

Haya Mehalech Bamidbar

Shabbat in Outer Space

Astronaut Ilan Ramon's question: *"When Should I Observe Shabbat on the Columbia?"*

Shabbat 69b

Teacher's Guide

Colonel Ilan Ramon, of blessed memory, posed the following halachic question to Rabbi Tzvi Konikov, the rabbi of Cape Canaveral: When should I observe Shabbat while I am on the space shuttle Columbia?

The forty-eight year old Ramon was a veteran Israeli fighter pilot before he was picked to be Israel's first astronaut. Ramon, whose father was a German refugee who fought in Israel's War of Independence, and whose mother was an Auschwitz survivor, brought on board the shuttle a miniature Torah scroll that had made its way to Israel from the Nazi concentration camps. Since Ilan Ramon considered himself to be representing the Jewish people and Israel, he asked NASA to provide him with kosher food during the flight, and arranged to keep the Sabbath while in orbit.

Though the question of when to keep Shabbat in space had been the topic of theoretical discourse since the 1960s, Ilan Ramon was the first Jew in world history to ask it *halachah lema'aseh*, with an eye to applying it as practical halachah.

The Space Coast, Florida rabbi posed the question to some leading halachic authorities, including Rabbi Levi Yitzchak Halperin, the director of Jerusalem's Institute for Science and Halacha. Rabbi Halperin penned a responsum, and eventually published a pamphlet entitled, "Im Esak Shamayim (If I Fly up to Heaven [... There You Are])," on how to keep Jewish law in space. This *Thinking Gemara* shiur is based on Rabbi Halperin's presentation. He claims that we can learn about this issue from the halachic literature about keeping Shabbat in areas near the Arctic Circle, where the sun does not set for months. That discussion, in turn, draws from a passage in the Talmud about a desert wanderer who forgets which day Shabbat is.

Here are some of the key questions this shiur will deal with:

**KEY
QUESTIONS**

- Is a Jew in space obligated to observe the mitzvot?
 - If he is, when should he keep the Shabbat?
 - When does a Jew observe Shabbat in areas where the sun does not set for months?
 - What should someone do if he or she is detached from civilization and forgets when Shabbat is?
 - What do these extreme situations teach us earth-bound Jews living in places with conventional latitudes?
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**CLASS
OUTLINE****Section I. Observing Shabbat in Space****Section II. Keeping Shabbat near the Arctic Circle****Section III. Observing Shabbat when Lost in the Desert****Section IV. Lessons for Jews in Normal Places**

Note: This shiur is not intended as a source of practical *halachic* (legal) rulings. For matters of halachah, please consult a qualified *posek* (rabbi).

SECTION I Observing Shabbat in Space

Case 1. Shabbat on the Space Shuttle Columbia

The first Israeli astronaut to fly on a space mission – NASA Microgravity Research Mission STS-107, on the Space Shuttle Columbia – was also the first Jew ever to ask a rabbi the following question of practical halachah: “When should I keep Shabbat on a spaceship?” What follows is the background of that she’elah – halachic query – in that rabbi’s own words.

1. From “Shabbat in Space: The Legacy of Ilan Ramon,” by Zvi Konikov, available online at chabad.org/library/article_cdo/aid/632169/jewish/Shabbat-in-Space.htm – Rabbi Konikov describes his first encounters with Ilan Ramon.

I first met Ilan Ramon at an almost clandestine gathering in my hometown of Satellite Beach, Florida. NASA personnel and Israeli Security teams had taken extra security precautions to ensure that nothing would go wrong. Even the location had been kept secret until the very day of the meeting.

Ilan addressed the assembled Jewish community leaders. After his speech he approached me. He greeted me with a warm hug and presented me with his request: “Rabbi, I need to talk with you. I want to keep Shabbat while in space, but no one can tell me how to do it!”

And that was how our friendship began.

Ilan was a very special Jew. He often expressed the thought that he saw his trip to space as a mission. “I will represent the entire Jewish people,” he would say. As a representative of the Jewish people, he wanted to do everything in the very best possible way Jewishly; including keeping Shabbat and eating only kosher food.

“Kosher food?” the NASA staff shrugged their shoulders at the Jewish astronaut’s strange request. Ilan was not one to give up easily, and a solution was found. NASA contacted My Own Meals, a company in Deerfield, Ill. that sells certified kosher food in “thermo-stabilized” sealed pouches for campers.

Shabbat also presented quite a challenge. A day/night cycle in orbit is 90 minutes long, which means that a week lasts a mere ten and a half hours from start to finish! Would Ilan need to keep Shabbat every half day?!

At his behest I brought his case before some of the world’s leading rabbinic authorities...

Here are selections from the text of the letter in which Rabbi Konikov poses Ilan Ramon’s halachic question to a number of *poskim* (halachic authorities), including Rabbi Levi Yitzchak Halperin, whose response forms the backbone of this shiur.

2. Letter published in Or Yisrael, Tishrei 5763 – Rabbi Konikov poses Ilan Ramon's question to halachic authorities.

To the honorable and scholarly Rabbi ... may he be blessed with long years,
Peace and blessing,
To follow up today's telephone conversation, I am writing with regards to my meeting with Mr. Ilan Ramon, who is now part of the team on spaceship STS-107, that, according to schedule, is to fly on the 27th of June, 2002. (Note: the Columbia actually ended up taking off on January 16, 2003.)

I was very moved and impressed by Mr. Ramon, and specifically by his deep love for Judaism and the Land of Israel. During my conversation with him, he asked me, in my capacity as the official rabbi of the NASA district, the following question: Given that he must be on the spaceship on Shabbat, what should he do to keep Shabbat, and which time zone should he follow, to know when Shabbat begins and ends ...

As you know, this question has already been dealt with extensively by a number of halachic authorities, but, in my humble opinion, this is the first time that it is being raised, not only as a theoretical possibility, but for practical application. Therefore, I feel the need to consult with an expert on the matter before making any practical judgment.

Therefore, I turn to you, since it is well known that you are fluent in much of the literature on the topic, and have already dealt with the issue in the past ...

I will greatly appreciate if you can assist me on this matter as soon as possible.

Thanks in advance,
Chaim Tzvi Konikov

כבוד הרב הגאון ... שליט"א
שלום וברכה,
בהמשך לשיחתנו הטלפונית
מהיום, הנני בזה לכתוב בענין
הפגישה שלי עם מר אילן רמון,
שכרגע הוא משתתף לחללית
STS-107 שליפי התכנית צריכה
לטוס לחלל ב-27 ליוני 2002.

מאד התפעלתי והתרשמתי ממר
רמון ובפרט מאהבתו וחבתו
ליהדות וארץ ישראל. הוא שוחח
אתי והעלה את השאלה הבאה
בתור הרב הרשמי של תחום
NASA ושאלתו היא: בנוגע לזה
שעלי להיות על החללית בשבת,
מה עלי לעשות כדי לשמור את
השבת ולפי איזה שעון עלי לקחת
כדי לדעת זמני כניסת ויציאת
השבת....

כידוע לה, שאלה זאת כבר
נידונה באריכות אצל כמה וכמה
פוסקים, אלא שזה לפי עניות
דעתי הפעם הראשונה ששאלה
כזו נשאלת לא רק באופן תאורטי
אלא למעשה בפועל, ולכן מרגיש
הנני צרף שלפני שאחליט על
פסק הלכה למעשה בפועל,
שעלי להתיעץ עם ממחה בנדון
כיון שנוגע למעשה בפועל.

ולכן הנני פונה אליו, כיון שכידוע
הנך בקי בכמה וכמה תשובות
בנדון, וכבר התעסקת בעבר
בנושא הזה....

אודה לה מאוד אם תוכל להיות
לי לעזר בהנפך לעיל ובהקדם
האפשרי.

בתודה מראש,
חיים צבי קניקוב

What do you think?

When should an Israeli, flying on an American space mission that takes off from Cape Canaveral, Florida, keep Shabbat? The satellite orbits the earth every one-and-a-half hours, so the astronauts on board see a sunrise every one-and-a-half hours. Does that affect when he should keep Shabbat? What are the Shabbat options open to the astronaut in space, and which makes the most sense to you?

Let us backtrack a moment, to discuss what might seem to be an obvious point: Is there an obligation to keep the mitzvot in space? Are, perhaps, the mitzvot only obligatory on Earth?(!)

Mitzvot outside Earth

Rabbi Menachem Mendel Kasher, of blessed memory, in his groundbreaking composition on the Jewish implications of landing on the moon, *Haadam al Hayareiach: Le'or Hatorah Veba'emuna*, The Man on the Moon: in Light of Torah and Jewish Belief, writes a sharp polemic against an approach suggesting that the mitzvot are only applicable on this earth.

3. Rabbi Menachem Mendel Kasher, "The Man on the Moon," Ch. 5, "Keeping the Torah on the Moon," p. 53 – Is the Torah obligatory outside the planet Earth?

I saw that ... a certain rabbi [wrote] that "One is not obligated in mitzvot while on the moon, even in a closed earth colony," and, "There is no place for the Torah on the moon even for people." ... I was shocked to read such a decision with regards to a question that touches on keeping the entire Torah.

