wool dipped into a vat of liquid made from only a few snails?

¹⁴ R’ Yochanan ben Dehavai bases his position on a somewhat problematical reading of the text: *tolaat shani*—literally the crimson (Kermes) worm—as *sheni*, second. To make this exegesis more understandable one may suggest that in fact, *lechatchila*, in a perfect world, everyone including R’ Yochanan ben Dehavai would prefer to use first-dipped *tekebelet*. The situation in second-century Israel, though, was far from perfect. The post-*churban* *tekebelet* industry must have been

wool is unfit. Later generations held in accordance with the latter view and took pains to ensure that no wool was immersed in the dye vat before the batch intended for *tebbelet* strings. The Rambam and Tosafot understood that the reasoning behind those measures was based on improper intention, and therefore (the Rambam implicitly and Tosafot explicitly) allowed multiple batches of wool to be immersed in the same dye vat provided that each batch was dipped with the proper intention. Rashi understood the underlying problem with *ma'areh sheni* differently, and most subsequent *meforshim* took Rashi at face value, assuming that he categorically rejected dipping a second batch of wool in a previously used vat regardless of the circumstances. R' Gershon Henokh of Radzyn, however, interpreted Rashi in a manner that would allow multiple batches of wool as long as the color of the dyed wool in each batch remained vibrant. R' Eliyahu Tavger suggested an understanding of R' Chanina ben Gamliel's position (and that of Rashi) that deems only first-dipped wool as acceptable for *tebbelet*.

The Tur and *Shulchan Aruch* are silent with respect to the question of *ma'areh sheni* and *tebbelet* in general, which is not surprising since it was not of any practical concern, *tebbelet* having been lost to the world around the seventh century. There is certainly room for leniency given that the issue of *ma'areh sheni* is a *makbloket* to begin with and any problems can be circumvented according to the Rambam and Tosafot by having the proper intention during each immersion. Furthermore, the Radzyner maintained that even according to Rashi, second-dipped wool is acceptable so long as the dye retains its strength.

All this notwithstanding, Ptil Tekhelet, which produces *tebbelet* strings from the *Murex trunculus*, adopts a stringent position and uses each dye vat only once for one batch of wool. A further stringency held by Ptil Tekhelet is based on the same reasoning. Only tufts of wool or fine threads are dyed in the *tebbelet* vat, but not fully 8-fold plied strings (after

in a shambles, having lost its most important customer, the *Beit Hamikdash*. The spread of Roman authority over Israel would have led to increased enforcement of Imperial regulation constraining the use of *tebbelet*. The general status of Jews in Israel in that period was significantly depressed and repressed. Perhaps R' Yochanan ben Dehavai is making a statement that in such a situation, there is room for leniency. *Tolaat*—reminiscent of Isaiah's description (Isaiah, 41:14) of the downtrodden Jewish people as *Tolaat Yaakov*, as if to say, when the Jews are in the state of *tolaat*, then we can rely on *sheni*, and accept even *ma'areh sheni* for ritual use.

shezira).¹⁵ The tightly wound strings do not fully absorb the dye throughout, and a core of white remains. This could be a violation of *kelil tekhelet* on two counts. Firstly, understanding *kelil* as ‘completely,’ the tekhelet dye does not permeate the string thoroughly. Secondly, following the notion of *tekhelet* as representing the highest level of prestige, such strings would certainly be considered inferior. One might be tempted to call them *tekhelet*-plated, and indeed, such strings could hardly be described as fit for a king.

Afterword

Even according to the strictest position regarding *ma'areh sheni*, one question still remains. The typical method for dyeing with *tekhelet*-like dyes (known as vat dyes) is to dip the wool into the liquid dye bath and then remove it, exposing it to air, and then to repeat that process of dipping and removing many times. This procedure results in the most uniform color across the fabric. Would this be permissible in terms of dyeing *tekhelet*? Everything we have discussed in this article had to do with dipping a second batch of wool into a vat that had already been used previously. This situation is different in that *the same wool* is repeatedly dipped into the vat. Would this be a violation of *ma'areh sheni*, or is there room in this case for leniency? ❧

¹⁵ The process of making strings for *tzitzit* is as follows: Wool is sheared from the sheep (*qizra*), then bleached (*libun*), then carded (*nipputz*) to straighten the wool fibers and remove any impurities. The wool is then twisted into fine threads (*teviya*). Eight threads are plied (*shizira*) together into the final *tzitzit* strings which are set by exposure to hot steam.

Radzyner dyers today dip the fully plied strings in the vat according to R' Gershon Henokh's psak. He discusses the issue at length in the first part of the 3rd chapter of *Ptil Tekhelet* and concludes ודאי שהצביאה יכולה להיות בחוטין כמו בצמר.