

SURVEY OF RECENT HALAKHIC PERIODICAL LITERATURE: REFRIGERATORS ON SHABBAT

I. THE ISSUE

Undoubtedly, the most ubiquitous electrical appliance is the refrigerator; even the most impoverished household enjoys the benefits of this money-saving, labor-conserving, and health-preserving invention. Today, electric refrigerators and stoves (heretofore, usually gas-consuming rather than electric) are *de rigueur* in privately-owned homes and customarily provided by the landlord in rental dwellings. The refrigerator began to replace the far less effective and much more inconvenient icebox in the early years of the 20th century. By the late 1930s or early 1940s the icebox was relegated to the status of a quaint relic. Virtually no person born after those years has seen an icebox other than perhaps in a museum.

For Jews, use of a refrigerator on *Shabbat* posed a previously untemplated dilemma. The refrigerator rapidly became the repository of all perishable foodstuffs; storing food elsewhere to be eaten over the course of *Shabbat* became cumbersome. Food and beverages better enjoyed when cooled could be kept at the desired temperature. Concern for allowing perishable foods to be kept overnight, particularly on hot summer days, for consumption at the *Shabbat* morning meal was eliminated. Perhaps most significantly, housewives were no longer constrained to prepare *Shabbat* meals only on *erev Shabbat*; they now had the option of cooking earlier in the week and refrigerating food for later use on *Shabbat*.

However, opening the refrigerator door on *Shabbat* posed a halakhic problem. The electric bulb designed to illuminate the interior automatically activated with the opening of the refrigerator could readily be removed.¹

I am indebted to Dr. David Marks and Mr. Jonah Ottensoser for their considerable assistance with the technical aspects of this article and to Rabbi Shlomo Zuckier for his incisive comments.

¹ R. Ephraim Greenblatt, *Rivevot Efrayim*, III, *Orah Hayyim*, no. 247, p. 141, s.v. *im muttar*, finds a problem in the continued presence of the light bulb socket that remains even when the bulb has been removed. He asserts that opening the

A more serious problem lay in the fact that the internal temperature of the refrigerator is regulated by an electrical device. The temperature is set at a desired level; a compressor cools the air until it reaches the preset temperature, at which point the compressor shuts itself off automatically. As the cool air warms, and with the passing of time it inevitably does so, the temperature rises, the compressor is activated and continues to operate until the air within the refrigerator is again lowered to the preset temperature. Opening the refrigerator door has the effect of allowing outside air to enter the interior of the refrigerator. The warm air either immediately triggers operation of the compressor or, more usually, raises the internal temperature at least marginally so that a rise in temperature sufficient to activate the compressor will occur sooner than had the door not been opened.

A refrigerator causes the temperature of air within a closed compartment to fall by means of a closed system in which liquid in the coils of the refrigerator is repeatedly converted from a gas to a liquid and then from liquid to gas. A compressor, essentially a pump, compresses the refrigerant in its gas form under high pressure causing the gas to become very

door causes electricity to flow to the electrical socket even when no bulb is present. Accordingly, Rabbi Greenblatt advocates taping down the spring-loaded door-switch that is otherwise released with the opening of the door in order to prevent flow of electricity to the socket. See also R. Levi Yitzchak Halpern, *Kashrut ve-Shabbat ba-Mitbah ha-Moderni* (Jerusalem, 5739), p. 322. That concern, however, is misplaced. There is no flow of electricity unless an electrical circuit is completed, thereby fashioning a closed loop through which current can flow. Release of the spring mechanism only removes an impediment that otherwise blocks the completion of the circuit. When there is a break in the circuit, the voltage is not high enough for the coursing electrons to bridge the spatial gap in the light bulb socket. In the absence of a conductor, such as the tungsten filament of a bulb to complete the circuit, nothing whatsoever is effected by release of the door switch. Cf., the monograph published by *Mishmeret ha-Shabbat*, entitled *Refrigerators and Freezers on the Sabbath*, Eliyahu Braverman, ed. (Elul 5774), p. 9, which states that release of the spring in opening or closing a refrigerator “could represent a problem of ‘*boneh*’ a half circuit [*sic.*] [i.e., the electrons are being activated without being released through the circuitry]. This is similar to plugging an extension cord to an outlet without connecting it to any appliance.” Analysis of the last statement is beyond scope of this discussion. However, simply causing electrons to course through a wire until they create a counter-voltage and become immobile does not seem to be encompassed within *Hazon Ish*’s depiction of *boneh*. See *infra*, section III. In an open circuit, any electrical flow leaves behind an excess charge that is not neutralized by electrons returning from the other end; this accumulating excess charge creates an increasing counter-voltage that halts the current when it becomes equal to the applied voltage. Thus, when the circuit remains open, not only is there an absence of any effective “construction” but the current generated is generated only to be “destroyed” immediately, i.e., to be halted by the resultant counter-voltage it creates.

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hot. The highly pressurized gas is pushed into a condenser located at the back of the refrigerator. The heat is dissipated and as the gas loses heat in the course of dissipation it converts to a liquid while high pressure is maintained. The liquid is then forced into an expansion valve, i.e., a narrow tube, under high pressure. The coolant, traveling under pressure, begins to vaporize in a manner similar to the spray of an aerosol can. The abrupt change of the coolant from a liquid into a gas occurs in the evaporator, i.e., the coils in the freezer section. As the liquid abruptly changes to gas its temperature drops dramatically and the gas absorbs heat from the surrounding air. Drawing heat from the surrounding air causes the air to become cold because cold is simply the absence of heat. As a result, as heat is removed, the air in the refrigerator becomes cold. Finally, the gas enters a low-pressure area within the compressor and the entire process is restarted. Constant temperature is maintained at a set level under control of a thermostat that turns the compressor on and off as needed.

There are various types of thermostats. A simple and quite common thermostat consists of two thin strips of dissimilar metals, e.g., iron and brass that are screwed or welded together. Metal expands with heat but two dissimilar metals will expand at different rates. Since the two connected strips of metal expand at different rates the combined strip will bend. When the strip of metal bends sufficiently it comes into contact with a stationary piece of metal and thereby completes a circuit that enables a flow of electricity traveling through the strip of metal to enter the circuit and activate a device that causes the compressor to run. As the temperature drops the metal shrinks. Since the two metals also contract at different rates the combined strip unbends and ceases to be in contact with the stationary piece of metal. With severance of contact between the two pieces of metal, the electrical circuit is broken and the compressor ceases to operate.

Variations of this basic thermostat include attaching a small tube of mercury to wires protruding from the bi-metallic strip. The bending of the metal causes the wires to become immersed in the mercury. Since mercury is a conductor of electricity, it serves to complete the circuit and thereby enables electricity to manipulate the switch that causes the compressor to run. A variant device employs a small bellows filled with gas that expands and contracts with variations in temperature. When the bellows expands sufficiently it depresses an attached micro-switch that causes the compressor to begin operation; when the temperature falls, the bellows contracts, the switch opens, the circuit is broken and the compressor ceases to run.

Modern thermostats, known as thermistors, interface with computers and function as thermal resistors. The thermistor is a resistor whose

resistance changes with temperature. A computer measures the change in resistance and correlates the resistance with temperature. Computer software then employs that information to control a device that turns the compressor on and off.

Is the opening of the door, which leads to activation of the compressor, and in some refrigerators, of the thermistor as well, an innocuous act or is it prohibited on *Shabbat*? Very few modern-day halakhic issues have received as much attention as the question of opening a refrigerator door on *Shabbat*. The question has spawned a voluminous literature whose publication has spanned a period of decades.²

The Mishnah, *Hagigah* 10a, declares, “The laws of *Shabbat* are as mountains suspended by a hair.” Rashi explains that the Mishnah is simply reporting that scriptural references to the manifold and complex Sabbath proscriptions are sparse and that many are referred to only by allusion. It seems apt to add that the Mishnah concomitantly describes the principles underlying the laws of *Shabbat* as being as weighty and daunting as mountains whereas their application is as precise and sharply defined as a hair. To be properly applied, the basic principles require astute analysis of terms and sharp definition of categories. Application in practice often appears to entail “splitting hairs” in narrowly defining the ambit of halakhic categories. Little wonder then that, not infrequently, disagreement arises in determining how particular acts are to be classified. Considerable confusion exists with regard to the formidable technological complexities in use of electric current to operate household appliances. Both factors contribute to ambiguities in the halakhic categorization of electricity. Consequently, resultant controversies among rabbinic scholars are hardly surprising.

II. MECHANICAL REFRIGERATORS

1. *Pesik Reisha de-lo Niha Leih*

One of the earliest and most eminent figures to address the refrigerator issue was the renowned authority R. Simchah Zelig Rieger, who served as

² A bibliography of sources addressing that question appears in R. Levi Yitzchak Halpern, *Ha-Hashmal be-Halakhah*, II (Jerusalem, 5741), 194-203, 212-221 and 371-372. Additional sources may be found in *Rivevot Efrayim*, III, *Orah Hayyim*, no. 247, pp. 146-148; R. Moshe Meir Yadler, *Me'or ha-Shabbat*, IV (Jerusalem, 5768), 15:8, note 12, p. 403; and *Encyclopedia Talmudit*, XVIII (Jerusalem, 5746), 686-691.

the *dayyan* of Brisk during the tenure of R. Chaim Soloveitchik's rabbinate. His treatment of the issue was published in *Ha-Pardes*, Sivan 5694. Reb Simchah Zelig quotes R. Chaim Soloveitchik's formulation of a far-reaching thesis having direct application upon the then-novel question under discussion.

In opening a refrigerator door on *Shabbat*, a person intends simply to remove or replace a foodstuff; he does not at all intend to trigger operation of the compressor. Generally, unintended forbidden "labor" that occurs as a consequence of an otherwise permitted act does not debar a person from performing the permitted act. The paradigm, presented by the Gemara, *Shabbat* 22a, is the situation of a person who drags a bed, chair or stool along the ground. Moving furniture from place to place is entirely permissible; digging a hole or groove in the ground or on an earth floor is forbidden on *Shabbat*. The normative ruling is that pulling or pushing a bed or the like is permissible, even though it is possible that in the process of doing so a groove will be made in the ground, so long as there is no intention to gouge a hole. The principle is that an act undertaken to achieve an innocuous purpose but which secondarily entails a concomitant result which, if intended, would render the act prohibited, is nevertheless permitted, provided that the prohibited act is a *davar she-eino mitkaven*, i.e., the secondary result is unintended. In the example given, the primary, intended act is moving furniture; a secondary, unwanted result is gouging a groove—a forbidden act. However, the activity may not be undertaken if the unintended secondary result is not merely a *possible* result but is a *necessary* consequence of the primary act. Such would be the case if the bed or chair is pulled through sand or loose earth. Ostensibly, the distinction is quite simple: since the result is inevitable, it cannot be unintended, i.e., intention is imputed constructively.³ Such a phenomenon is termed a "*pesik reisheih ve-lo yamut*" (*Shabbat* 103a) which translates as the rhetorical question, "Can [the animal's] head be severed and it not die?"