In my humble opinion, it is crystal clear that the *halachic* parameters are such that the obligation to keep the Torah's mitzvot rests on everyone, and that every Jew must keep the Torah wherever he lives: up on the moon, or in the water underground, at the North Pole or the South Pole where a large part of the year it remains light or dark, or in an airplane. As long as one is alive and able to fulfill the mitzvot of the Torah, he is obligated to keep them and is forbidden to transgress any prohibition. If it is beyond his control, the merciful God absolves him. But when it is not clearly beyond his control, he has to keep them. There is no place where a Jew could become absolved from the Torah's mitzvot.

רְאִיתִי לְהֵרֵב ... [שֶׁכְּתִיב] "אִין לְחַיִּב
עַל הַיָּרֵחַ בְּמִצְוֹת, גַּם בְּתוֹךְ שְׁלֵחָה
סְגוּרָה שֶׁל הָאֲדָמָה, " ... וְ"אִין לָנוּ
מְקוֹם לְתוֹרָה עַל הַיָּרֵחַ גַּם בְּשִׁבִיל
בְּנֵי הָאָדָם. " ... וְנִשְׁתַּמְּמֵתִי לְקִרְוֵא
הַחֲלֻטָּה כְּזוֹ בְּשֵׂאֵלָה הַנוֹגֵעַ לְקִיּוּם כָּל
הַתּוֹרָה בְּלָה.

לְפִי עֲנִיית דַּעְתִּי בְּרוּר בְּלִי שׁוּם סִפְק
שֶׁהַהֲגֵדָה שֶׁל הַהֲלָכָה הַיָּא, שֶׁהַחַיִּיב
לְקַיֵּים מִצְוֹת הַתּוֹרָה הִיא חוֹבַת
גְּבֵרָא, וְכָל בֶּר יִשְׂרָאֵל חַיִּיב לְקַיֵּים
הַתּוֹרָה בְּמְקוֹם שֶׁהוּא חַי: בְּשָׁמַיִם
מִמַּעַל עַל הַלְּבָנָה אוּ בְּמִים מִתַּחַת
לְאָרֶץ בְּצִיר הַצְּפוֹנִי אוּ בְּצִיר הַדְּרוֹמִי
שֶׁבּו חֶלֶק מִהַשְּׁנָה כְּלוּ אוּר אוּ חוֹשֶׁךְ,
אוּ בְּאוֹרוֹן. כָּל זְמַן שֶׁהוּא חַי וְאֶפְשָׁר
לוּ לְקַיֵּים מִצְוֹת הַתּוֹרָה חַיִּיב לְקַיֵּים
וְאִסּוּר לְעִבּוֹר עַל שׁוּם אִיסּוּר, וְאִם
אָנוּס הוּא רַחֲמָנָא פְּטָרִיהּ, אֲבָל עַל
מָה שֶׁהוּא אִינוּ אָנוּס בְּרוּר שֶׁהוּא חַיִּיב
לְקַיֵּים, וְאִין שׁוּם מְקוֹם כָּלֵל לוֹמַר
שֵׁישׁ לְבֵר יִשְׂרָאֵל אֶפְשָׁרוֹת לְהַפְטִיר
מִמִּצְוֹת הַתּוֹרָה ...

Unlike the one approach that Rav Kasher was addressing, all other halachic authorities maintained that a Jew is obligated in mitzvot outside of this earth. If so, when should the Jewish astronaut keep Shabbat?

Rabbi Levi Yitzchak Halperin lays down the conceptual framework of our topic by presenting three possible ways of addressing the issue of when to keep Shabbat in space.

4. Rabbi Levi Yitzchak Halperin, Im Esak Shamayim, p. 22 – Proposal One: Follow the Space Shuttle sunrise.

We can indeed consider each time the shuttle orbits the globe (90 minutes) as one complete day, including both a nighttime and a daytime period. Based on this, there will end up being sixteen complete “days” within a twenty-four hour period. This would follow the biblical verse (Bereishit [Genesis] 1:5), “It was evening and it was morning, one day,” that teaches us that a nighttime period followed by a daytime makes up one complete “day.”

In line with this approach the astronaut would, apparently, have to read the Shema thirty-two times in a twenty-four hour period...he would have to put on tefillin once every hour and a half...pray forty-eight prayers (every twenty-four hour period)...According to this calculation he will have at least two Shabbatot every twenty-four hour period, each one an hour and a half long..

... נתן אבן להתייחס לכל פעם
 שהמעבורת מקיפה את כדור הארץ
 כמקמה שלמה, הפוללת בתוכה לילה ויום
 גם יחד. לאור זה נמצא שבמשך 24
 שעות (המהוות יממה שלמה על פני
 כדור הארץ) עוברות עליו שש עשרה
 יממות שלמות, של לילה ויום כל אחת,
 ולפי הכתוב בברייתו של עולם (בראשית
 א:ה), “ויהי ערב ויהי בקר יום אחד,
 המורה לנו שהלילה והיום שלאחריו
 מהווים יחדיו יחידה אחת של יום שלם
 (יממה).”

בהתאם לקביעה זו יהיה עליו לכאורה
 לקרוא קריאת שמע 23 פעם במשך 24
 שעות ... להניח תפילין פעם אחת כל
 שעה וחצי ... להתפלל 48 תפלות ... לפי
 חשבון זה יהיו לו במשך 24 שעות לפחות
 שתי שבתות, בנות שעה וחצי כל אחת ...

Not only would this approach be extremely difficult, almost impossible, to carry out. It would also, Rabbi Halperin contends, result in the weird and necessarily incorrect situation of one Jew who has a unique personal Jewish calendar, as his days drift off from the rest of the Jewish people's!

Here is another possible approach to how to keep Jewish time in space, and, hence, when an astronaut should keep Shabbat.

5. Ibid., p. 26 – Proposal Two: Keep time with the earth below.

There is another possibility...that the astronaut should always act in accordance with the time of the place that he is passing over. This applies both to day and night, to the date, and to the count of the days of the week, month, and year.

However, this possibility is also not very sensible, for according to this a strange possibility becomes possible – that for a few moments it will be Shabbat for him, and immediately afterwards Shabbat will go out. A little while later it will be Shabbat for him again, and this will continue. Similarly, it is possible, according to this possibility, that at a certain point he is obligated to say the morning Shema, and right after he begins the time for Shema will end (the time for the morning Shema on earth is only the first three hours of the day, and the space shuttle is circling the entire earth every one-and-a-half hours!). According to this approach other similar strange and blatantly illogical situations like these are likely to arise.

קִיַּמַת אֶפְשָׁרוֹת נֹסֶפֶת ... כִּי עָלָיו
לְנַהֵג בְּכָל עֵת כְּפִי הַזְּמַן שֶׁל
הַמְּקוֹם שֶׁהוּא חוֹלֵף מֵעָלָיו, הֵן
לְגַבֵּי הַיּוֹם וְהַלַּיְלָה, וְהֵן לְגַבֵּי
הַתְּאָרִיךְ וּמְנֻן יְמֵי הַשָּׁבוּעַ,
הַחֹדֶשׁ, וְהַשָּׁנָה.

אֲדָּה גַם אֶפְשָׁרוֹת זוֹ אֵינָה סְבִירָה
כָּל כּוֹן, שֶׁיִּכְוֶן לְפִיָּה יִתְכַּן מֵצֵב
מוֹאָר, שֶׁדְּקוֹת סְפוּרוֹת יִהְיֶה אֲצֵלוֹ
שֶׁבֶת, וּמֵיָד לְאַחַר מִכּוֹן כְּבָר תֵּצֵא
שֶׁבֶת, וְלְאַחַר זְמַן מָה שׁוֹב יִהְיֶה
אֲצֵלוֹ שֶׁבֶת, וְחוּזָר חֲלִילָה. כִּיֹּצֵא
בְּזֶה יִתְכַּן לְפִי אֶפְשָׁרוֹת זוֹ שֶׁבְּרִגַע
מְסוּיִים הוּא מִתְחַיֵּיב בְּקִרְיַת
שְׁמַע שֶׁל שְׁחִרִית, וּבְעוֹד שֶׁהוּא
מִתְחִיל לְקְרוֹא קְרִיַּאת שְׁמַע כְּבָר
חֲלָף עָבַר לוֹ זְמַן קְרִיַּאת שְׁמַע,
וְעוֹד מֵצָבִים שׁוֹנִים נֹסְפִים, שֶׁהֵם
בְּלִתי סְבִירִים וּבְלִתי הַגִּיוֹנִיִּים
בְּעֵלִיל, כִּיֹּצֵא בְּאֵלוֹ.

So far we have seen two approaches to keeping a Jewish calendar in space:

A. Every new sunrise that the astronaut sees counts as the beginning of a new day. This results in a position that is both impossible halachically – that an individual should end up with a calendar different than the rest of the Jewish world – and totally impractical, forcing him to pack all of a day's mitzvot into a tiny, hour-and-a-half space-shuttle day. He would end up keeping two Shabbatot every twenty-four hours, each one for an hour and a half.

B. The astronaut keeps the halachic times of the part of the earth he is flying directly over. This too is a bizarre option. Since the space shuttle is quickly orbiting around the earth, the astronaut will end up quickly drifting in and out of mitzvah obligations, and drifting in and out of the same day!

