

HALOCHOSCOPE

This week's question:

May one wear a watch on *Shabbos*, that is powered by sunlight? Each time he exposes it to the sun, it recharges a little. Is there a difference between wearing it under a sleeve and wearing it uncovered, or when wearing short sleeves?

The issues:

- A) *Tikun Kli*, 'fixing' a utensil
- B) *Chama*, intentionally using the sun's heat for cooking; *Toldos Chama*, solar power
- C) Is charging the cell (altering the chemicals through light or heat) forbidden?
- D) *Davar She'aino Miskaven*; *Psik Raisha*

A) *Tikun Kli*

The most serious issue in this case is that the watch needs the charging to make it work. This means that by charging it one is 'fixing' a utensil. This involves *makeh bepatish*, a Scriptural *melacha* pertaining to finishing touches on a product, or *tikun kli*, a Rabbinical extension of it. In addition, intentionally recharging the watch when it is dead could involve causing the electric current. Some consider this a form of these *melachos*. [Some add that it could involve *boneh*, building in some form.]

Because it is such a common activity in its various forms, there are many extensions of this *melacha*, to prevent violation. Scriptural *makeh bepatish* applies to adding finishing touches, even if the utensil is functional without it. Trimming loose ends of thread on a garment, banging out dents in a pot, polishing or sanding a wooden item, or charring a wick are examples of *makeh bepatish*. If the entire item is made, the Talmud debates whether *boneh*, the *melacha* of building, is involved. Repairing a broken violin string is a Scriptural violation. Tuning a violin is needed for its functioning. This activity is always done. One could suggest that it is the normal way to use the instrument. However, since this is not part of the playing, one must at the very least consider it a type of 'repair'.

If the repair is not essential for the functioning of the item, such as straightening a bent pin, the Rabbis instituted a Rabbinical extension of *makeh bepatish*. This is further extended to forbid activities that could lead to *makeh bepatish* or *tikun kli*. One may not reattach a loose chair leg, even loosely, unless it is such that one normally does not really tighten it. Swimming is forbidden, lest one be tempted to fashion a float (or, in current terms, to inflate a swimming aid). Beating a beat without an instrument is forbidden, as an extension of the avoidance of using instruments. Toiveling new food utensils is also forbidden, because it is *nir'eh kimesaken*, has the appearance of *tikun kli*. The same applies to tithing produce or removing the *challah* tithe from dough.

A standard example of how this applies is a watch. If it has stopped, winding it or changing the battery is clearly *tikun kli*. The now useless watch would also be *muktzeh*, unless worn as jewelry. Winding it up when it has not stopped, adjusting the hands, set-

ting the alarm or setting it not to go off, are all subjects of debate. If the activity involves causing the sound, there seems to be a consensus to forbid it, as part of the prohibition against causing music. Wearing an automatic watch causes the mechanism to continuously rewind. As we shall see in the last section, many poskim maintain that this does not involve *tikun kli*, but not all for the same reasons. Some would consider it a case where no *tikun kli* would be instituted. Others would say that it does not count as forbidden 'activity'. [See Shabbos 31b 41b 47a-48b 74b 102b-103a 122b 146a-b, Eruvin 35b-36a, Beitza 10a 11b 22a 33b, Poskim. Tur, B.Y. Sh. Ar. O.C. 314, 317, 338:1-3, commentaries.]

B) Chamah and Toldos Chamah

The heat of the sun can be used easily to start a fire. It can also be used to heat food to the point that it will cook. Both of these are considered true *melachos* when done in the usual way. Other materials can be placed in the sunlight to effect both of these results. They absorb the rays of sunlight and amplify them or concentrate them. Then they are used to produce fire or transferred to food to cook it. Other uses of sunlight involving a *melacha* include laundering and drying clothing or hides, aiding growth of plants, causing colors to appear (in the case of invisible ink) melting solids, etc. In all of these cases, it must be determined whether the actions of the humans constitute a *melacha* activity.