³ See Rabbenu Hananel, *Shabbat* 133a. See also Rambam, *Hilkhot Shabbat* 1:6. Cf., however, *infra*, note 8. R. Shimon Shkop, *Sha'arei Yosher, sha'ar*, III, chap. 25, pp. 265-266, regards the distinction as lying in the act rather than in the intent: an unintended result is not attributable to the actor and is regarded as if it occurred spontaneously; however, when the result is necessary and inevitable, it cannot be regarded as spontaneous and hence is attributed to the actor. Cf., *Me'or ha-Shabbat*, IV, 15:8, note 12, pp. 404-405. See also R. Mordecai Benet, *Magen Avot, Shabbat* 30a, s.v. *akh kashah*; R. Elchanan Wasserman, *Kovez Shi'urim, Ketubot*, sec. 18; *Hazon Ish, Orah Hayyim* 3:1; and R. Shmu'el Rozovsky, *Hiddushei Rabbi Shmu'el, Ketubot*, no. 7.

A controversy arises in a situation in which the contemplated, but necessary, result is not merely unintended but is also deplored because it entails financial cost or the like. That phenomenon is termed a “*pesik reisha de-lo niha leih*—severance of a head that is not welcome.” Although all authorities agree that such an act is biblically permitted,⁴ most medieval scholars, including *Tosafot*, *Ketubot* 6a, regard a *pesik reisha de-lo niha leih* as rabbinically proscribed. An early authority, the *Arukh*, is cited by *Tosafot*, *ad locum*, and by Rosh, *Shabbat* 12:1, as ruling that acts of that nature were not banned by rabbinic decree and hence are entirely permissible.⁵ Were that view to be accepted as normative, argues Reb Simchah Zelig, opening the refrigerator door on *Shabbat* would be unobjectionable, since the resultant operation of the compressor is not only unintended but also unwanted.⁶ However, *Arukh*’s position is widely regarded as a minority view upon which one may not rely.⁷

⁴ See *Magen Avraham*, *Orah Hayyim* 320:21. Regarding a rabbinic prohibition cf. *Pri Megadim*, *Eshel Avraham*, 314:5.

⁵ Rosh, *Shabbat* 14:9; Rashba, *Shabbat* 109b; and Ran, *Shabbat* 110b, assert that *Arukh*’s permissive view is restricted to *Shabbat* prohibitions which are limited to *melekhet mahasbevet*, i.e., an act that is “intended” or “premeditated,” but does not extend to other forbidden acts. See *infra*, note 8. The concept “*lo niha leih*” does not connote “unwelcome” or “deplored” simply because of the entailed Sabbath violation but describes an act situationally unwanted. Reb Simchah Zelig assumes that “*lo ikhpat leih*—he is unconcerned,” i.e., the person undertaking the act does not care one way or another, is halakhically tantamount to *lo niha leih*. [There is an inherent ambiguity in the connotation of the term “*lo niha*” – it may be rendered as either “not welcome,” i.e., of no benefit, or as “unwelcome” in the sense of disdained]. See R. Shlomoh Zalman Auerbach, “Mekarer Hashmali be-Shabbat,” *Kovez Ma’amarim be-Inyanei Hashmal be-Shabbat* (Jerusalem, 5738), p. 21. That article was subsequently included in Rabbi Auerbach’s *Minhat Shlomoh*, vol. 1. See *ibid.*, no. 10, sec. 7. See also R. Moshe Feinstein, *Iggerot Mosheh, Yoreh De’ah*, I, no. 39 and R. Yisra’el Ya’akov Fisher, letter cited in *Me’or ha-Shabbat*, IV, 15:8, note 12, p. 409.

Hence: if there is no halakhic distinction between *lo ikhpat leih* and *lo niha leih*, *Tosafot*, in disagreeing with the *Arukh*, forbid not only a *pesik reisha de-lo ikhpat leih* but also a *pesik reisha de-lo niha leih*. However, Me’iri, *Shabbat* 103a, maintains that the controversy between the *Arukh* and *Tosafot* is limited to a *pesik reisha de-lo ikhpat leih* but that *Tosafot* would concede that a *pesik reisha* that is actually *lo niha leih*, i.e., “deplored,” is permitted. Hence, according to Me’iri, if hastening operation of the compressor is actually “deplored,” even those early-day authorities who take issue with *Arukh* would sanction opening the refrigerator door on *Shabbat*. See also R. Shlomoh Zalman Auerbach, *Birkhat Shlomoh*, I, no. 2.

⁶ See *infra*, note 17 and accompanying text.

⁷ *Shulhan Arukh*, *Orah Hayyim* 320:18, describing a situation involving a *pesik reisha de-lo niha leih* in connection with an otherwise biblically proscribed act, refers to *Arukh* with the phrase “there is one who permits” and continues with the comment “but they disagreed with him.” Cf., however, *Bet Yosef*, *Orah Hayyim* 320:18.

Reb Simchah Zelig takes issue with categorization of *Arukh's* position as a minority view. He reports that R. Chaim Soloveitchik demonstrated that Rambam is in agreement with *Arukh* in maintaining that a *pesik reisha de-lo niha leih* is entirely permissible.⁸ If so, *Arukh's* opinion can no longer be dismissed as insignificant and, since the matter involves only a possible rabbinic, rather than biblical, infraction, a permissive ruling is warranted. Were activation of the compressor to be a certainty, an act causing that to occur, even if the result is unintended, would be rabbinically forbidden. However, since that occurrence is only doubtful, the act should be regarded as permissible. The applicable rule is *safek de-rabbanan le-kula*, i.e., acts entailing only the possibility, as distinct

⁸ Analytically, Reb Simchah Zelig's argument is straightforward. However, Reb Chaim's proof that Rambam is in agreement with *Arukh* is quite tenuous. If a *pesik reisha* is regarded as effectively rendering an unintended consequence constructively intentional, the fact that the forbidden result is unwanted or even deplored should be of no consequence. *Tosafot*, *Keritut* 20b, s.v. *sevira*, explain that a *pesik reisha de-lo niha leih* is permitted, not because the result is unintended, but for another reason entirely, *viz.*, it is a *melakhah she-einah zerikhah le-gufah*. That principle encapsulates the notion that prohibited categories of "labor" are forbidden only if performed in order to accomplish the halakhically defined *telos* of the act; however, if the act is performed in order to achieve some other goal, there is no biblical prohibition. If the prohibited effect is unwanted, by definition, the act was not performed for the biblically defined purpose and hence is permissible. Accordingly, explain *Tosafot*, every *pesik reisha de-lo niha leih* is actually an act of "labor" in the nature of a *melakhah she-einah zerikhah le-gufah*. The problem is that Rambam, *Hilkhot Shabbat* 1:7, rules that a *melakhah she-einah zerikhah le-gufah* is a biblically culpable offense. If so, and if a *pesik reisha de-lo niha leih* is permissible only because it constitutes a *melakhah she-einah zerikhah le-gufah*, a *pesik reisha de-lo niha leih* should similarly be forbidden. Reb Chaim explains that, even though a *melakhah she-einah zerikhah le-gufah* is biblically forbidden, nevertheless, performing an act of labor on *Shabbat* in the form of a *pesik reisha de-lo niha leih* is permissible—as is the position of *Arukh*—because, for purposes of *Shabbat* regulations, only a "*melekhet mahashevet*"—i.e., a "premeditated" act of labor—is biblically forbidden. See *Beizah* 13b. The concept of *melekhet mahashevet*, argues Reb Chaim, connotes a *willful* act rather than a merely intended act. Thus, since a *pesik reisha de-lo niha leih* is not willful, it does not constitute a biblical transgression. Reb Chaim's theoretical exposition is quite astute; his attempt to reconcile that theory with the statement of the Gemara, *Keritut* 20b, upon which *Tosafot* base their thesis, is somewhat strained.

Cf., however, R. Shlomoh Heiman, *Hiddushei Rabbi Shlomoh*, I, *Ketubot*, no. 4, who asserts that a radically opposite position is reflected in the comments of Rosh, *Shabbat* 14:9; Rashba, *Shabbat* 109b; and Ran, *Shabbat* 110b, and advances a different explanation in reconciling Rambam's rulings. Cf. also R. Jacob Kanterovitz, *Ha-Mesilah*, vol. 2, no. 3 (Nisan 5697), reprinted in *idem*, *Hiddushei ha-Gri*, I (Brooklyn, 5708), 161a-162a, who argues against acceptance of R. Chaim's thesis and offers an alternative resolution of the apparently contradictory rulings of Rambam. See also the analysis of Rambam's position offered by *Maggid Mishneh* and by R. Eleazar Menachem Shach, *Avi Ezri*, I, *Hilkhot Shabbat* 10:17.

from the certainty, of violation of a rabbinic ordinance are entirely permissible.

That report of Reb Chaim's analysis of Rambam's position seems to have raised quite a few eyebrows. In a later issue of *Ha-Pardes*, Elul 5694, the editor comments that, in light of the many queries he had received, he is publishing the words of Reb Chaim as recorded in his own hand. Those novellae were subsequently published in *Hiddushei Rabbenu Hayyim ha-Levi al ha-Rambam, Hilkhot Shabbat* 10:17.

2. *Gerama*

Permissibility of opening the refrigerator door on *Shabbat* is not necessarily contingent solely upon relying on the opinion that an unintended consequence of a rabbinically proscribed act is permitted even if that result is in the nature of a *pesik reisha*. Other factors may also be considered. Warm air is not introduced into the refrigerator by means of a direct act. Opening a door constitutes removal of a barrier preventing warm air from entering. The refrigerator door is comparable to a dam blocking the natural flow of water coursing down a river bed with the result that the pressure of the impeded water builds up against the dam. Removing or breaching the dam releases that pressure, thereby generating a strong initial rush of water; after dissipation of that gust of water, normal flow will resume. Halakhah regards the initial gust of water caused by release of pent-up energy to be the direct result of the human act. Therefore, since breaching of the dam is regarded as the proximate cause of any harm caused by the initial rush of water, the person who removes or pierces the dam will be held liable for any such harm. The initial rush of water is described as caused by a *koah rishon*, i.e., an "initial force" produced by a human act. The subsequent unimpeded flow is described as a *koah sheni*, i.e., "a second force" that is made possible only by release of the first gush of water. The person who breaches the dam does not directly cause that force to come into existence; the second force comes into being only because of the release of the first force. Thus, although the person opening the dam is ultimately responsible for all subsequent flow of water, he is only the remote, non-proximate cause of the resultant normal coursing of water in the riverbed. Such a result is in the nature of a *gerama*, or indirect cause, for which the person is culpable in the eyes of Heaven but for which, since his act is not the proximate cause of harm, a human court cannot assign either criminal culpability or tort liability.⁹

⁹ See *Sanhedrin* 77b.