Rabbi Halperin himself believes that the correct approach to keeping Shabbat (and the rest of the Jewish calendar) in space is to follow a third possibility:

6. Ibid., p. 20 – Proposal Three: Start counting twelve-hour units of days and nights.

It is possible to determine that a complete day for him will finish after twenty-four hours pass, twelve of them night, and twelve of them day –totally ignoring what is going on outside the space shuttle, whether it is orbiting above an area of the earth that is in daylight or one that is covered with the darkness of night.

If we take this approach, he would have to treat the first twelve hours of the day as night, with all the mitzvot and obligations that go along with it, and the twelve hours that follow as daytime, with all the mitzvot and obligations that follow. He will then apply this calculation to counting the days that pass and to keeping all the rules and mitzvot of the Torah, whether they are leniencies or stringencies.

... נתנו לקבוע שיממה שלימה לגביו
הוא לאחר שחולפות 24 שעות,
כשמתוכן 12 שעות הן לילה ו-12
שעות הן יום, מבלי להתיחס כולל
לסביבה בה נמצאת המעבורת, אם
היא נמצאת בסביבה ששורר בה
אור יום או חשכת לילה.

באם ננקט כן, יהיה עליו לנהוג ב-12
שעות הראשונות של היממה כאלו
הן לילה, על כל המצוות והחייבים
הפרויכים בכה, וב-12 שעות
שלאחריהן כאלו הן יום, על כל
המצוות והחייבים הפרויכים בכה.
בהתאם לחשבון זה יהיה עליו גם
לחשב את מנין הימים העוברים
עליו לגבי כל דיני ומצוות התורה,
הן לקלא, הן לחומרא.

This approach also has its difficulties, even though it is the closest of all three approaches to “Earth time.” He will pass through many periods of daylight and darkness within each of his twenty-four hour days. Also, it is rare on Earth to experience perfect twenty-four hour days like his.

However, Rabbi Halperin has one very powerful reason to prefer this third approach (counting twenty-four hour periods of night-day units) over the others – and it is not just because it is more practical than one-and-a-half-hour days or keeping the time of the spot on Earth below the space shuttle.

To hear why he chooses this option, let us think about **how the halachah measures time**:

A. The Torah's time-bound mitzvot require measuring units of time: day and night (reading *Shema* in the morning and evening, putting on *tefillin* during the daytime hours); weeks (Shabbat every seven days); months (all of the holidays fall out on the particular day of a Jewish month); and years (the *Shemittah* cycle).

B. These units of time are measured by observing the heavenly bodies – a halachic day begins when the **sun** sets and then the **stars** come out; daytime begins with **sunrise**; a week counts seven of these days; a month begins with the new **moon**; and a year begins after an entire revolution around the **sun**.

Rabbi Halperin now asks the following question: Does the halachah take into account sunrise from anywhere else other than on the earth? Is the astronaut's personal sunrise – when he sees the sun rise from the vantage point of his spaceship

- relevant in the eyes of the halachah? Does the halachah mark the beginning of a month from anywhere outside the earth? Would the halachah recognize any year other than the earth's complete revolution around the sun?

Rashi teaches us, through his commentary on the creation of the heavenly bodies, that the Torah's calendar and the mitzvot connected with it are based on the sun and the moon and their position from **Earth's** vantage point.

7. Bereishit 1:14-19 – God creates the heavenly luminaries on the fourth day of Creation.

<p>14. And God said, "Let there be luminaries in the expanse of the heavens, to separate between the day and the night, and they shall be for signs and for appointed seasons and for days and years.</p>	<p>(יד) וַיֹּאמֶר אֱלֹהִים יְהִי מְאֹרֹת בְּרָקִיעַ הַשָּׁמַיִם לְהַבְדִּיל בֵּין הַיּוֹם וּבֵין הַלַּיְלָה וְהָיוּ לְאֹתוֹת וּלְמוֹעֲדִים וּלְיָמִים וּשְׁנָיִם:</p>
<p>15. And they shall be for luminaries in the expanse of the heavens to shed light upon the earth." And it was so.</p>	<p>(טו) וְהָיוּ לְמְאֹרֹת בְּרָקִיעַ הַשָּׁמַיִם לְהָאִיר עַל הָאָרֶץ וַיְהִי כֵן:</p>
<p>16. And God made the two great luminaries: the great luminary to rule the day and the lesser luminary to rule the night, and the stars.</p>	<p>(טז) וַיַּעַשׂ אֱלֹהִים אֶת שְׁנֵי הַמְּאֹרֹת הַגְּדֹלִים אֶת הַמְּאֹרֹת הַגְּדֹל לְמַמְשֶׁלֶת הַיּוֹם וְאֶת הַמְּאֹרֹת הַקְּטָן לְמַמְשֶׁלֶת הַלַּיְלָה וְאֵת הַכּוֹכָבִים:</p>
<p>17. And God placed them in the expanse of the heavens to shed light upon the earth.</p>	<p>(יז) וַיִּתֵּן אֹתָם אֱלֹהִים בְּרָקִיעַ הַשָּׁמַיִם לְהָאִיר עַל הָאָרֶץ:</p>
<p>18. And to rule over the day and over the night, and to separate between the light and the darkness, and God saw that it was good.</p>	<p>(יח) וְלַמָּשֶׁל בַּיּוֹם וּבַלַּיְלָה וּלְהַבְדִּיל בֵּין הָאֹרֹר וּבֵין הַחֹשֶׁךְ וַיִּרְא אֱלֹהִים כִּי טוֹב:</p>
<p>19. And it was evening, and it was morning, a fourth day.</p>	<p>(יט) וַיְהִי עֶרֶב וַיְהִי בֹקֶר יוֹם רְבִיעִי:</p>

8. Rashi's Commentary on Bereishit 1:14 – The position of the sun and moon will determine the Jewish calendar and holidays.

<p>And for appointed seasons: This refers to the future, when the Israelites are destined to be commanded concerning the festivals, and they [the festivals] are reckoned from the first phase of the moon. — [from Gen. Rabbah 6:1].</p>	<p>וּלְמוֹעֲדִים: עַל שֵׁם הַעֲתִיד, שְׁעֵתֵי יִשְׂרָאֵל לְהַצְטוּוֹת עַל הַמוֹעֲדוֹת וְהֵם נִמְנָיִם לְמוֹלַד הַלְּבָנָה:</p>
<p>And for days: The sun serves for half a day, and the moon for half of it, so that you have a full day.</p>	<p>וּלְיָמִים: שְׁמוֹשׁ הַחֲמֶה חֲצֵי יוֹם וְשְׁמוֹשׁ הַלְּבָנָה חֲצֵי יוֹם הָרִי יוֹם שָׁלֵם:</p>
<p>And years: At the end of 365 days (other editions: and a quarter of a day) ...</p>	<p>וּשְׁנָיִם: לְסוֹף שְׁלֹשׁ מְאוֹת שָׁשִׁים וַחֲמִשָּׁה יָמִים</p>

The time framework for the mitzvot of the Jewish day is determined by solar events like sunrise (*neitz hachama*), noon (*chatzot*), sundown (*shkiah*), and the appearance of stars at night (*tzeit hakochavim*), and the same is true for the Jewish week, for Shabbat begins a little before sundown at the end of each sixth day.

Each Jewish month begins when the first tiny crescent of the moon appears, and the Jewish holidays are dated by days (each beginning with nightfall) within a Jewish month – for example, Pesach begins at nightfall of the fifteenth of the month of Nissan.

The Jewish year incorporates both the earth's movement around the sun and the moon's monthly orbits around earth. A Jewish year always includes at least twelve lunar months, and an extra month is added periodically (seven times every nineteen years) to align it with the solar year. We make sure that each of the holidays is appropriately aligned with its season, so Pesach always comes out in the spring, Shavuot in the summer, and Sukkot in the early fall.

But this whole system is determined from Earth's vantage point. Here is Rabbi Halperin's (radical) conclusion:

9. Rabbi Levi Yitzchak Halperin, *Im Esak Shamayim*, p. 41 – Are time-bound mitzvot applicable in space?

Therefore, everywhere on the globe – where the Creator set and imprinted the order of creation based on the paths of the Earth, sun, and moon – all of Torah's time-bound mitzvot are applicable... That is not true in space, where the laws of creation and the order of time are totally different, and are not bound at all by the system of day and night – and the time that flows from it – based on the path of the earth, sun, moon, and the relations between all of them.

לְפִיכָּהּ בְּכֹל מְקוֹם שֶׁהוּא עַל פְּנֵי כְּדוּר
הָאָרֶץ, אֲשֶׁר שָׁם קָבַע וְטָבַע הַבּוֹרָא
אֶת סְדְרֵי הַבְּרִיאָה הַמְּוִשְׁתֵּתִים עַל
מִסְלוּלֵי כְּדוּר הָאָרֶץ וְהַשָּׁמֶשׁ וְהַיָּרֵחַ,
נוֹהֲגוֹת כָּל מְצוּוֹת הַתּוֹרָה הַתְּלוּיֹת
בְּזָמַן... לֹא כֵן בְּחֻלָּל, שָׁם חֲקֵי
הַבְּרִיאָה וְסְדְרֵי הַזְּמַנִּים הֵם שׁוֹנִים
לְחֻלּוּטֵינּוּ, וְאֵינָם כְּפוּפִים כָּלֵל
לְמַעַרְכַּת חֲקֵי הַיּוֹם וְהַלַּיְלָה וְסְדְרֵי
הַזְּמַנִּים הַנִּגְזָרִים מִמְּנָה הַמְּבַסֶּסֶת עַל
מִסְלוּלֵי כְּדוּר הָאָרֶץ, הַשָּׁמֶשׁ, הַיָּרֵחַ,
וְהַיַּחַס שֶׁבֵּין כּוּלָּם.