Producing fire in any way is forbidden. One must cause combustion, violating the *melacha* of *ma'vir*. One may not use a magnifying glass to start a flame on paper or wood, or place a flammable material in a place where the sun will cause it to ignite.

Cooking is only forbidden when it is done in the normal way. This excludes cooking with the heat of the sun. It also excludes using the heat of a cloth or sand heated by the sun. These could be even more useful for cooking, but are not considered normal. It is forbidden Rabbinically, only because one would not realize the difference between these and the same materials heated by a fire. When heated by a fire, these materials are considered normal cooking sources, and cooking with them forbidden Scripturally.

Some say that this is because one needs to be able to modify the heat source while cooking. Therefore, while it is possible to cook easily cooked foods in direct sunlight, one would not normally do this. One would also not use the sun to heat up a material to cook other food with. Others say the difference is whether the heat source is predictable and reliable. One would not normally cook with heat that might not work or heat up when it is needed. Based on this, some say that using an alternative to regular cooking heat could be permitted or forbidden. This would include chemical heat (used in army or camping situations, usually for food that is already fully cooked) and microwaves. Chemical heat is not adjustable, but is predictable and reliable. Microwaves are predictable, and can be manipulated to effect the same control as adjusting fire. All in all, if an alternative heat source is usable as a 'normal' manner of cooking, it should be forbidden. This is discussed with regard to using solar powered water heaters, common in Eretz Yisroel.

Some raise the possibility that when solar heat is transferred into electricity, its use is the same as regular heat sources. Due to this possibility, even direct sunlight used for cooking might no longer be considered abnormal. By extension, the same issues that apply to regular electricity should apply to solar electricity. In our case, the solar energy is absorbed as light. The watch can be charged by other light, but its manufacturers claim that even cloudy daylight is more effective than artificial light. Using the energy is not an

issue on *Shabbos*, provided one does not ignite or do any other *melacha*. [See Shabbos 38b-39a, Psachim 41a, Beitza 33a-b, Chulin 8a, Poskim. Halochoscope II:3, Section B. Igros Moshe OCIII:45 Tzitz Eliezer VII:19 IX:20 SSK (1st ed.) 1:n67.]

C) Charging the cell; Activating chemical reaction

By exposing the watch to the sun, a light sensitive material is able to absorb the heat and turn it into energy. This action causes a chemical reaction. While many *melachos* involve this type of reaction, the issues involved there are not the change *per se*. Cooking changes hard material to soft, or vice-versa. It is only forbidden when heat is used to cause it. Also, it must be permanent. Sunlight affects plant growth. Exposing plants to the light involves a *tolda* of *zorai'a*, sowing or planting seeds, as it aids growth. The *melacha* is specifically to aid the growth of a plant. [Sunlight affects the human body as well. Apart from providing vitamin D, the Torah describes it as healing the body. Yet this process is not forbidden. Neither is any healing forbidden Scripturally. Only processes that involve specific *melachos*, such as puncturing, removing blood, etc. can be Scripturally forbidden. Grinding a medicine involves *melacha*, as does kneading a mixture into a new substance. However, the changes effected by it are not considered *melacha*.] Thus, we see that making the chemical change is not the issue. Accordingly, unless a *melacha* can be pinned on this activity, it can not be included in a general Scriptural prohibition. Salt-ing a hide is forbidden as a specific process. Using chemicals to cause a specific *melacha* is forbidden. However, just causing the reaction with no *melacha* is not forbidden.

In fact, some substances are visibly affected by heat or light. These include color changing items that are used in clothing or toys. They change according to the temperature, and change back. This also includes glasses that double as sunglasses. They are changed to darken in sunlight and change back out of the sun. The issue raised is dyeing. Since no permanent change takes place, this does not involve dyeing. Though it clearly also involves a chemical reaction, it is not forbidden for that reason. Only other issues are raised, depending on a specific *melacha*.