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Arguably, the initial rush of warm air into a refrigerator cabinet that occurs immediately upon opening its door is comparable to the gush of water that comes immediately upon removal of a dam.¹⁰ That air enters the refrigerator as a result of the natural flow of air present in the room. That air cannot penetrate the interior of the refrigerator when the door is closed because of the interposition of the door. However, after the penetration of warm air, the exchange of warm air within the room and the cool air of the refrigerator is no more than the result of a *gerama*.¹¹ The compressor does not begin to operate until there is, comparatively speaking, a significant increase in temperature within the refrigerator. Thus, the “labor” involved in causing the compressor to begin running is performed by means of *gerama* rather than by means of a direct, proximate act. The

¹⁰ However, R. Shlomoh Zalman Auerbach, *Kovez Ma’amarim*, p. 32 and *Teshuvot Minbat Shlomoh*, I, no. 10, sec. 10, also suggests that the removal of an impediment is not necessarily to be regarded as a proximate cause of its effect in all circumstances. A dam causes water power to build up; removal of the barrier results in a gush of far greater force than that of a naturally-flowing river. The “power” or force of that gush is categorized as the act of the person who removes the impediment. However, suggests Rabbi Auerbach, if removal of the dam does not cause the water to flow with increased force but merely allows the water to resume flowing at its natural speed, removal of the barrier may be no more than a *gerama*. Completing an electrical circuit, he asserts, is comparable to the latter situation. Electricity is present and “flows” at a constant speed even in the absence of a completed circuit. Absent a completed circuit, the electricity has nowhere to flow and hence remains at a standstill; completing a circuit does not engender a surge in current but simply enables the electrical current to continue its natural flow. Since completing the circuit merely allows the already existing flow to continue without impediment such an act may be deemed to be no more than a *gerama*.

Moreover, argues Rabbi Auerbach, air pressure does not build up in a room because it is blocked by a refrigerator. Air is always in motion and its speed does not become more rapid when the refrigerator door opens. The speed of the air remains constant but the flow of air now has access to an area it could not earlier penetrate. Since the air pressure remains constant and is not reduced by opening the refrigerator door there is no “force” whose release can be categorized as an activation of the compressor resulting from removal of an impediment. The delay in activation of the compressor is not because a period of time must elapse for an initial gust to reach the thermostat but because the heat of the flow of warm air is insufficient to cause the thermostat to fall to a level sufficient to activate the compressor. Cf., R. Ephraim Meir Friedman, *Mekarer Hashmali be-Shabbat*, sec. 3. According to this argument, even if the compressor is immediately activated upon opening the refrigerator door, the opening of the door is in the nature of a *gerama*.

¹¹ Indeed, an act carried out in the form of a *gerama*, even when fully intended, does not constitute a biblical infraction. See *Shabbat* 120b. *Shulhan Arukh* and Rema, *Orah Hayyim* 334:22, rule that such acts, when intentionally performed, constitute a violation of a rabbinic decree unless undertaken in order to avoid significant financial loss.

likelihood that the temperature has already risen to the point that the even small amount of warm air that can immediately penetrate to the interior of the refrigerator and thereby activate the compressor is extremely remote.¹² If the compressor does commence operation immediately, it is likely that the occurrence of that event upon opening the refrigerator door is mere happenstance and would have taken place as the result of a natural rise in temperature even if the refrigerator door had not been opened.¹³ Even if that is not the case, the resultant operation of the compressor certainly is not an inevitable *pesik reisha*. The action of further air flow beyond the quantity of warm air that immediately enters the refrigerator cabinet and its effect upon the compressor is indeed in the nature of an unintended *pesik reisha* but that *pesik reisha* occurs as the product of a *gerama*. Many authorities permit the *gerama* of even a welcome but unintended *pesik reisha*.¹⁴ In the case of opening the refrigerator door, the act of introducing warm air effects the *gerama* of an unwelcome result, i.e., *gerama* of a *pesik reisha de-lo niha leih*—an act that, arguably, would be sanctioned even by those who forbid *gerama* of a *pesik reisha de-niha leih*.¹⁵

¹² See *supra*, note 10.

¹³ Moreover, there is an additional consideration that has apparently eluded the attention of most rabbinic scholars. If the compressor is immediately activated it is not because of pent-up pressure of warm air in the room or even of immediate resumption of natural flow of air but because of a rise in air pressure caused by the rush of cold air out of the refrigerator. Cold air is heavier than warm air and rapidly displaces the warm air. The cold air leaving the refrigerator leaves behind a partial vacuum which is then filled with warm air. In effect, it is the rush of cold air that pushes a quantity of warm air into the refrigerator sufficient to activate the compressor. Release of the cold air may be a *koah rishon* but the pressure of the cold air upon the warm air that it causes to enter the refrigerator cabinet is in the nature of a *koah sheni*. Cf., *Kashrut ve-Shabbat be-Mitbah ha-Moderna*, p. 327.

¹⁴ See *Shulhan Arukh, Orah Hayyim*, 357:1 and *Mishnah Berurah* 357:8. Cf., Rema, *Orah Hayyim* 334:22. See also R. Joshua Neuwirth, *Shemirat Shabbat ke-Hilkhatav*, I, 12:18, note 51 and 23:19, note 64.

Many authorities permit *gerama* of a *pesik reisha de-lo niha leih* in instances of “great need” or for purposes of a *mizvah*. [Removing food from a refrigerator for the Sabbath meal involves fulfillment of a *mizvah*; removal of a snack does not. See *Mishnah Berurah*, 325:60 and *Orhot Shabbat*, III, 26:8.] See *Magen Avraham* 646:2 and *Mishnah Berurah* 321:58 and 646:8. For an extensive citation of sources, see *Shemirat Shabbat ke-Hilkhatav*, III, *Mavo le-Hilkhot Shabbat*, 1:14, note 46. Cf., the discussion of *pesik reisha* in instances of *trei de-rabbanan* in R. Shalom Gelber and R. Yitzchak Mordecai Rubin, *Orhot Shabbat*, III, 30:6, note 13.

¹⁵ That position is explicitly affirmed by R. Ovadiah Yosef, *Yehaveh Da'at*, II, no. 46. See *Tosafot Shabbat* 103a, s.v. *lo* and *Mishneh Berurah* 336:29. *Mishneh Berurah* 316:3, *Sha'ar ha-Ziyun*, sec. 18, permits a *pesik reisha de-lo niha leih* in any case involving *trei de-rabbanan*, i.e., an act otherwise prohibited only because one rabbinic

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Rabbi Auerbach, *Kovez Ma'amarim*, p. 31 and *Teshuvot Minhat Shlomoh*, I, no. 10, sec. 10, recognizes that opening a refrigerator might be presumed to constitute a *pesik reisha de-lo niha leih* because a person's preference would certainly be for warm air not to enter. *Magen Avraham* 320:21 notes that all agree that causing a *pesik reisha de-lo niha leih* does not entail a biblical offense. If so, the possibility that opening the refrigerator door will immediately cause the compressor to begin operation would constitute a possible, but doubtful, rabbinic transgression.¹⁶ The applicable principle would be *safek de-rabbanan le-kula*, i.e., acts that may only possibly involve a rabbinic transgression are permissible. Moreover, in the majority of instances the compressor will not begin to operate immediately upon opening the refrigerator door. Accordingly, every individual act of opening the door may be regarded as permissible because of the principle of *rov*—majority. Applying the principle of *rov*, a random act may be assigned to the major class, i.e., it may be presumed to be one of the majority of such acts, an act that does not cause immediate activation of the compressor.

Nevertheless, Rabbi Auerbach, *Kovez Ma'amarim*, p. 20 and *Teshuvot Minhat Shlomoh*, I, no. 10, sec. 4, expresses doubt with regard to whether triggering the operation of the compressor is to be considered *niha leih* or *lo niha leih*. Although a person certainly wishes that the warm air would not enter, he is nevertheless fully aware that such a phenomenon will occur. When that phenomenon occurs he does wish that the refrigerator maintain a low temperature in order to prevent spoilage. A person who is aware that it is inevitable that warm air will enter does wish the compressor to operate. Hence, given the totality of the circumstances and the person's awareness of those circumstances, operation of the compressor, suggests Rabbi Auerbach, may be considered *niha leih*.¹⁷ In rebutting his own argument, Rabbi Auerbach contends that, the foregoing

prohibition is imposed upon another rabbinic prohibition. Thus, a *gerama* of any rabbinically prohibited form of "labor" would be permitted if the unintended result is *lo niha leih*. See also *Shemirat Shabbat ke-Hilkhatah*, I, 12:18, note 53.

¹⁶ Cf., *supra*, note 11.

¹⁷ However, it might be argued that even granted that every person desires his refrigerator to be cold, nevertheless, no person is actually concerned with the precise temperature within the refrigerator cabinet since a setting of a few degrees higher or lower is of no significant consequence. Hence, at the time that the compressor begins to operate, its activation or non-activation is of no interest to the person opening the door. Furthermore, although the short delay in commencement of the running of the compressor may have a minor effect in retarding possible spoilage of food, the authorities who depict the matter as *lo niha leih* may well regard the marginal benefit to be inconsequential or so negligible as to be discounted when measured against increased consumption of electricity.

notwithstanding, at the moment of opening the door, a person has no desire to activate the compressor; the person opening the refrigerator door does desire that the compressor operate—but only later, *after* the temperature rises.¹⁸ However, at that later time, when the warm air has entered and the temperature has risen, his desire is merely a mental state unaccompanied by a physical act.¹⁹ Rabbi Auerbach regards the question of whether the act is to be categorized as *nihā leih* or *lo nihā leih* to be a matter of doubt. The essence of Rabbi Auerbach's perplexity is whether present knowledge of a future desire is sufficient to cause the act to be deemed *nihā leih* at the time it is performed.