[Note: Rabbi Halperin's conclusion is by no means obvious. Though there is very little material on the topic, Rabbi Konikov wrote to and received responses from a few other rabbis. One of them, Rabbi Gavriel Tzinner (published in *Or Yisrael*, Vol. 29, p.34) does not seem to assume that the obligation to keep Shabbat outside earth is only rabbinic in level, as will be discussed later.]

What about the astronaut's own sunrise, sunset, days, and years – are they recognized by the halachah?

10. Ibid., p. 42 – Are the astronaut's sunrise and sunset identical to the ones the halachah refers to?

If a man flies in a space shuttle and orbits the earth in a way that as a result of his orbit, the times of light and darkness frequently change for him, he has created for himself a personal time system, but this system is not within the rules of nature or the order of creation.

For the Torah's system of time is based solely on the order and paths of the luminaries in relation to man living on Earth. It is not determined by a new system of light and darkness that is a result of man's movement in relation to the heavenly bodies.

It therefore seems obvious that with regards to space...essentially, the mitzvot, laws, and obligations dependent on day and night, the week, month, and year are not applicable. For these mitzvot are only applicable to one living in a place that is following the laws of creation and the order of time on the globe – not to someone living with a totally different time system.

וגם אם משייט שם אדם במעבורת חלל ומקיף את כדור הארץ, באופן שבכל פעם משתנים אצלו זמני האור והחשיכה, הרי זו מערכת זמנים שהיא יצר לעצמו, כתוצאה ממסלול הקפתו, ואיננו מחקי טבע הבריאה וסדריה.

שכן סדרי הזמנים שקבעה התורה משתתים אך ורק על סדרי ומסלולי המאורות ביחס לאדם הנמצא במקומו על פני כדור הארץ, ולא על סדרי מאורות חדשים שנוצרים כתוצאה מתנועת האדם במקביל למסלולי המאורות.

נראה, אפוא, כדבר פשוט, כי לגבי החלל ... מעקר הדין אינם נוהגים שם כל המצוות, הדינים, והחייבים, התלויים בזמני יום ולילה, שבוע, חודש, ושנה. כי המצוות הללו נתנו אך ורק למי שחי במקום המתנהג לפי חקי הבריאה וסדרי הזמנים התקפים על פני כדור הארץ ולא למי שחי בסדר זמנים שונה לחלוטין.

Rabbi Moshe Shternbuch, another contemporary halachic authority, concurs that the Torah's time-bound mitzvot are not obligatory when one leaves Earth and its order of time. [Note: He goes one step further, though, and asserts that it is therefore **prohibited** to leave the Earth and thereby be absolved of the mitzvot God gave us to do here.]

11. Rabbi Moshe Shternbuch, Teshuvot Vehanhagot, 5:84 – Is a man obligated in time-bound mitzvot while in space?

It seems that since we have received the Torah with the times as they are in our world, someone who leaves this world absolves himself of the mitzvot that are dependent on time, such as Shabbat, the holidays or the daily Shema and prayers. But it is prohibited to absolve oneself of the Torah's obligations, for we are servants of the Holy One, blessed be He, and are obligated to keep His commandments.

ונראה שקבלנו את התורה עם הזמנים כפי שהם בעולמנו, ומי שיצא חוץ לעולם זה הפקיע עצמו ממצוות התלויות בזמן כמו שבת ורגלים או יום ולילה בק"ש ותפלה, ואסור להפקיע עצמו מחייבי התורה כיון שאנו עבדים להקדוש ברוך הוא לשמור מצוותיו

Rabbi Halperin, whom, in fact, the question was referred to, still maintained that even though on a **biblical** level, time-bound mitzvot are limited to Earth's position vis-à-vis the heavenly bodies, on a **rabbinical** level one is still obligated in time-bound mitzvot in space.

12. Rabbi Levi Yitzchak Halperin, Im Esak Shamayim, p. 43 – Time-bound mitzvot are still obligatory in space.

Nevertheless, it is very logical that on a rabbinic level, a person is obligated to fulfill these mitzvot, so that he should not lose consciousness of these mitzvot.

בְּכֹל זֹאת, מִסְתַּבֵּר מְאֹד, כִּי מוֹפְטִל
עָלָיו לְקַיֵּם אֶת כָּל הַמִּצְוֹת הַקְּלוּי
מִדְּרַבָּנָן, כְּדֵי שֶׁלֹּא תִשְׁתַּכַּח מִמֶּנּוּ
תּוֹרַת מִצְוֹת אֵלוּ.

[The source he bases this on will be the basis of our Section III.]

In investigating a question of practical halachah that had never come up before in world history, Rabbi Halperin followed the methodology of halachic authorities and looked for the most similar case his predecessors had dealt with. That case, “Keeping Shabbat near the Arctic Circle,” has one crucial difference from the case at hand, “Keeping Shabbat in Space.” The former refers to someone located on the earth, whereas the latter is in space, outside the earth, and therefore outside the obligation of time-bound mitzvot. However, they have one crucial similarity; they both are questioning when to keep Shabbat when the Torah's standard calendar days are not operating – when the sun does not rise and set every twenty-four hour period. That will be the subject of Section II.

KEY THEMES OF SECTION I

- There are three possible ways an astronaut can keep a Torah calendar in space: count a new day every time he sees a sunrise; keep the time of the point on Earth that is directly below him; or start counting twenty-four hour periods based on when he leaves Earth.
- The third approach is preferable, because, based on the Torah's Creation story, the time-bound mitzvot are dependent on the position of the heavenly bodies – sun, moon, and stars – vis-à-vis Earth and not on a person's location in space.
- Whether time-bound mitzvot are at all binding to someone in space is questionable. Nevertheless, Rabbi Levi Yitzchak Halperin (the halachic authority who responded to the rabbi of Cape Canaveral) holds that on a rabbinic level, time-bound mitzvot are still obligatory in space.
- The halachic model for adopting this approach is the ruling on keeping the Torah's time-bound mitzvot near the Arctic Circle, the subject of Section II.

SECTION II Keeping Shabbat near the Arctic Circle

Case 2. Shabbat in the Land of the Midnight Sun

Dave and Brenda Goldfish, a newlywed couple with an itch to travel, decided on an offbeat vacation spot for July, 2014: Longyearbyen, Norway, the world's largest town closest to the North Pole. Their base was to be the Spitsbergen Hotel, and their trip was to include a snowmobile expedition, a dogsled ride, and...Shabbat in a city well north of the Arctic Circle where the sun does not set for more than four months. Longyearbyen, in a fjord off the Greenland Sea, is, at latitude 78° 13' N, whereas the Arctic Circle is at 66.56° N. The sun does not set in Longyearbyen from April 18th until August 23rd and they are set to be there on Shabbat July 4th and 5th! They asked their rabbi, Rabbi Tzefaniah Levi, when they should keep Shabbat during their vacation.

Before we hear from Rabbi Tzefaniah, think it over yourself – when do you think Shabbat should be kept when the sun never sets for four months? April 18th, when the period begins, falls out on a Shabbat, and then the sun does not set until August 23rd. If there were Jews in Longyearbyen, would they observe a 127-day Shabbat?

What do you think? What possible options can you imagine?

Halachic thinkers are divided into three basic camps on this question, according to the summary presented by the author of the book *Hazmanim Bahalachah*, Rabbi Chaim Pinchas Beinisch. (Delving into each of these in depth is beyond the scope of the shiur, but it served as the model for the halachic decision on how to keep Shabbat in space.)

Approach A. As long as the sun does not actually set (go below the horizon) it remains day! A day ends when the sun sets – even if that takes months. A Shabbat ends when the sun sets and might end up lasting for months if it takes that long. Rabbi Chaim Elazar Shapira, of blessed memory, the saintly Munkatcher Rebbe, author of the *Minchat Elazar*, entertains this option in responsum 4:42 (though he does not say it with certainty and he cautions against entering such a situation).

Approach B. There is no day or night near the poles. This approach, also radical, was first discussed by Rabbi Yehudah Muskato (Italy, 1530-1593) in his commentary *Kol Yehudah* on Rabbi Yehudah Halevi's *Kuzari*, and was accepted by a few later halachic authorities. In a responsum to his son (Zeicher Simchah, Responsum 30) by Rabbi Simchah Bamberger (Germany, 1832-1898), he contrasts places in the far north of Norway where, depending on the time of year, Shabbat is either extremely long or extremely short, with places where there is **no** night or **no** day during certain periods of the year. He instructs his son to avoid going to such a place, asserting that it was not meant for Jewish settlement, since God did not intend for us to dwell in places where the mitzvot – dependent on the existence of day and night – cannot be kept. He likewise directs his son to avoid places where

it is doubtful whether it is night at all: “Why should a person place himself in a halachically doubtful position ...?”