The activity also directs energy to activate or power a circuit. If the circuit is already running, the activity does not make it work. It helps it continue in the long term. This could be construed as adding fuel to an existing fire. However, in that case, the additional fuel causes a greater fire with more heat. This is more like rigging a contraption to provide extra oil to a lamp by dripping it in from a nearby source. The Talmud discusses doing this before *Shabbos*. The issue is that one might be tempted to use the oil, eventually taking some from the lamp. This involves *kibuy*, extinguishing. If the contraption is such that one would never be tempted to use the oil it is permitted. Adding oil to the lamp or contraption on *Shabbos* involves burning. In our case, no actual burning takes place. The electrical energy released could be considered consuming in some form, but it does not involve a flame. Burning calories is not forbidden. Activating an electrical circuit would involve a prohibition of some kind, but with no visible light given off, it is not considered Scriptural burning by the poskim. In our case, there is no direct action to direct some power to the circuit. In fact, it is likely that it goes to a storage cell, that in turn is connected to the circuit. Thus, one is not burning fuel, but causing it to be created, stored, added to the existing supply, and eventually causing it to be consumed. It could even be considered causing it to be consumed immediately, as part of the existing supply.

Accordingly, it would appear that placing a solar cell in the sun to charge should be permitted. If the watch is dead and needs to be charged, the issues raised in the other sections might arise. If the item is a battery, it could be considered *muktzeh*. If it is a device that is already running, placing it there to soak up more energy would seem permissible. It would be akin to warming up water in the sun.

In summary, unless a specific *melacha* is violated through the chemical reaction, causing it to happen does not constitute *melacha*. Collecting or storing the power is not forbidden. Directing the power to a circuit could be considered as a delayed, or even immediate consumption of fuel. [See Shabbos 29b. e.g. References, Halochoscope X:27.]

D) Davar Sha'aino Miskaven; Psik Raisha

When a permissible activity is done on *Shabbos* that could result in *melacha*, the issue of *melech machasheves* arises. The Torah only forbids *melacha* when it is done in the way that activity was performed in construction of the *mishkan*. This means it must have that kind of intent and purpose. If the permissible activity might not result in *melacha*, the Talmud debates whether it is forbidden anyhow. We follow the lenient view. Even if it does result, the person who did it is not considered having violated. However, if the result is inevitable, it is likened to cutting the head off a rooster to play with it, while having no interest in killing it. *Psik raisha* is considered true *melacha*. Sometimes, the intent makes a difference, such as when the person does not want the result, when it is either rabbinical or permitted. If there is neutral desire for the result, the poskim debate its status. Due to the lack of intent, if the activity does not involve a Scriptural *melacha*, certain leniencies apply. Generally, if the activity involves a single Rabbinical prohibition, it is forbidden. If it involves a doubly or triply Rabbinically instituted case, if there are lenient views that are sometimes followed, or followed by some, or with other mitigating circumstances, it is often permitted. One such application is wearing an automatic watch that has not stopped. There is no true *makeh bepatish*, because it is a complete *kli*. The 'repairs' are not even needed for the functioning, right now. Thus, it is a doubly Rabbinical activity, even according to those who consider rewinding an unstopped watch *tikun kli*. Based on this kind of reasoning, wearing a solar watch is also permitted. [See E.g. Shabbos 73b etc., 75a 102b 106a 110b, Sukah 33b, Kesubos 6a, Poskim. Rambam, Shabbos, 1, 9:13. Tur, Sh. Ar. OC e.g. 337:1, commentaries. Chelkas yaakov 1:75, etc. Encyclopedia Talmudit Chashmal, p. 723.]

On the Parsha ... I have placed my rainbow in the clouds; it shall be a sign of the covenant ... When I form clouds, the rainbow will be seen ... [9:13 etc.] Why the rainbow, and why in the clouds! Clouds represent withholding the light of the sun, as it was during the *mabul*. The light of the sun is representative of the good and blessings of Hashem. It happens to be the direct or indirect source of all energy in the world. When mankind deserves to have the sunlight withheld again, but Hashem shows His adherence to the covenant, He shows a distorted form of the sunlight through the clouds. Weakened, dispersed sunlight still provides enough energy for the world to survive. [See e.g. Hakesav Vehakabalah]

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