3. The Restrictive Opinions: When the Compressor Is Not Operating

(a) *Pesik Reisha*

Opening a refrigerator whose temperature is thermostatically controlled might well be regarded as a forbidden *pesik reisha* because ultimate commencement of operation of the compressor is inevitably hastened thereby.²⁰ Even though the act is in the form of *gerama*, if it is assumed that operation of the compressor is *nihā leih*, opening the refrigerator door would be forbidden because it is the *gerama* of a *pesik reisha de-nihā leih*.

(b) *Pesik Reisha de-le-she-Avar*

However, the many authorities who prohibit the practice do so for a more compelling reason. There is a distinct possibility, remote as it may be,

¹⁸ Cf., R. Gedaliah Felder, *Yesodei Yesburum*, III (Toronto, Ontario, 5766), p. 294.

¹⁹ See R. Abraham Bornstein, *Aynei Nezer, Orah Hayyim*, no. 230, sec. 3, who presents a similar argument in justifying placement of water-filled utensils in the path of a fire. The person doing so is certainly pleased that the fire becomes extinguished but would much prefer that the fire not spread in the first place. Since, at the moment the containers of water are placed in the path of the fire, the person has no desire that the water simultaneously quench the fire, the act is considered *lo nihā leih*.

²⁰ R. Yosef Eliyahu Henkin, *Ha-Mesilah*, vol. 2, no. 4 (Iyar, 5697), reprinted in *idem, Edut le-Yisra'el*, ed. R. Asher Rand (New York, n.d.), p. 152, regards a *pesik reisha* to be prohibited only if the *pesik reisha* occurs at the time and place that the contemplated act is performed and only if the effected *pesik reisha* is perceived simultaneously with the performance of the act. A photo offset of *Edut le-Yisra'el* is included in Rabbi Henkin's *Kitvei ha-Griy'a Henkin*, I (New York, 5741). See *infra*, note 27. See also Maharal of Prague, *Gur Aryeh, Shabbat* 73b, who regards washing one's hands in a garden as permissible even though causing plants to grow is forbidden because the forbidden effect is unintended and, despite being a *pesik reisha*, occurred only at a later time. Maharal's view is contrary to the ruling of *Shulhan Arukh, Orah Hayyim* 336:3. R. Shlomoh Zalman Auerbach, *Shulhan Shlomoh* 336:6. *Me'or ha-Shabbat*, IV, chap. 14, note 145, describes that view as a "*biddush gadol*," i.e., highly novel.

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that, unknown to the person preparing to open the refrigerator door, the temperature has already risen to the point that the compressor is poised to begin operation and that opening the door may cause it to do so immediately. If the initial rush of warm air is sufficient to cause the compressor to commence operation, opening the refrigerator door is the proximate cause of a forbidden *pesik reisha*.²¹ Although, prior to opening the door, it is not known that the compressor is poised to begin operation, that contingency is a distinct possibility. Accordingly, opening the refrigerator door constitutes a *safek pesik reisha*—i.e., an act that may possibly be of a prohibited nature. Performing such an act is forbidden because it constitutes a *safek*, i.e., a “possible” or “doubtful” transgression.

Situations of that nature, most authorities maintain, are to be distinguished from an act that may or may not result in a prohibited effect but in which the effect is undetermined. In the latter case, because the effect is not intended, it does not constitute even a “possible” transgression. The paradigm of an unintended result that is not a *pesik reisha*, viz., dragging a heavy object over the ground, involves performance of an act without awareness of its necessary, determinate consequences. Such an act is not a *pesik reisha* and is not categorized a “possible” or “doubtful” transgression. To be sure, a person in possession of exhaustive knowledge of all pertinent factors as well as of their causal implications would be able to predict with certainty that the movement of a piece of furniture will or will not cause a groove to be carved in the earthen surface over which it is moved. Such a determination would require a comprehensive assessment of the weight of the object being pulled along the ground, the degree of pressure applied to the object and the resistance to that pressure by the ground upon which it is drawn. The latter factor, in turn, would depend upon many variables, including the type of soil, its moisture content, compactness, etc. It is conceivable, albeit unlikely, that such information might be forthcoming upon performance of a battery of empirical tests and scientific analyses. Those findings, particularly with the assistance of computer simulations, might lead to a conclusive prediction with regard to whether a hole will or will not appear in the ground. Nevertheless, it is highly unlikely that a person contemplating such an act, even if in possession of the raw data in their totality, would be capable of ascertaining the outcome. Thus, although the result, determined as it is by the laws of nature, is indeed compelled, nevertheless, from the perspective of a person contemplating the act, the result is completely indeterminate, i.e., even comprehensive knowledge of presently existing theoretically

²¹ Cf., *supra*, notes 10 and 13.

determinable facts would not enable him to predict the outcome. Hence, for purposes of *Shabbat* regulations, the unintended result is regarded as contingent and therefore the act is permissible, rather than regarded as a possible *pesik reisha* and therefore forbidden because of doubt.

Such a situation differs materially from one in which knowledge of all ascertainable facts would render the outcome readily apparent. For example, a person may be intent upon placing a cover over a receptacle—an innocuous act unless a bee, a fly or the like is present in the receptacle. Covering the receptacle renders escape of a creature confined therein physically impossible. Consequently, in such circumstances, placing a cover over the receptacle constitutes an act of *zeidah* or “capture.” A person placing a cover over the opening of the receptacle may have no knowledge of the presence of the fly and certainly have no intention of “capturing” it. Many, and indeed the vast majority of containers do not serve as refuge for living creatures. Since “capture” of a living creature is not a necessary concomitant of the contemplated act it might seem that covering the box is not a *pesik reisha*. However, in cases of such nature, all pertinent factors are already in existence and may readily be ascertained. In such instances an observer who chooses to inform himself of the relevant particulars is fully capable of predicting with certainty the result of the contemplated act. *Taz, Orah Hayyim*, 317:3, citing *Tur Shulhan Arukh*, rules that, even in such circumstances, the act does not involve a *pesik reisha* insofar as a person who has not examined the interior of the container is concerned because the person bent upon covering the receptacle has no intention to “capture” a living creature nor knowledge of the presence of such a creature within the receptacle and there is no known factor that compels the actual presence of a living creature within the container. Accordingly, rules *Taz*, it is not necessary to peer into the container in order to check for the presence of a living creature before covering the receptacle. For the individual intent upon covering the box, the act of “capturing” the insect is a *davar she-eino mitkhaven*, i.e., unintended, and since that person lacks subjective certainty with regard to the outcome, asserts *Taz*, the act is not to be classified as a prohibited *pesik reisha*.

That position is disputed by R. Akiva Eger, *Hiddushei R. Akiva Eger, Shulhan Arukh, Yoreh De'ah* 87:6. Rema rules that it is forbidden to kindle or to stoke a fire under a pot owned by a non-Jew. Rema recognizes that, since non-Jews do not use separate utensils for cooking meat and dairy products, it is likely that tending to the fire will constitute an act of cooking a mixture of milk and meat that has been

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absorbed within the walls of the pot—an act prohibited to a Jew. R. Akiva Eger comments:

I find it difficult [to understand]. [The Jew] has no intention to cook; [he intends] only to stir the fire. [That act] is not a *pesik reisha* because perhaps the non-Jew did not cook meat and also milk in the pot. [Therefore,] it must [be the case that it is] only an uncertainty with regard to the future [that is permitted when the result is unintended, i.e., the uncertainty is] that perhaps such [an effect] will not come about as a result of his act, e.g., pulling a chair or stool [in which case] there is doubt [because] perhaps his pulling will not create a hole; but [with regard to] uncertainty concerning the past as in this case in which, if there is an absorption of [both] meat and milk, the stoking will certainly cause [prohibited] cooking, but the uncertainty is [only that] perhaps there is no absorption of milk and meat [in the wall of the pot]. That is properly described as a *pesik reisha*.

Later authorities term a *pesik reisha* of the latter nature a “*pesik reisha de-le-she-avar*—a *pesik reisha* regarding the past” in contradistinction to the standard “*pesik reisha de-le-haba*—a *pesik reisha* with regard to the future.” A *pesik reisha de-le-haba* is prohibited only if the act is known with certainty to entail a prohibited result; an act involving a possible—and hence doubtful—*pesik reisha de-le-she-avar* is forbidden, as are all doubtfully prohibited acts. According to R. Akiva Eger, only an action involving lack of foreknowledge of the unintended effect of a contingent act is permitted; an act whose result is clearly determined—albeit such determination is unknown to the actor—constitutes a “doubtful” transgression.

The refrigerator’s compressor will or will not commence operation immediately upon the opening of the refrigerator door. Whether it will or will not do so depends entirely upon the temperature level inside the refrigerator one moment before the door is opened. Whether or not the compressor is poised to begin operation is unknown to an external observer but has been factually determined before the act is commenced. Hence, the situation is analogous to placing a cover over a receptacle without knowing whether or not there is a living creature inside, i.e., if there *is* a creature inside, placing a cover over the receptacle is in the nature of a *pesik reisha de-le-she-avar* that is prohibited according to R. Akiva Eger’s analysis of Rema’s ruling.²²

²² Cf., *Shulhan Arukh ha-Rav, Orach Hayyim, Kuntres Aharon 277:1* and R. Joshua Weingarten, *Teshuvot Helkat Yo’av, Orach Hayyim*, no. 8.