Approach C. The earth's twenty-four hour orbit around the sun

determines an entire day – even in places whose inhabitants do not witness sunrise or sunset for months. This is the position most commonly taken by halachic authorities and is the subject of an extensive literature that includes both a range of rabbinic proof texts and a variety of approaches to determining how to apply time-bound halachot. It is this approach that became the model for dealing with Shabbat in space.

The core assumption behind this approach is that a halachic day need not necessarily include a period of darkness followed by a period of daylight. This is based on a passage in the Talmud:

13. Chagigah 12a – Ten things were created on the first day of Creation.

Rabbi Yehudah quoted Rav, as saying: Ten things were created on the first day. They are: Heaven and Earth, desolation and emptiness, light and darkness, spirit and water, the measure of day and the measure of night. Heaven and Earth [were created], as it is written (Bereishit 1:1), “In the beginning God created the heavens and the earth”; desolation and emptiness, as it is written (Bereishit 1:2), “And the earth was [full of] desolation and emptiness”; darkness, as it is written (Bereishit 1:2), “and there was darkness on the face of the deep”; light, as it is written (Bereishit 1:3), “And God said, ‘Let there be light’”; spirit and water, as it is written (Bereishit 1:2), “and the spirit of God hovered on the face of the waters”; the measure of day and the measure of night, as it is written (Bereishit 1:5), “And it was evening and it was morning, one day.”

וְאָמַר רַב יְהוּדָה אָמַר רַב: עֲשָׂרָה דְבָרִים נִבְרָאוּ בְיוֹם רֵאשִׁוֹן וְאֵלוּ הֵן - שָׁמַיִם וָאָרֶץ, תְּהוֹ וְבְהוֹ, אוֹר וְחֹשֶׁךְ, רוּחַ וּמַיִם, מִדַּת יוֹם וּמִדַּת לַיְלָה. שָׁמַיִם וָאָרֶץ: דְּכַתִּיב, (בְּרֵאשִׁית א:א) “בְּרֵאשִׁית בָּרָא אֱלֹהִים אֶת הַשָּׁמַיִם וְאֶת הָאָרֶץ.” תְּהוֹ וְבְהוֹ: דְּכַתִּיב, (בְּרֵאשִׁית א:ב) “וְהָאָרֶץ הָיְתָה תְהוֹ וְבְהוֹ.” אוֹר וְחֹשֶׁךְ - חֹשֶׁךְ דְּכַתִּיב, (בְּרֵאשִׁית א:ב) “וְחֹשֶׁךְ עַל פְּנֵי תְהוֹם.” אוֹר: דְּכַתִּיב, (בְּרֵאשִׁית א:א) “וַיֹּאמֶר אֱלֹהִים יְהִי אוֹר.” רוּחַ וּמַיִם דְּכַתִּיב, (בְּרֵאשִׁית א:ג) “וְרוּחַ אֱלֹהִים מְרַחֶפֶת עַל פְּנֵי הַמַּיִם.” מִדַּת יוֹם וּמִדַּת לַיְלָה: דְּכַתִּיב, (בְּרֵאשִׁית א:ה) “וַיְהִי עֶרֶב וַיְהִי בֹקֶר יוֹם אֶחָד.”

Rashi defines “the measure of day and the measure of night.”

14. Rashi, Commentary on Chagigah 12a – What is the “measure of day and the measure of night”?

The measure of day and the measure of night –
The two of them together form a twenty-four hour period.

מִדַּת יוֹם וּמִדַּת לַיְלָה - עֲשָׂרִים וָאַרְבַּע שָׁעוֹת בֵּין שְׁנֵיהֶם:

The daytime and nighttime periods, altogether twenty-four hours, existed even before the creation of the sun, moon, and stars on the fourth day. In most places in the world, we begin Shabbat before sunset, the halachic night sets in when the stars are visible following a sunset, and morning begins with the sun's light and is followed by sunrise itself. Although this pattern does not take place near the poles, the *midat yom valayla*, the raw twenty-four hour day, still exists.

15. Rabbi Chaim P. Beinisch, Hazmanim Behalachah, p. 67 – How do we determine day and night north of the Arctic Circle?

According to this, in a place and time outside of the dominion of the luminaries (before the fourth day of Creation), as mentioned in our discussion of the area near the earth's poles, the primordial division of the measure of day and the measure of night still stands. Day and night are determined by their original definition, two equal parts of a [twenty-four hour long] earthly orbit as [exists in other places] on the days of the vernal and autumnal equinoxes (the first days of spring and fall when the day and night are of equal length).

וּלְפִי זֶה בְּמָקוֹם וּבְזִמְנֵן שְׁלֹא
קִיַּמְתָּ מִמְּשַׁלֵּת הַמְּאוֹרוֹת,
וּכְמוֹ בְּנִידוּנֵנוּ בְּאֲזוּרֵי הַקְּטָבִים,
אֲזִי הַחֲלוּקָה הָרֵאשׁוֹנָה שֶׁל
”מֵדַת יוֹם וְלַיְלָה” בְּמָקוֹמָהּ
עוֹמְדָת, וְהַיּוֹם וְהַלַּיְלָה נִקְבָּעִים
עַל פִּי קְבִיעֶתָם הָרֵאשׁוֹנָה,
שֶׁהִיא חֲלָקִים שְׁוִים לְיוֹם
וְלַיְלָה הַבְּנוּיִים עַל תְּנוּעַת כְּדוֹר
הָאָרֶץ עַל צִדּוֹ, בְּיָמֵי נִיסָן
וְתִשְׂרִי.

Halachic authorities, such as the Ben Ish Chai (Rav Pe'alim, Vol. I, Sod Yesharim 2:4 p. 122), the Klausenberger Rebbe (Divrei Yatziv Orach Chaim 1:108) and others, wrote long essays on this topic, citing proofs from Talmudic passages discussing: a. measuring time during the flood; b. day and night during the forty days Moshe was up in Heaven receiving the Torah; c. the miraculous stopping of the sun during Yehoshua (Joshua)'s battle at Givon, d. the miraculous Friday when Rabbi Yehudah Hanasi died (and the funeral lasted for many hours on a unnaturally extended day), and e. the original Shabbat when there was a thirty-six hour period of light (see a summary in Hazmanim Behalachah, pp. 67-71).

Within this camp, there are a variety of approaches.

The two main early proponents of this approach were Rabbi Yaakov Emden, known as the Yaavetz (Germany, 1697-1776), and Rabbi Yisrael Lipshutz, author of the Tiferet Yisrael (Germany, 1782-1860).

16. Rabbi Yaakov Emden, Mor Uketziah 344 – How do people living close to the earth's poles keep Shabbat?

We must examine how people that live in or travel to countries near the earth's poles [should keep Shabbat]. Because of their proximity to the pole, the day is so long (in the summer) that one “day” ends up being two months or more, and there is even a place

צָרִיף עֵינֵן אֵיךְ יִנְהַגוּ הַיּוֹשְׁבִים אוֹ
נוֹסְעִים בְּמְדִינוֹת הַסְּמוּכוֹת לְקוֹטָב.
שֶׁלְפִי רוֹב הַקְּרֵבָה, מִתְאַרְךָ הַיּוֹם,
יֵשׁ שְׂיֵהִיָּה חוֹדֶשׁ אוֹ שְׁנַיִם חֳדָשִׁים
יוֹם אֶחָד, וְכֵן יוֹתֵר, עַד שֶׁיִּמְצָא
מָקוֹם מִתְאַרְךָ הַיּוֹם חֲצֵי שָׁנָה, וְכֵן

where one “day” lasts half a year, and it is night the other half. At the pole itself there is no day and night at all; rather, all year long it is bein hashmashot (twilight), because there is no sunrise and sunset there, for the equator is their horizon. If so, how should they keep Shabbat there?

It seems to me that they should count there seven equal periods of twenty-four of our hours. They should calculate Shabbat based on when they arrived there [e.g. Tuesday], counting days by [twenty-four] hours, and observe Shabbat on the seventh day [of the week], similar to what we spoke of previously concerning someone in the desert (see Section III below).

הַלֵּילָה חֲצֵי שָׁנָה. וְתַחַת הַקָּטָב לֹא יֵשׁ יוֹם וְלֵילָה כָּלֵל אֲלֵא כָּל הַשָּׁנָה בְּלֵה הוּא בֵּין הַשְּׁמָשׁוֹת שָׁם, לְפִי שְׂאִין בְּאוֹתוֹ מְקוֹם עֲלִית וְשִׁקִּיעַת הַשָּׁמֶשׁ, כִּי הַמְּשׁוּה הוּא אוֹפְקָם. אִם כֵּן כִּיצַד יַעֲשׂוּ שָׁם שַׁבָּת?