(c) The Counter-Arguments

1. *Mishnah Berurah*, *Bi'ur Halakhah* 316:3, rules in accordance with the permissive view of *Taz* and cites comments of Ramban that support *Taz*' position. However, *Bi'ur Halakhah* is equivocal with regard to relying upon the ruling of *Taz* in instances of a *pesik reisha de-le-she-avar* in situations involving biblically proscribed acts.
2. Moreover, R. Shlomoh Zalman Auerbach, "Mekarer Hashmali be-Shabbat," *Kovez Ma'amarim be-Inyanei Hashmal be-Shabbat* (Jerusalem, 5738), p. 29,²³ asserts that there is no contradiction between *Taz* and R. Akiva Eger and that the latter would agree that such acts are permitted in conjunction with possible *Shabbat* violations in circumstances in which the effect of the act cannot be known in advance. The reason, argues Rabbi Auerbach, is that, unlike other transgressions, *Shabbat* culpability is contingent upon "*melekhbet mahashevet*,"²⁴ i.e., an act of "premeditated labor." That higher level of awareness, contends Rabbi Auerbach, is not present in a *pesik reisha de-le-haba* and is equally absent in a *pesik reisha de-le-she-avar*.²⁵ In support of that contention Rabbi Auerbach quotes R. Mordecai Benet, *Magen Avot*, *Shabbat* 30a, whose opinion is cited as authoritative by R. Isaac Maltzen, *Shevitat ha-Shabbat*, *Kelalei Davar she-eino Mitkhaven* (Jerusalem, 5673), chap. 6, sec. 8.
3. Some authorities, including R. Shlomoh Zalman Auerbach, *Kovez Ma'amarim*, p. 29 and *Minhat Shlomoh*, I, no. 10, sec. 9, assert that R. Akiva Eger forbids a possible *pesik reisha de-le-she-avar* only in situations comparable to that of placing a cover over a receptacle in which a fly may be present, i.e., situations in which the presence of the fly could readily be discerned were one to endeavor to make such a determination. However, it is not possible for a person intent upon opening a refrigerator door to know whether his act will trigger operation of the compressor. Since the result of that act cannot be determined in advance, argues Rabbi Auerbach, the act cannot be regarded as even a doubtful infraction. The rationale underlying this distinction is that, in the case of *pesik reisha de-le-haba*, a person cannot be said not to intend the secondary result that occurs as a *pesik reisha*, since the effect is a necessary consequence of his act and

²³ Reprinted in *Teshuvot Minhat Shlomoh*, I, no. 10, sec. 9.

²⁴ See *supra*, note 8.

²⁵ A similar view was earlier advanced by R. David Zevi Hoffmann, *Teshuvot Melammed le-Ho'il*, *Even ha-Ezer*, no. 102. Cf., however, *Sha'arei Yosher*, *sha'ar*, no. 3, chap. 25 and *Teshuvot Helkat Yo'av*, no. 8. See also *Avnei Nezer*, *Orah Hayyim*, no. 251.

hence is at least constructively intended. The same is true of even a possible *pesik reisha de-le-she-avar* because a person cannot turn a blind eye to that which can readily be determined and plead that the result is unintended; he can, however, make that claim if it is impossible for him to discover in advance that the predetermined future result will actually occur.

4. The Restrictive Opinions: When the Compressor Is Operating

Those who forbid opening the door even when the compressor is running do so because the thermostat not only causes the compressor to begin operation when the temperature rises but also causes the compressor to continue to operate for as long as is necessary until the temperature is lowered to a preset level. When the temperature within the refrigerator cabinet rises the compressor operates briefly until the thermostat returns to its preset level at which time the compressor ceases to operate. Opening the door while the compressor is running causes additional warm air to enter and thereby causes the compressor to continue in operation for a longer period of time than would otherwise have been necessary in order to lower the temperature to its preset level. That act, to be sure, is in the nature of a *gerama* but is nevertheless forbidden by those authorities as a *gerama* of a *pesik reisha*.²⁶ Those authorities regard the situation as similar to closing a door in the face of an oil-burning lamp situated in close proximity to the doorway with the result that additional oil is drawn toward the wick.²⁷

Nevertheless, the majority of rabbinic authorities who have addressed the issue permit opening the refrigerator door when the compressor is in operation. It is indeed the case that, if the refrigerator door remains closed, the compressor will operate for a shorter period of time. This is so

²⁶ Cf., however, Me'iri, *Shabbat* 120b; R. Zevi Pesach Frank, *Teshuvot Har Zevi, Orah Hayyim*, no. 133; *Shemirat Shabbat ke-Hilkhatah*, I, 1:39, note 118 and 26:9, note 31; and *Shemirat Shabbat ke-Hilkhatah*, III, *Mavo le-Hilkhot Shabbat* 1:24, note 94.

²⁷ See *Shulhan Arukh, Orah Hayyim* 277:1. It is, however, permitted to close the door to a room containing a burning candle even though the result will be prolongation of the time that the candle continues to burn. Rabbi Kanterovitz, *Ha-Mesilah*, vol. 2, no. 3 and *Hiddushei ha-Gri*, I, 161a, describes that phenomenon as not enhancing the act of "burning" but merely allowing an ongoing form of "labor" to run its course by preventing external interruption. Rabbi Henkin, *Ha-Mesilah*, vol. 2, no. 4 and *Edut le-Yisra'el*, p. 152, cites that provision as demonstrating that a *pesik reisha* that occurs "at a different time, in a different place and is not observable at the time of the act" is not in the category of a forbidden *pesik reisha*. See *supra*, note 20.

because the compressor will automatically shut off when the internal temperature falls to the preset level. Opening the refrigerator door allows additional warm air to enter thereby causing a further rise in temperature. That further rise in temperature will, in turn, cause the compressor to remain in operation longer since it will take more time to lower the temperature to its preset level. However, contend those authorities, preventing the compressor from shutting off does not involve any forbidden form of “labor”; preventing the compressor from ceasing to operate merely allows ongoing labor to continue for a longer period of time. Those authorities maintain that the situation is not to be categorized as an act causing the continuation of a prohibited activity—as is the case with regard to closing a door situated in close proximity to an oil-burning lamp—but as an act preventing generation of an instrument that would cause a prohibited activity to cease, i.e., an act impeding the cooling process that would generate cold air, that, in turn, would turn off the compressor. Closing a door in the face of a gusting wind will prevent the flame from being extinguished and will effectively cause additional fuel to be consumed. Such an act is a prohibited *gerama*. Nevertheless, closing the door is certainly permitted when no wind is as yet in existence. A *gerama* resulting in “labor” performed by means of a cause that is not yet in existence—in this case, the wind—is entirely permissible. Were it possible to do so, it would certainly also be permissible to prevent the wind from gusting or to delay it from doing so, even though the lamp would thereby continue to burn. Opening the refrigerator door is tantamount to delaying the gust of wind, i.e., opening the door delays the generation of enough cold air to cause the compressor to shut off. Thus, the *gerama* involved in opening the door takes place before the cause of the labor, i.e., the cold air, is in existence.

III. THE NATURE OF THE PROHIBITION REGARDING USE OF ELECTRICITY ON *SHABBAT*

As has been discussed, for many decisors the major consideration upon which a permissive view is based is either that the matter involves a doubtful *pesik reisha* with regard to a rabbinic prohibition or that the authorities who permit a *pesid reisha de-lo niha leih* may be relied upon with regard to rabbinic infractions or that the *gerama* of a *pesik reisha de-lo niha leih* with regard to a rabbinic prohibition is permitted.²⁸ Hence, a crucial

²⁸ See *supra*, note 15.

factor in resolving the question of opening a refrigerator door on *Shabbat* is whether generation of an electrical current constitutes a biblical or a rabbinic prohibition.

The most obvious concern is the phenomenon of sparking, i.e., sparks that are produced when contact is made between electrical wires in closing a circuit. Prominent among the authorities who equate creation and extinguishing of sparks with generation and extinguishing of a flame is R. Jacob Breisch, *Teshuvot Helkat Ya'akov*, III, no. 94.²⁹ Numerous other authorities take note of the transient, ephemeral nature of a spark and rule that it is not at all analogous to a flame.³⁰ Moreover, they contend, sparking not only fails to serve any constructive purpose but is also inherently *mekalkel* or “destructive” in nature. In addition, sparking constitutes production of fire in a manner that is *ke-le-ahar yad* or unusual in nature.³¹ Hence, generation of sparks on *Shabbat* can involve no more than a rabbinic infraction. It should also be noted that sparking has been eliminated in most modern-day appliances and, at the minimum, is not in the nature of *pesik reisha*.

Some authorities, following the position of R. Isaac Shmelkes, *Teshuvot Bet Yizhak, Yoreh De'ah*, II, Indices and Addenda, no. 31, regard generation of electricity as a rabbinically forbidden form of “*molid*,” i.e., “causing something to be born” in the sense of causing something to come into existence.³² The term “to be born” should not be understood literally. An example of *molid* is producing a flame by striking a match, an

²⁹ See also R. David Zevi Hoffmann, *Teshuvot Melammed le-Ho'il, Orah Hayyim*, no. 49.

³⁰ *Pri Megadim, Orah Hayyim, Mishbezot Zahav* 502:1, asserts that a flame that is not attached to a material substance that it consumes is not “fire” for purposes of Sabbath laws. See also *Hazon Ish, Orah Hayyim* 50:9; Rabbi Henkin, *Ha-Mesilah*, vol. 2, no. 4 and *Edut le-Yisra'el*, p. 152. See also *Encyclopedia Talmudit*, XVIII, 171-173 and 733-735. Cf., Rabbi Auerbach's *Kovez Ma'amarim*, pp. 26-27 and *Teshuvot Minbat Shlomoh*, I, no. 10, sec. 7, who asserts that generation of sparks is unintended and since it serves no useful purpose it is in the nature of a *mekalkel* in that it wastes electricity. Since the door is never opened for the purpose of generating sparks, Rabbi Auerbach considers generation of sparks in that manner to be *ke-le-ahar yad*, i.e., an act performed in an unusual manner, a factor that in itself would reduce the severity of the act to a rabbinic infraction. Citing *Dagul me-Revavah, Orah Hayyim* 340:3, Rabbi Auerbach concludes that even *Magen Avraham, Orah Hayyim* 314:5, who maintains that a *pesik reisha* with regard to a rabbinic prohibition is prohibited, would concede that it is permitted when carried out in the form of *mekalkel* and *ke-le-ahar yad*.

³¹ See *Kovez Ma'amarim*, p. 25 and *Teshuvot Minbat Shlomoh*, I, no. 10, sec. 7, s.v. *gam katav*.

³² That view is also espoused by R. Chaim Ozer Grodzinski, *Teshuvot Abi'ezer*, IV, no. 6. See also R. Yitzhak Drezi, *Shevut Yizhak* (Jerusalem, 5758), chap. 17, sec. 4.

act forbidden even on *Yom Tov* despite the fact that burning fuel for purposes of cooking and the like is permitted. Both the wood and the agent that causes combustion already exist. The flame is “newly born” in the sense that the essential state of those existing materials has been transformed. Another example of *molid* is infusing clothing with perfume so that the cloth will become suffused with the aroma of the perfume. Both the perfume and the clothing are already in existence as separate entities. The perfumed article of clothing is a new entity in the sense that it has attained a new state by becoming saturated with, and retaining, an aroma that would otherwise dissipate.

Bet Yizhak regards introduction of electrical current into a metal or wire as similar in nature. He regards the electrified wire, as opposed to the inert piece of metal, as having acquiring a new state and hence as constituting a “newly-born” entity. An act in the nature of *molid* is only rabbinically prohibited. As earlier noted, the applicable rule is that an act that involves only a merely possible, and hence doubtful, rabbinic infraction is entirely permissible. Consequently, an act that may possibly, but not necessarily, effect a result in the nature of *molid*, e.g., an act in the form of a possible, but doubtful, *pesik reisha de-le-she-avar*, is permissible.³³

An analysis of the nature of electricity renders *Bet Yizhak*'s thesis subject to challenge. In perfuming clothing, the perfume saturates and becomes embedded in the cloth in a manner that is quite durable. Hence, the perfumed garment is regarded as a new entity, albeit attributable to two already existing progenitors, *viz.*, the aroma and the cloth. In contradistinction, electrical current effects no change in the essential nature of the medium in which it is conducted; electrical current is no more than a movement or flow induced in electrons already present in the conductor. Movement of the electrons is ultimately initiated by a generator or battery. Electrons travelling through a wire collide with atoms of which the wire is composed, thereby heating the wire and creating thermal motion that is essential for lightbulbs, heaters and the like. The energy of that flow can be transferred to cause physical entities to be set in motion.

The movement of electrons also generates magnetic fields as the electrons move through conductors, most especially coil conductors, known as solenoids, which intensify the magnetic field. It is the magnetic field associated with the flow of electrons that makes the existence of motors possible. The core of a motor is an electromagnet—a coil known as an

³³ In addition, Rabbi Auerbach, *Kovez Ma'amarim*, p. 24 and *Teshuvot Minhat Shlomoh*, I, no. 10, sec. 6, develops the novel view that *gerama* of a *molid* is not at all prohibited and hence is permitted even when consciously intended.

armature—and it is the movement of the armature that is transmitted to other parts of the mechanism.

Thus, electrical current seems to be analogous to a circle of dancers moving at a rapid pace. Heat and motion are generated by the dancing but the dance is hardly a new entity; when the dancing stops, both heat and motion dissipate. Hence, commencing the dance cannot be regarded as an instance of *molid*. “Dancing” (i.e., circulating) electrons convey energy in the form of current, but that current is nothing more than transient movement of already existing electrons in an already existing medium. When motion of the electrons ceases there is no further electric current and no further heat or motion.

Hazon Ish, *Hilkhot Shabbat* 50:9,³⁴ regards the completion of an electrical circuit on *Shabbat* as constituting a biblical transgression. *Hazon Ish* regards the act as being encompassed either within the category of “*makkeh be-patish*,” i.e., completion of the fashioning of a utensil or artifact, or within the category of “*boneh*,” i.e., “building” or construction. An inert wire, piece of metal or other conductor is simply a raw material; introduction of current by completing an electrical circuit animates the circuit so that previously inert components can serve a pragmatic, utilitarian function. That act is regarded by *Hazon Ish* as either an act of “building” or as an act of completing the fashioning of an artifact. If completing a circuit is an act of *boneh*, breaking the circuit, reasons *Hazon Ish*, must similarly be regarded as an act of “*soter*,” i.e., destruction of a “built” entity.³⁵

Nevertheless, there are cogent grounds to permit the practice even according to *Hazon Ish*:

- (1) As argued by R. Shlomoh Zalman Auerbach and R. David Zevi Hoffmann, *Teshuvot Melammed le-Ho'il, Even ha-Ezer*, no. 102, even R. Akiva Eger would concede that, with regard to *Shabbat* restrictions, a *pesik reisha de-le-she-avar* is permissible.
- (2) As noted earlier, some authorities regard R. Akiva Eger's formulation of a possible *pesik reisha de-le-she-avar* as limited to situations in which the *pesik reisha*, if present, might be determined in advance.

³⁴ See also the letters of *Hazon Ish* published in *Kovez Ma'amarim, Milu'im*, pp. 61-63 and in *Teshuvot Minhat Shlomoh*, I, no. 11 together with Rabbi Auerbach's response. For further discussion of this issue see *Shevut Yizhak*, chap. 17, secs. 1-2.

³⁵ A view similar to that of *Hazon Ish* was earlier formulated by R. Mordecai Leib Winkler, *Teshuvot Levushei Mordekhai, Mahadura Telita'i, Orah Hayyim*, no. 25. See also *Shevut Yizhak*, chap. 17, secs. 1, 2 and 5. Rabbi Henkin, *Edut le-Yisra'el*, p. 121, regards such acts as “at least” rabbinically forbidden, apparently because of their similarity to completing the fashioning of a utensil.

Those authorities contend that even R. Akiva Eger would concede that, when the presence of a *pesik reisha* cannot be ascertained in advance, an act involving a doubtful *pesik reisha* is permissible.

- (3) In opening a refrigerator door the presence of a *pesik reisha* is itself a matter of doubt since in the majority of instances the compressor will not begin to run immediately upon opening of the door. A doubtful *pesik reisha*, it has been contended by some authorities, may be ignored on the basis of the principle of *rov*.³⁶
- (4) Since the initial rush of warm air is not sufficient to impact upon the thermostat, the opening of the refrigerator door is regarded by some authorities as a *gerama* rather than a proximate cause of the operation of the compressor, even if operation of the compressor is triggered immediately, and hence is only rabbinically forbidden.
- (5) Operation of the compressor, although a *pesik reisha*, is a *pesik reisha de-lo niha leib* and for that reason itself is reduced to a rabbinic infraction.
- (6) Although he questions *Hazon Ish*'s underlying thesis,³⁷ R. Shlomoh Zalman Auerbach suggests that *Hazon Ish* would concede that, for several reasons, causing a compressor to cycle on and off does not involve multiple acts of *boneh* and *soter* or *makkeh be-patish*.³⁸
 - (a) The initial adjustment of the compressor to turn on and off according to the temperature setting may indeed be an act of construction or of fashioning an artifact.³⁹ However, since the nature of the artifact is to turn itself on and off automatically depending upon the temperature, each individual completion or interruption

³⁶ See *Kovez Ma'amarim*, p. 31 and *Teshuvot Minhat Shlomoh*, I, no. 10, sec. 10; and R. Moshe Stern, *Teshuvot Be'er Mosheh*, VI, *Kuntres Elektrik*, nos. 4-5.

³⁷ See *Kovez Ma'amarim*, *Milu'im*, pp. 63-79 and *Teshuvot Minhat Shlomoh*, I, no. 11.

³⁸ R. Shlomoh Zalman Auerbach does not address the question of *molid* in connection with this point. However, it is arguable that it is the initial setting of the device to complete an electrical circuit that is the "*molid*" or "animation" of the electricity and that it is that act that is the "*molid*" of all future cyclical operations. If so, additional factors, such as a rise or fall in temperature, are not separate acts of *molid* but simply govern the expression of the original act.

³⁹ Rabbi Auerbach, *Kovez Ma'amarim*, *Milu'im*, p. 59 and *Teshuvot Minhat Shlomoh*, I, no. 11, also argues that, even according to *Hazon Ish*, completing a circuit when there is as yet no flow of current should not be a form of *boneh*. If so, an appliance attached to a timer might be set when the timer is in the off position. Nevertheless, Rabbi Auerbach cites R. Chaim Greineman, *Hiddushim u-Bi'urim, Orah Hayyim*, II, no. 8, sec. 14, who reports that *Hazon Ish* regarded such a practice also to be a form of *boneh* and further cites *Teshuvot Levushei Mordekhai, Mahadura Telita'i, Orah Hayyim*, no. 25, to that effect.

of a circuit cannot be deemed a discrete act of “construction” or of completing the fashioning of an artifact. Causing the compressor to go on and off fifty times in the course of a day rather than forty times, argues Rabbi Auerbach, cannot be regarded as causing additional acts of either *boneh* or *makkeh be-patish*; rather, the cyclical operation of the compressor is “programmed” into the “construction” of the artifact, i.e., when the refrigerator is plugged into an electrical outlet and started. Consequently, subsequent responses to temperature fluctuations are simply the mode in which an already constructed and completed artifact is used.

Moreover, opines Rabbi Auerbach, it is permissible not only indirectly and unintentionally to cause the compressor to commence operation but it would be permissible even purposely and directly to cause a thermostat-controlled compressor to commence operation sooner than otherwise. His contention is that, since the compressor is already fully operational and already functioning, causing additional occurrences of cyclical activity in no way adds to or enhances the nature of the artifact; hence, such cyclical activity is neither the “construction” nor the “completion” of an artifact.

- (b) R. Shalom Mordecai Schwadron, *Teshuvot Maharsham, Orach Hayyim*, no. 509, basing himself upon *Pnei Yehoshu'a, Beizah* 12a and *Shabbat* 95a, asserts that construction of a temporary structure is not a prohibited form of *boneh*. R. David Ortinberg, *Tehillah le-David* 316:2, similarly maintains that completion of a non-durable artifact does not constitute an act of *makkeh be-patish*. If so, asserts Rabbi Auerbach, opening the door of the refrigerator cannot be a prohibited act because the refrigerator is, in effect, preprogrammed so that the “construction” represented by the completion of an electrical circuit cannot endure because the circuit is designed to “self-destruct” upon a drop in the temperature.

Notwithstanding Rabbi Auerbach’s quite cogent argument that a permissive ruling with regard to opening a refrigerator door on *Shabbat* is entirely compatible with *Hazon Ish*’s thesis concerning the nature of the prohibitions involved in other uses of electrical appliances, it is reliably reported that *Hazon Ish* himself did not sanction that practice.⁴⁰

⁴⁰ See R. Nissim Karelitz, *Hut Shani*, I, sec. 2, *Kuntres ha-Hashmal u-Makbshirei ha-Hashmal*, sec. 2 and *Orhot Shabbat*, III, 26:4, note 7. However, the latter writers also quote a letter from R. Chaim Kanievski indicating that *Hazon Ish* on a single

Apparently he regarded commencement of each cooling cycle to be a new act of *boneh* and/or of *makkeh be-patish*.

IV. DIGITAL REFRIGERATORS

Refrigerators manufactured at an earlier time relied essentially on a thermostat to control operation of a condenser in order to cool the air within the refrigerator cabinet and upon a fan to spread the cold air. Modern-day refrigerators are much more sophisticated. Presently, refrigerators contain sensors, i.e., small internal attachments, that react to heat and cold. The function of the sensors is to transmit data to silicon chips containing a vast number of transistors (electronic or digital switches) on a substrate such as silicon oxide. Those transistors control the voltage, and thus the current flow applied to the compressor, and thereby turn the compressor on and off. The sensors are extremely sensitive to changes in temperature and register even minute fluctuations in electronic circuitry. Those changes are registered even when they are minimal and do not immediately effect a change in any other of the refrigerator's components. The electronic sensors transmit data continuously even when the compressor is in operation.