וְנִרְאֶה לִי שְׂיִישׁ לְמִנּוֹת שָׁם שִׁבְעָה יָמִים שְׁוִים שָׁל כ"ד שָׁעוֹת שְׁוֹוֹת שָׁלָנוּ, וּמִחֲשָׁב מִיּוֹם שֶׁהִגִּיעַ לָשָׁם, מוֹנֶה הַיָּמִים בְּשָׁעוֹת, וּמְקַדֵּשׁ שַׁבְּעִי, כְּדָרָךְ שְׁנֹזְפֵר לְעֵיל לְהוֹלֵךְ בַּמִּדְבָּר.

So, according to Rav Yaakov Emden, if Dave and Brenda reached Longyearbyen on Tuesday at 4 PM, it follows that seventy-two hours later, on Friday at 4 PM, their Shabbat is soon to begin.

The Tiferet Yisrael (serving then as a rabbi in Danzig, at 54° 22' N, still south of the Arctic Circle but in a place where there were times when it did not get completely dark) speaks in a similar vein:

17. Tiferet Yisrael, Commentary on Mishnah Berachot 1:5 – How should you keep Shabbat near the North Pole?

The fact that there are differences between different locations – that night comes earlier in one place than another – does not bother me. For it certainly makes sense that every man should go according to his place and time...Therefore, all of Israel is not keeping Shabbat at one time and in one place. In fact, God sanctified us with his mitzvot and commanded each of us to keep his Shabbat according to his place and time...But I am in doubt about someone who happened to come close to the North Pole in the summer. For there are a number of straight months where there is genuine daylight, and you see the sun surround the entire horizon, east, south, west, and north. What should a Jew who goes there

וְאִמָּנָם בְּעֵינֵי חֲלוּק מְקוֹמוֹת שֶׁבְּמְקוֹם אֶחָד מִקְדָּיִם הַלֵּילָה לְבוֹא וּבְאַחֶרֶת מְאַחֶרֶת לְבוֹא, בְּכַגּוּן דָּא לֹא קָמִיבְעֵיָא לִי, דְּבִנְדָּאֵי שְׁנֵרֶת הַדִּין נוֹתֵנוּ, דְּכָל אָדָם גִּידוּ לְפִי מְקוֹמוֹ וְשַׁעֲתוֹ ... וְאִם כֵּן אִין יִשְׂרָאֵל שׁוֹמְרֵין שַׁבָּת כָּלן יַחַד בְּשָׁעָה אַחַת וּבְזִמְן אֶחָד. אִפִּילוּ הֵכִי כִּי קִדְשָׁנוּ הַקָּדוֹשׁ בְּרוּךְ הוּא בְּמִצְוֹתָיו וְצִוָּנוּ לְשַׁמֹּר כָּל אֶחָד שַׁבָּת בְּשַׁבְּתוֹ לְפִי מְקוֹמוֹ וְשַׁעֲתוֹ ... וְלִכְאוּרָה יֵשׁ לְהִסְתַּפֵּק גַּם כֵּן בְּמִי שֶׁקָּרָה לוֹ שְׂיִבֵּא בְּקִיץ סְמוּךְ לְנֶאֱרָדְפָּאֵל. שְׁשָׁם יֵשׁ אִיזָה חֲדָשִׁים רְצוּפִים בְּקִיץ יוֹם מְמֶשׁ, וְרוֹאִים הַחֲמָה מְקַפֶּת כָּל הָאֶפֶק סְבִיב מְזֻרַח דְּרוֹם מְעַרֵב צָפוֹן. וְהָאִיזָה יִתְנַהֵג

with sailors on a whale hunting expedition do? When should he pray the morning and evening prayers, and when should he keep Shabbat?

הַיִּשְׂרָאֵלִי הַבָּא לְשֵׁם עִם הַסְּפָנִים
שֶׁהוֹלְכִים לְשֵׁם לְצוּר הַתְּנִינִים
הַגְּדוֹלִים (וְוַאלֵּפִישׁ) מִתִּי זְמַן
תְּפַלְתּוּ וּקְרִיאת שְׁמַע שְׁחֲרִית
וְעֶרְבִית וּמִתִּי יְשֻׁבוֹת שַׁבָּתוֹ?

18. Ibid. – There is a way of counting days near the North Pole.

We can say that there is a different indicator there, for [one observing the sun in the Arctic sky will note that] the sun makes the rounds of all four directions in a twenty-four hour period (even though the sun does not set below the horizon there, one can still tell that the earth has made its entire daily rotation on its axis by watching a complete rotation of the sun in the sky). If so, he knows that each revolution that the sun makes is one day.

יֵשׁ לוֹמַר שֶׁסִּימָן אַחֵר יֵשׁ לוֹ,
דְּשֵׁם הַשֶּׁמֶשׁ מְקוּרָה מְכַל הַד'
רוֹחוֹת כָּל כ"ד שָׁעוֹת.

Therefore, if, according to his time, he comes there on a Sunday, he will know that the seventh revolution that the sun makes will be Shabbat (that is, he knows that the earth has rotated on its axis seven times and seven days have passed, because he observed the sun seem to make seven revolutions in the Arctic sky) – although he will not know his time to pray the morning or afternoon prayers. Likewise, through this he will not know when Shabbat should come in or go out, or whether he should keep Shabbat according to the European or the American clock. It is known that these two countries are on opposite sides of the globe, one directly opposite the other. If so, when they are beginning Shabbat in [certain areas of] Europe by making Kiddush Friday night, Friday morning is just beginning in [certain areas of] America...

אִם כֵּן, יוֹדֵעַ שְׂכַל הַקִּפָּה א'
שֶׁתַּעֲשֶׂה הַשֶּׁמֶשׁ, יָדַע שֶׁהוּא
יוֹם אֶחָד. וְאִם כֵּן, אִם יָבֹא
לְשֵׁם לְפִי חֲשֻׁבוֹנוֹ בְּיוֹם א' יָדַע
שֶׁהַקִּפָּה הַשְּׂבִיעִית שֶׁתַּעֲשֶׂה
הַשֶּׁמֶשׁ הוּא יוֹם שַׁבָּת וְאַף עַל
גַּב שְׁזַמַּן שְׁחֲרִית וְעֶרְבִית שְׁלוֹ
לֹא יָדַע. וְעַל יְדֵי זֶה לֹא יָדַע
גַּם כֵּן מִתִּי זְמַן כְּנִיסַת וִיציאת
שַׁבָּת. וְהָאִיךְ יִתְנַהֵג אִם כְּפִי
תוֹשָׁבֵי אֵיירָאָפָא אוֹ כְּפִי תוֹשָׁבֵי
אַמֶּרִיקָא? וְהֲרִי יָדוּעַ שֶׁשְּׂשִׁיתִי
מְדִינוֹת הַלָּלוּ אַחַת מִנַּחַת
עַל פְּנֵי כַדּוּר הָאָרֶץ מִצַּד
אֶחָד וְהָאַחֶרֶת מִמּוֹלֶה מְמִישׁ
מִתְחַתֶּיָה וְאִם כֵּן, כְּשֶׁמְקַדְּשִׁין
הַשַּׁבָּת בְּאֵירָאָפָא הִיא תְּחִלַּת
עֶרְב שַׁבָּת קוֹדֵשׁ בְּאַמֶּרִיקָא ...

He should keep the leniencies and stringencies of the place he came from...

וְאִם גַּם נֹאמַר שְׁנוֹתֵינוּ עָלֵינוּ
חוֹמְרוֹת וְקוֹלוֹת הַמְּקוֹם שֶׁצִּיא
מִשָּׁם ...

He should note the hour that he reached there, according to his clock. For instance, if he came at 6:00 PM according to his time, that will remain

אֶפְשָׁר לְצַדֵּד בְּשִׁיחֻשׁוֹ
לְמַפְרַע עַל פִּי אוֹהַר נְכוּנָה
בְּאִיזָה שְׁעָה הוּא. לְמִשָּׁל, שֶׁיָּבֹא

6:00 PM on Sunday, and he will count another five times twenty-four hours or five revolutions of the sun until that point, and then begin to keep Shabbat for the next twenty-fours.

In any case, it seems to me that if he were to then transgress the Shabbat by doing forbidden activities...it would be no better than someone who was walking in the desert and did not know when Shabbat was to be (a Talmudic passage that will be the subject of Section III – and it would only be obligated on a Rabbinic level).

According to this approach, if there are two people there, one from America and the other from Europe, each one will observe his Shabbat according to the place he left...but they are only obligated on a Rabbinic level.

שם בְּשַׁעָה ו' שָׁעַל הָאוֹהֶר שְׁלוֹ
וְהוּא לְפִי חֲשׁוֹבוֹנוּ שָׁעָה ו' לְאַחַר
חֲצוֹת יוֹם א', יִחְשׁוֹב עוֹד ה'
פְּעָמִים כ"ד שָׁעוֹת אוֹ ה'
הַקְּפוֹת הַשָּׁמֶשׁ עַד הַנִּקְוָה
הַהֵיא, וְאֵז יִתְחִיל לְמִנּוֹת
וְלִשְׁבוֹת שַׁבָּתוֹ כ"ד שָׁעוֹת.

וְעַל כָּל פְּנִימִים נִרְאָה לִי שֶׁאִם
עָשָׂה אִזּוֹ מְלֻאכָה... דְּלֹא עָדִיף
מִמִּי שֶׁהוֹלֵךְ בַּמִּדְבָּר וְאֵינוֹ יוֹדֵעַ
מִתֵּי שַׁבָּת.

וְלִפִּי זֶה אִם יִהְיוּ שְׁנֵי
אֲנָשִׁים, אֶחָד מֵאַמֶּרִיקָא וְאֶחָד
מֵאֵירֹאפָא כָּל אֶחָד יִשְׁמֹר
שַׁבָּתוֹ לְפִי מְקוֹם שֶׁיֵּצֵא מִשָּׁם...
וְאִין חַיִּיבִים רַק מְדַרְבְּנָן ...

[On the one hand, the Tiferet Yisrael seems to side with the halachic authorities who hold the day changes every time the earth rotates on its axis, despite the lack of a new sunset. However, it is then surprising that he asserts that Shabbat transgression would only be of Rabbinic level in those places. Does he essentially side with the second camp – that halachic days, and Shabbat itself, are not applicable there?]

Rabbi Moshe Shternbuch formulates a similar approach in his Teshuvot Ve'hanhagot. He says that in a place where the sun does not set for over twenty-four hours, it remains day (as opposed to night), but the day of the week switches the moment the sun hits, according to his observation, the lowest place in the sky.

19. Rabbi Moshe Shternbuch, Teshuvot Vehanhagot 1:315 – How do you count days when the sun does not set for months?

Question: I was asked by someone who was traveling to Finland for a short period, and would be in a place where there is no day for a number of months – How should he keep Shabbat and when should he pray?

Answer: The later authorities dealt with this issue, and my position is that there is no daytime (in the winter period when the sun does not appear at all) or nighttime (in the summer months when the sun does not set) there, but, nevertheless, we count a day as having passed. The change (from, for instance, Friday to Shabbat) takes place (in the summer months) at the moment that the location

שָׂאֵלָה: נִשְׂאֵלְתִי בְּנוֹסֵעַ
לְפִינְלַנְד לְזְמוֹן קָצֵר מְאֹד
בְּמְקוֹם שֶׁאֵין יוֹם בְּמִשְׁךָ כַּמָּה
חֲדָשִׁים, מֵהוּ לְתַפְלָה וְשַׁבָּת

הָאֲחֵרוֹנִים נִסְתַּפְּקוּ בְּזֶה,
וְאִמְרָתִי לוֹ שֶׁלְדַעְתִּי אֵין שָׁם
יוֹם וְלַיְלָה, וּמְכַל מְקוֹם יֵשׁ
יְמָמָה וּמִתְחַלֶּפֶת בְּרִגַע
שֶׁנִּמְצָא בְּמְקוֹם הַכִּי קְרוֹב
לְשָׁמֶשׁ, וְהוּא הַדִּין כְּשֵׁי שֶׁלִּילָה
אֲרוּךְ מִתְחַלֶּפֶת הַיְמָמָה בְּרִגַע
שֶׁמִּגִּיעַ הַמְקוֹם בְּסִבּוֹ אֶת

is the closest to the sun (when the sun is at its lowest point in the sky). Similarly, when there is a long night, the day switches when the point as far as possible from the sun is reached. According to this, there are places where daytime is but a fleeting moment; and similarly sometimes nighttime is but a fleeting moment. Since this person is traveling to a place where there is no day, daytime is but a fleeting moment and the mitzvot of the day are not applicable, even though Shabbat is not canceled.

In my opinion, a person should not live in such places because he absolves himself from the mitzvot of the day. Only if he is forced to be there, the law is as I have stated (the days continue to progress, but there is no daytime when the sun does not appear for months, and there is no nighttime when the sun does not set for months)...

הַשֶּׁמֶשׁ בַּמְּקוֹם הַכִּי רְחוֹק
מֵהַשֶּׁמֶשׁ, וְלִפִּי זֶה יֵשׁ מְקוֹמוֹת
שְׁיֹם רַק רְגַע כְּמִמְרָה
וּמִתְחַלֶּפֶת, וְהוּא הַדִּין לִילָה
רַק רְגַע כְּמִמְרָה שְׂמִתְחַלֶּפֶת,
וְכִיּוֹן שְׁנוֹסֵעַ לְמְקוֹם שְׂכָלוֹ
לִילָה, רַק רְגַע כְּמִמְרָה יוֹם
בְּשַׁעֲהַ שְׂמִתְחַלֶּף, וְלִכּוֹן
מִתְבַּטֵּל מִמֶּנּוּ שְׂמָה כָּל מִצְוֹת
הַיּוֹם אֲף שֶׁשַּׁבַּת לֹא בְּטֵלָה.

וְלִדְעוּתִי אֶסוּד לְגוֹר בְּמְקוֹמוֹת
כְּאֵלוֹ מֵאַחַר שְׂמִמְקִיעַ מַעֲצָמוֹ
אֶת מִצְוֹת הַיּוֹם, וְרַק אִם
מוֹכְרַח לְהִיּוֹת שְׂמָה הַדִּין כְּמוֹ
שֶׁבְּאַרְנוּ...

According to the Ben Ish Chai (Rav Pe'alim, Vol. I, Sod Yesharim 2:4 p. 122), in areas where the sun is either above or below the horizon for more than twenty-four hours, 6:00 AM is considered sunrise and 6:00 PM sunset. Candle lighting for Shabbat is calculated (some light eighteen minutes before sundown, others twenty or forty) based on a 6:00 PM sunset on Friday afternoon. The end of Shabbat is calculated based on sunset Saturday at 6:00 PM (some would wait until 6:42 PM to make Havdalah, others until 7:12).

Rabbi Yosef Liberman (Habe'eir, Vol. 13, p. 21) and previously the Klausenberger Rebbe (Divrei Yatziv Orach Chaim 1:108) make a novel suggestion for the traveler near the North Pole – that he keep time according to the clock of the Land of Israel. In the absence of the standard sun time, he reverts back to the essential time of the world – that of Israel. Israel is the ideal place for keeping the Torah's mitzvot; the mystics teach us that there is a heavenly schedule corresponding to the worldly schedule in the Land of Israel; and all of the Divine blessings come down to the world through the conduit of the Land of Israel.

Modern halachic authorities are in this third camp, calling for keeping twenty-four hour days, and a Shabbat every seventh. Rabbi Halperin, in his directive to Ilan Ramon, went with the approach of the Tiferet Yisrael: One who enters a zone without classic halachic days and nights should continue counting twenty-four hour periods from the last location he left, and keep Shabbat accordingly.

Based on this, Rabbi Halperin ruled that Ilan Ramon should begin counting time in space based on when he left Cape Canaveral. He could then switch to Israel time when he first flew directly over Israel.

The Yaavetz and the Tiferet Yisrael, in their exposition of this third approach to keeping halachic time near the Arctic Circle, each mentioned a Talmudic passage as a model. That passage from Tractate Shabbat, about when someone should keep Shabbat if he is lost in the desert, will be the subject of Section III.

KEY THEMES OF SECTION II

- The halachic authorities dealing with Shabbat in space looked for a related precedent. They found one in the discussion of how to keep Shabbat near the Arctic Circle, where the standard system of Torah's time-bound mitzvot does not seem to apply, since the sun does not set for months at a time.
- One approach, held by a few lone halachic authorities, says that we must be consistent, and until the sun actually sets the halachic day continues.
- Another, also a minority opinion, says that halachic time does not apply to areas without daily sunsets.
- The most popular approach among the poskim holds that a new day begins every time the earth begins a new rotation on its axis. However, when to count each new day is a matter of dispute.
- When should one keep Shabbat in places where the sun does not set for months on end? Rav Shternbuch says that Shabbat begins the seventh time the sun hits its lowest point in the sky; the Ben Ish Chai holds that nightfall begins at 6:00 PM every day; Rav Yosef Liberman and the Klausenberger Rebbe say to follow Israel time; and the Tiferet Yisrael says that they should begin Shabbat when the people of their hometown do.
- These last two approaches were drawn on by Rabbi Halperin in his response to Ilan Ramon. He should begin counting time in space based on when he left Cape Canaveral, then switch to Israel time when he first flew directly over Israel.

SECTION III Observing Shabbat When Lost in the Desert

Case 3. A Jew Lost in the Jungle

Imagine the following: After an intense month, running a summer day camp in New Jersey, Lenny, a third grade teacher, decided he needed to get away for some personal time. Lenny nonchalantly told his roommate Alex that he plans on traveling to Bolivia for a few weeks. Alex – deep into his master's thesis – nodded and said, "Have a great time." Lenny was an adventurer, the type to just get up and fly somewhere for a couple weeks, and then return back to teaching his third-grade class.

By the end of the first week, Alex was getting a little concerned about not hearing at all from Lenny but brushed it off assuming Lenny just wanted to have time to himself. But in the second week, Alex called other friends, and Lenny's aunt in Los Angeles (his only relative), who was also worried, having not heard from him either. They

contacted the United States Consulate, which contacted authorities in Bolivia.

A search party eventually found Lenny, lost but alive after nineteen days in the Bolivian rainforest. He had miraculously survived a fall, which had knocked him out cold.

Though the entire story of Lenny's adventures is beyond the scope of this class (and is the subject of an upcoming documentary), one aspect is directly related – what he did about keeping Shabbat. Between the fall, the anxiety, the thick storm clouds – and losing his cell phone, which also served as his watch – Lenny had lost track of time.