In addition, many digital refrigerators have a fan in the cooling unit and sometimes in the freezing compartment as well. In many such refrigerators the fan is controlled by a button or spring mechanism that causes the fan to cease operation whenever the door is open. Some refrigerators also incorporate a warning system in the form of a beep or a flashing light designed to alert the user that a door has been left open unintentionally. Effectiveness of the warning system depends upon an electronic card that times the duration that the door is open. Thus, the very opening or closing of the door affects the flow of electrical current.

That problem can be circumvented by disarming the mechanism that causes activity when the door is opened. If the mechanism is a plunger switch, the switch can simply be taped down. If the mechanism is a magnet embedded within the refrigerator, a duplicate magnet can be attached to the door at the corresponding location on the door. The effect is to

occasion did sanction opening a refrigerator while the compressor was running. Cf., R. Abraham Horowitz, *Orhot Rabbeinu*, I, no. 172. *Hut Shani*, in ascribing a stringent view to *Hazon Ish*, fails to note any relaxation of that stance on the latter's part. However, *Hut Shani* concedes that he finds that the reason for banning the practice while the refrigerator is in operation to be elusive. The rationale that Rabbi Karelitz strives to formulate is less than compelling. Cf., R. Chaim Biberfeld, *Menubah Nekhonah* (Jerusalem, 5738), p. 61.

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“fool” the refrigerator into thinking that the refrigerator door is always closed with the result that opening the door has no effect upon problematic functions.

There are digital refrigerator models that do not have separate cooling systems for the refrigerator and freezer compartments. Instead, they have a vent known as a “damper” placed between the compartments for the purpose of allowing cold air to flow from the freezer to the refrigerator. In those refrigerators a thermostat controls a motor that causes the vent to open and close as the temperature within the refrigerator compartment rises or falls. In mechanical refrigerators the damper causes the motor to operate by mechanical release of a spring and hence poses no *Shabbat* problem beyond that presented in opening the refrigerator door. In digital refrigerators the incoming warm air also serves to operate the second motor, i.e., the motor that controls the vent between the two compartments.

Some refrigerators also have a digital screen designed to show internal temperature. Introduction of warm air in opening the door instantaneously causes the reading on the screen to change.⁴¹ Some authorities find that, even in the absence of a screen, recording digital markings in any other manner also constitutes a forbidden activity on *Shabbat* even though neither writing nor any other indication appears on a screen or elsewhere.⁴² Typically, that function is not controlled by the plunger switch or magnet in the door frame. Hence, that problem cannot be obviated by taping the plunger switch or placing a magnet at an appropriate site.

The halakhic problems are somewhat ameliorated in refrigerators that are fitted with compressors known as “inverter motors” designed to run constantly but whose level of operation is modified according to the internal temperature. The presumed halakhic advantage inherent in such systems is that, according to the authorities who permit opening the refrigerator door only when the compressor in operation, those refrigerators can be opened at any time since the compressor runs constantly at least at a low level.⁴³

⁴¹ Functions of that nature, when controlled by an observable spring mechanism, can be deactivated by depressing the mechanism and firmly placing electrical tape over the spring. In models in which the functions are controlled by magnetism, a magnet can be taped to the appropriate internal location.

⁴² See *Iggerot Moshav, Orav Hayyim*, IV, no. 84. See also *Refrigerators and Freezers*, pp. 14-16, 24 and 26. It is difficult to grasp why sub-visual markings, particularly markings not in the form of letters, should be regarded as encompassed within either the category of “writing” or “dyeing.” See this writer’s discussion of photography and use of video cameras on *Shabbat* in *Contemporary Halakhic Problems*, V (Southfield, Mich., 2005), 137-146.

⁴³ Raising or lowering the electrical current in an already operating device would appear to present no problem, provided that no metal parts are heated or cooled in

A declaration, dated 26 Kislev 5772, prohibiting use of refrigerators in which opening the door causes either an incremental flow of electrical current or the recording of digital markings was issued over the signatures of Rabbis Nissim Karelitz, Aryeh Leib Steinman, Joseph Shalom Eliashiv, Chaim Kanievski, Samuel Auerbach and Shimon Ba'adni.⁴⁴

V. FROST-FREE REFRIGERATORS

In non-frost-free refrigerators the coils comprising the evaporator become very cold and cause moisture in the air to freeze with the result that frost or ice accumulates on the surface of the coils. In such refrigerators the unit has to be turned off in order to defrost the coils and allow the ice

the process. Since the mechanism is already in operation causing its action to be enhanced or diminished should not be considered to be an act of *molid*, *boneh* or *makkeh be-patish*. Thus, R. Joshua Neuwirth, *Shemirat Shabbat ke-Hilkhatah*, I, 34:28, quotes Rabbi Auerbach as permitting raising and lowering the amplification of a hearing aid provided that it has been turned on before *Shabbat*. See also R. Shlomoh Zalman Braun, *She'arim Mezuyanim be-Halakhah*, I, 80:39. The identical issue is presented in the use of air-conditioning units that employ an inverter motor. In such appliances the motor runs without interruption while the temperature is constantly regulated by sensors that increase or diminish the flow of electrical current.

Nevertheless, *Shevut Yitzhak*, chap. 17, sec. 4, compares increasing the flow of electricity to intensifying the aroma of a garment by spilling additional perfume upon it. It is evident that *Mishnah Berurah* 511:26 would forbid that practice as a form of *molid*. Cf., however, *Shulhan Arukh ha-Ray*, *Orah Hayyim* 511:7. *Shevut Yitzhak* argues that increasing flow of current is similarly forbidden. R. Moshe Feinstein, *Iggerot Mosheh*, *Orah Hayyim*, IV, no. 84, forbids use of a microphone on the Shabbat because, *inter alia*, speaking into a microphone causes an increase in the flow of electrical current. R. Abraham Horowitz, *Orhot Rabbenu*, I, sec. 187, reports that *Hazon Ish* ruled that increasing the flow of electrical current on *Shabbat* is prohibited.

R. Joshua Neuwirth, *Shemirat Shabbat ke-Hilkhatah*, addenda, chap. 38, note 31, explains that the concern is that increasing the electrical flow causes a previously dormant "portion" of the electrical wire to become "alive." *Shemirat Shabbat ke-Hilkhatah*, I, 38:7 rules that increasing the flow of electricity is prohibited but, nevertheless, *ibid.*, note 31, cites R. Shlomoh Zalman Auerbach as ruling that it is permitted to do so without question provided that no wire is "kindled" or extinguished. See also *Minhat Shlomoh*, I, no. 9. Surprisingly, as noted above, Rabbi Neuwirth, *Shemirat Shabbat ke-Hilkhatah*, I, 34:28, unreservedly permits raising and lowering the amplification of a hearing aid. Cf., R. Levi Yitzhak Halperin, *Ma'aliyot be-Shabbat* (Jerusalem, 5744), chap. 13; *idem*, *Teshuvot Ma'aseh Hoshev*, I, no. 1, sec. 17, no. 3, sec. 6, II, no. 5, secs. 2-3 and no. 16. sec. 2; as well as *idem*, *Yeshurun*, XI (Elul 5762), 722. See also *Shevut Yitzhak*, chap. 17, secs. 3-4 and *Refrigerators and Freezers*, p. 31.

⁴⁴ See *Refrigerators and Freezers on the Sabbath*, p.16. See also *ibid.*, pp. 20 and 24. Rabbi Karelitz' ruling regarding this matter is discussed in detail in his *Hut Shani*, V, *Kuntres ha-Hashmal u-Makbshirei Hashmal*, sec. 2.

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to melt. In frost-free units the cooling cycle stops periodically and a heating element wrapped around the evaporator is activated. The heating element melts the ice and the accumulating water is drained through a duct in the back of the unit. The cooling process is then restarted.

Causing metal within a heating element to become hot constitutes a biblical violation.⁴⁵ Thus, any leniency accepted by some authorities predicated upon the presumption that opening a conventional door involves a rabbinical infraction⁴⁶ rather than a biblical violation is not applicable to the opening of a no-frost refrigerator.

In most presently-manufactured frost-free refrigerators the defrost cycle is set to commence only after the compressor has been in operation for a certain period of time. When that period draws to a close the heating element is activated and the cooling system is switched off. The interval between the close of the defrosting period and its restarting is termed “compressor time” and is measured in “compressor hours,” i.e., the number of hours that the compressor is in actual operation. Reportedly, “compressor run time” is usually six hours.⁴⁷ The compressor runs only as long as is necessary to lower the temperature to the level at which the thermostat has been set. Upon reaching that level the compressor is deactivated until the temperature rises within the refrigerator cabinet, at which point the cooling system is restarted. The frequency with which the compressor is activated depends upon how rapidly the temperature rises within the refrigerator cabinet. The rise in temperature depends upon a number of factors, including the number of times the refrigerator door is opened, the temperature of the air within the room and, to some extent, by the heat of the food placed within the refrigerator.

Most significantly, insofar as the issue posed by the self-defrosting mechanism is concerned, an ongoing record of the cumulative time of compressor operation is maintained by the mechanism governing the compressor. Upon culmination of a preset period of compressor operation ranging from six to twenty-four hours the defrost element is activated for a period of time ranging between fifteen minutes and half an hour. Each model refrigerator has its own algorithm for determining the actual cumulative duration of compressor operation between defrosting periods. The longer the compressor runs the sooner the defroster wire will be activated. When the fifteen to thirty-minute defrosting period

⁴⁵ See Rambam and Ra'avad, *Hilkhot Shabbat* 12:1.

⁴⁶ E.g., *gerama* of a *pesik reisha* of a rabbinic prohibition when the prohibited result is *lo niha leih*. See *supra*, note 28 and accompanying text.

⁴⁷ See *Refrigerators and Freezers*, p. 21.

elapses the heating element is deactivated and the cooling cycle is restarted.

Alternatively, some refrigerators have a mechanism that records each opening of the refrigerator door and, entirely ignoring actual compressor operation, activates the defrosting process after the door has been opened a certain number of times.

VI. SOLUTIONS

I. A Short-Cycle Timer

It is possible to obviate the problem even with regard to no-frost refrigerators without introducing any special device. The refrigerator can be connected to a short-cycle timer and the door opened only when the timer has disconnected the refrigerator. The warm air introduced into the refrigerator cabinet may indeed cause the heating element to be activated immediately upon restoration of electrical power, or at least to become activated sooner than otherwise, but that phenomenon is certainly an instance of performing a *gerama* before the cause of the “labor” came into existence. At the time of opening the refrigerator there is as yet no electric current capable of effecting an act of forbidden “labor.” As discussed earlier, such a situation is comparable to opening a door in proximity to a burning lamp when there is as yet no wind present.

If the refrigerator’s thermostat is mechanical rather than digital⁴⁸ there is another even more convenient solution available. The temperature control dial may be set at the coldest setting so that the compressor will be cut off only when the coldest temperature is reached. A short-cycle timer can then be connected to the refrigerator and set to turn the refrigerator on and off at regular intervals. This will have the effect of preventing the refrigerator from ever becoming cold enough to shut off the compressor during the period in which the timer allows it to operate. As a result, the compressor will operate continuously without interruption when permitted to do so by the timer. The convenience is that under those circumstances the refrigerator may be opened even while the compressor is running.⁴⁹

⁴⁸ Digital refrigerators contain sensors connected to an internal control card. The digital record produced within the control card may present a problem even if the information is not recorded on a screen. See *Refrigerators and Freezers*, p. 10 and *supra*, note 42.

⁴⁹ See *Refrigerators and Freezers*, p. 21, note 2.

2. A “Sabbath Mode” Device

In an attempt to surmount the halakhic problems involved in *Shabbat* use some manufacturers have fitted their refrigerators with an optional device known as a “Sabbath mode.” The attachment disconnects fans from the door switch, deactivates lights, icons, digital readouts, solenoids, beeps and alarms as well as the icemaker and cold water dispenser.⁵⁰ The no-frost system is converted to act on the basis of clock hours as regulated by a preset timer rather than on the basis of compressor hours. The compressor continues to operate under the influence of a thermostat. Conversion to clock hours is the most significant feature of the Sabbath mode device because it serves to obviate the biblical transgression otherwise involved in heating metal.

In the Sabbath mode device a delay function is also added. The effect of the delay function is not to allow activation of the compressor to be immediately effected by a rise in temperature; rather, the compressor commences operation only fifteen to twenty-five seconds after the thermostat causes the electrical circuit to close. The delay is designed to render opening the refrigerator door a *gerama*, or indirect cause, rather than a direct, proximate cause. This, then, results in opening the refrigerator door to be relegated to the category of a *gerama* of a *pesik reisha de-le-she-avar*. However, assuming that a delay transforms the act into a *gerama*, the fifteen- to twenty-five second delay may not be sufficient for that purpose. R. Nissim Karelitz has been quoted as ruling that only a delay of a minute or longer may be deemed to render the act a *gerama*.⁵¹

Moreover, although as earlier noted, some authorities permit a *pesik reisha de-le-she-avar* when accomplished by means of *gerama*, the many authorities who forbid opening the refrigerator door while the compressor is running do so precisely because they are of the opinion that even *gerama* of a *pesik reisha de-le-she-avar* is prohibited. The delay function does not obviate the concern raised by the opinion of those authorities.

Nor is it at all clear that introduction of a delaying mechanism in itself reduces the status of the act to that of a *gerama*.⁵² For example, adding

⁵⁰ Use of icemakers and cold water dispensers present further *Shabbat* issues beyond the scope of this discussion.

⁵¹ See *Refrigerators and Freezers*, p. 13.

⁵² See *Minhat Shlomoh*, I, no. 9 and *Shevut Yizhak*, chap. 13:1 as well as the opinions of R. Joseph Shalom Eliashiv and R. Moshe Feinstein, as reported *ibid.*, chap. 15:1. See also *Refrigerators and Freezers*, p. 13.

fuel to a lamp on *Shabbat* is regarded as a biblical violation even though there is considerable delay before the added fuel is consumed by the flame.⁵³

⁵³ See Rosh, *Beizah* 2:17. Cf., however, *Pnei Yehoshu'a*, *Shabbat* 17b and *Beizah* 22a as well as R. Kanterovitz, *Ha-Mesilah*, vol. 2, no. 3, and *Hiddushei ha-Gri*, pp. 161a-162a. It may also be noted that there is discussion of whether homicide committed by administration of poison is a capital crime because of the many intermediate physiological steps that occur before the victim goes into cardiac arrest. There is no mention in those sources of a consideration that the act is merely a *gerama* because death is not instantaneous. See R. Jacob Schorr, *Teshuvot Ge'onim Batr'ai*, edited by the author of *Sha'agat Aryeh* (Livorno, 5518), no. 45 and R. Judah Eiyush, *Teshuvot Bet Yehudah*, *Even ha-Ezer*, no. 14.

Nevertheless, Rabbi Friedman, *Mekarer Hasbmali be-Shabbat*, pp. 3-4, assumes that whether a pause between an efficient cause and its natural and direct effect relegates the act to the status of a *gerama* is a matter of controversy between Rashi and *Yad Ramah*, *Sanhedrin* 77b. According to Rashi, only harm caused immediately by the gush of water that follows immediately in wake of a breach of a dam is considered to be the proximate result of the breach. According to *Yad Ramah*, any harm caused by the limited quantity of water immediately released, even after that water has resumed its normal flow, is ascribed to the person causing the breach. Rabbi Friedman assumes that Rashi, in asserting that culpability is limited to the immediate harm resulting from the breach in the dam, does so because he maintains that a delayed result always relegates the act causing that harm to the category of *gerama*, whereas *Yad Ramah* makes no such distinction.

This writer finds that analysis of Rashi's position unsatisfactory. Shooting an arrow is the proximate cause of resultant harm even though the harm does not occur until after the arrow has completed its flight; nevertheless, culpability is assigned no matter how much time has elapsed. For purposes of culpability the act is regarded as complete when it is initiated. The issue of *gerama* arises only when there has been a temporal interruption in the power or force transmitted to the object causing the harm by the initiator of the act. In the case of a breached dam, there is no such interruption. Thus, the controversy between Rashi and *Yad Ramah* must be of an entirely different nature.

The controversy between Rashi and *Yad Ramah* does not hinge upon the delineation of *gerama*; rather, the controversy between those authorities is with regard to the definition of an "act." The halakhic definition of an "act" is the transfer of motion, power or force from a person to an object. Breaching a dam involves no such transfer. The motion, power or force expended in piercing or removing the dam is not transferred to the water. Motion or force is expended solely to remove an impediment to the continued effect of an already existing natural force. The novel notion formulated by the Gemara is that such pent-up force is treated as if that force were imparted to the water in the act of removing the barrier. Accordingly, the person who removes the impediment is deemed to be the proximate cause of that force. Rashi maintains that this "novel" extension of the notion of proximate cause is limited to the actual pent-up force immediately released by removal of the barrier, whereas *Yad Ramah* avers that all subsequent natural motion of the quantity of water that had been pent up behind the dam is to be ascribed to the act of removing the barrier.

To this writer there is no reason to assume an effect must occur immediately without delay for an act causing that effect to be categorized as a proximate cause. Thus, for example, a person who places a pot on a fire on *Shabbat* is culpable even though

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It would certainly appear that categorizing a delay as constituting a *gerama* is inconsistent with the notion of proximate cause espoused by R. Chaim Ozer Grodzinski. A standard switch consists of a toggle that, when moved, causes two wires to make contact and thereby complete an electrical circuit. It might seem that it is the movement of the wires, rather than the movement of the toggle, that is the proximate cause of completing the circuit. If so, the movement of the toggle that induces movement of the wires is merely a *gerama*. Nevertheless, citing early authorities, R. Chaim Ozer Grodzinski, *Teshuvot Abi'ezer*, III, no. 60, asserts that since movement of the switch is the usual and normal manner of completing an electrical circuit, it must be regarded as the proximate cause for purposes of Halakhah. The natural and inevitable consequence of any particular act, *Abi'ezer* apparently contends, is always deemed a *melekhbet mabashevet*, i.e., conscious and premeditated, and hence constitutes a biblical violation.

It should also be noted that, according to some authorities, the delay function, even if effective in causing the act to be considered a *gerama*, may be redundant. As noted earlier, it has been argued that a) opening the refrigerator door is itself a *gerama* unless the initial rush of warm air is sufficient to activate the compressor and b) even if the initial rush of warm air proves to be sufficient to activate the compressor, such a concern does not render the act a forbidden *safek pesik reisha de-le-she-avar*

the food does not become cooked until much later. See R. Moshe Schick, *Teshuvot Maharam Shik, Orah Hayyim*, no. 157. Hence, there is no reason to assume that temporal interruption of the motion unleashed by an act negates the status of that act as a proximate cause provided, of course, that it is the original act that is solely responsible for restarting the motion. Assume a universe in which, when an arrow strikes an object in midflight, the flight of the arrow is not merely slowed but comes to a complete halt in midair only to resume its trajectory after a brief period of time. Since there is no supervening cause, the act of releasing the arrow is the sole proximate cause of the resumed flight.

The mechanism that causes a delay in starting operation of a compressor does not function by introducing a new, interposed entity that must be activated, as might be the case when one object is set in motion and it, in turn, strikes a second object. Rather, it is in the form of a temporary impediment to actualization of an existing cause timed to remove itself of its own accord. The resultant motion is the direct expression of the force imparted by the motion of the original actor, not a secondary motion generated by the earlier, primary motion. In an electrical apparatus employing such a time delay, the act responsible for completing the circuit is fully completed by the action taken to operate the mechanism; the timer serves only as a restraint that creates a temporary delay in actualization of the transfer of motion; the resumed motion or force is not a newly-generated secondary cause but rather the resumed expression of the original cause.

because the principle of *rov*⁵⁴ determines that any particular act is not of that nature.⁵⁵

3. Mishmeret ha-Shabbat

An Israeli organization, *Mishmeret ha-Shabbat*, has devised an attachment designed to avoid all *Shabbat* problems in order to allow opening of the refrigerator door whenever a person wishes to do so.⁵⁶ The attachment disconnects all sensors from the command card. Instead, the attachment causes the command card to ignore any change in temperature and to turn on the refrigerator at set intervals. The attachment similarly causes the heating element responsible for defrosting the refrigerator to come into operation automatically after the lapse of a certain number of hours and to remain operative for a set period of time. As a result, opening the refrigerator door has no effect whatsoever upon its operation.

⁵⁴ See *supra*, p. 64.

⁵⁵ See *supra*, p. 64 note 10.

⁵⁶ See *Refrigerators and Freezers*, pp. 27-28. Use of such an attachment may or may not invalidate the manufacturer's warranty.