Lenny had once participated in a three-part series about observing Torah in extreme situations, and one of them focused on a passage from the Talmud about someone lost in the desert who forgot when Shabbat was. That shiur did not remain a theoretical dialogue for Lenny. He lived it out.

What do you think a person should do if he totally forgets which day Shabbat is?

Here is the passage from the Talmud:

20. Shabbat 69b – What should you do if you are lost in the desert and forget which day Shabbat is?

Said Rav Huna: If someone was walking in the desert and did not know which day was Shabbat, he should count six days, then keep one (as Shabbat). Chiya son of Rav says: He should keep one day, then count six.

אָמַר רַב הוּנָא: הָיָה מְהַלֵּךְ (בְּדֶרֶךְ) (או) בְּמִדְבָּר וְאֵינוֹ יוֹדֵעַ אֵימַתִּי שַׁבָּת, מוֹנֶה שְׁשֵׁה יָמִים וּמְשַׁמֵּר יוֹם אֶחָד. חִיָּיא בֶּר רַב אֹמֵר: מְשַׁמֵּר יוֹם אֶחָד וּמוֹנֶה שְׁשֵׁה.

What do you think might be the source of their dispute?

21. Shabbat 69b – What is at the core of the dispute between Rav Huna and Chiya son of Rav?

What is the source of their dispute? One of the rabbis holds that [he should count Shabbat] as it took place in the creation story (following six days of the week); the other holds that [he should count Shabbat] just as Adam [who kept Shabbat a short time after he was created towards the end of the sixth day].

בְּמַאי קָמִיפְלֵגִי? מֵר סָבַר כְּבָרִיתוֹ שֶׁל עוֹלָם, וּמֵר סָבַר כְּאָדָם הָרֵאשׁוֹן.

The Gemara then found a Tannaitic source that clearly supports Rav Huna's approach of counting six days and then observing Shabbat on the seventh, and that is accepted as halachah.

[Note: Shabbat can be thought of in three different ways:

- A.** as the end of the week (the objective Creation story);
- B.** as the beginning of the week (from Adam's perspective); and
- C.** as the middle of the week (see the next few lines).

Each aspect has left its imprint in our sources. The first two appear in our passage. The third is relevant for a number of halachot: one should not embark on a sea voyage on Wednesday through Friday; you can still make Havdalah until Tuesday evening. (This is also in line with our experience of Shabbat – it both culminates our week and energizes the week that follows; and we enter Shabbat consciousness a few days before and come down a few days afterwards. Thus, we could consider it the peak of the week.)]

The conclusion of this passage (from the tractate Shabbat) was directly applied in the rabbinic response to Ilan Ramon's question about Shabbat in space.

Two assumptions underlie the next stage of the passage:

- A.** One is permitted to (and commanded to) transgress the prohibited Shabbat activities in order to save a life.
- B.** Someone who is lost in the desert and totally forgets which day Shabbat is must treat every day as possibly Shabbat, constantly keeping the Shabbat prohibitions, although he is permitted to save himself by continuing to travel to civilization. Rava below now relates to the Gemara's ruling that the traveler counts six days and then observes Shabbat on the seventh day. (A subsequent stage of the passage deals with one who can partially reconstruct which day it is).

22. Shabbat 69b – How does the lost traveler keep Shabbat in the desert?

Rava said: Every day he can do what is necessary (even if it involves transgressing the prohibited Shabbat activities) in order to keep alive.

Q. [And when the traveler reaches the seventh day, he should refrain from any prohibited activities, and not having prepared food] on that day he should die [from starvation]?!]

A. On the previous day he prepared enough for two days' sustenance.

Q. But maybe yesterday was really Shabbat [and he shouldn't have done any preparations]?!]

A. (Reformulation:) Rather, each day – including the day he counts / observes as Shabbat – he does whatever activities are necessary to keep alive.

אמר רבא בכל יום ויום עושה
 לו כדי פרנסתו [בר מההוא
 יומא]. וההוא יומא לימות?!
 דעביד מאתמול שתי פרנסות.
 ודילמא מאתמול שבת הווא?!
 אלא, כל יום ויום עושה לו
 פרנסתו אפילו ההוא יומא.
 וההוא יומא במאי מינפר ליה?
 בקידישא ואבדלתא.

Q. But in what way is that day distinguished as Shabbat (if he also does prohibited Shabbat activities in order to keep alive)?

A. Through making Kiddush (at the beginning of that day) and Havdalah (after it finishes).

Rashi expands on why there is a need to distinguish one day.

23. Rashi on Shabbat 69b – Why is there a need to mark the seventh day through Kiddush and Havdalah?

Kiddush and Havdalah – This is merely a method of remembering. He should have one day that is different from the rest, so that he will not forget the concept of Shabbat.

רש"י שבת סט:

קידושא ואבדלתא - לזכרון בעלמא,
שזיהא לו שם יום חלוק משאר ימים,
ולא תשתכח שבת ממנו:

Shabbat must never be forgotten. When all seven days of the week actually end up looking the same, a person must do something to distinguish one day out of seven from the rest. This is true for the person who forgot which day Shabbat is, and therefore ends up observing Shabbat every day by refraining from all thirty-nine forms of forbidden work, except what he needs to do to stay alive. This is then certainly true for someone who leaves the earth and is now biblically absolved of keeping Shabbat, along with all other time-bound mitzvot (See Section I, Source 12). If he were to follow the letter of the law, every day would be equally lacking sanctity. Therefore, so that he will not forget about the sacred Sabbath, he must certainly designate every seventh day as Shabbat.

Should Ilan Ramon keep Shabbat in space? According to Rabbi Halperin, he was not biblically obligated to, because he was outside of Earth's time framework. But, in fact, he must keep Shabbat on a rabbinic level, as Lenny did in the desert, so Shabbat would not be forgotten. When Lenny lost track of the days, he continued forging ahead to reach civilization and did whatever he needed to stay alive, but, based on the rabbinic mandate not to forget Shabbat, he indicated each seventh day as unique by beginning with Kiddush and ending with Havdalah. Similarly, Ilan Ramon was to keep a rabbinic level Shabbat, even though he was outside the earthly time-bound mitzvot system.

[However, remember Source 14, that day and night (*middat yom valaylah*) can be viewed as objective entities that existed even before the creation of the sun and other heavenly bodies. Day and night exist everywhere. Just as someone who is near the North Pole and does not see the sun set still relates to the day and night based on the earth's rotation on its axis, so it is with someone in space. This, perhaps, was the approach of one of the other rabbis who responded to Rabbi Konikov, Rabbi Gavriel Tzinner, who maintained that mitzvot are incumbent on space travelers.]

When should he keep that Shabbat? We draw on the model of the Jew in the Land of the Midnight Sun – and he can either keep the time of the location he left or Israel time.

KEY THEMES OF SECTION III

- Someone lost in the desert who forgot which day Shabbat is must refrain from Shabbat's forbidden work, because every day might be Shabbat. But, each day he is permitted to do what he needs to stay alive on that day.
- When does he keep Shabbat? He counts six days and keeps the seventh as Shabbat.
- Because he refrains from Shabbat's forbidden activities every day, and every day he does whatever he needs to stay alive, he needs to distinguish Shabbat by making Kiddush and Havdalah on that seventh day.
- This principle, that Shabbat never be forgotten, is the mandate for keeping Shabbat in space even though, as Rabbi Halperin contends, it is outside Earth's time system and therefore the Torah's time-bound mitzvot.

SECTION IV Lessons for Jews in Normal Places

Our discussion of extreme cases has some powerful lessons for Jews in normal situations, not just astronauts, Arctic travelers, or people lost in the jungle.

A. Our relationship with God is with us wherever we go. We are Jews in space, in the office, on vacation, in the privacy of our homes and in the middle of a modern metropolis. Now that space travel (even for private citizens) has become a realistic possibility, the following verses from King David's Tehillim (Psalms) take on new meaning.

24. Tehillim 139:8-10 – We meet God everywhere in the cosmos.

8. If I fly up to Heaven, there You are, and if I go down to the depths, there You are.	(ח) אִם אֶפְסַק שָׁמַיִם שָׁם אַתָּה וְאִצְעָה נְשֹׂאֵל הַנֶּגֶד:
9. I fly on the wings of dawn, or live beyond the sea,	(ט) אֶשָּׂא כְנָפַי שָׁחַר אֶשְׁכְּנָה בְּאַחֲרֵית יָם:
10. Even there Your hand guides me and You hold me with Your right hand.	(י) גַם שָׁם יְדָךְ תִּנְחֵנִי וְתִאחֲזֵנִי יְמִינֶךָ:

B. A Jew should be proud of his Jewish identity. Here is a quote from an article by Rabbi Shlomo Gestetner.

25. From Rabbi Shlomo Gestetner, January 15, 2003, "Ilan Ramon's Subtle Call to Jewish Earthlings," jr.co.il/pictures/israel/history/a030115.txt – Ilan Ramon taught a lesson on Jewish identity.

Ramon's journey ... is an inspiring example of one man who senses the importance of Jewish identity ... Ramon made headlines around the world as a result of his insistence on marking Shabbat in space and his procurement of kosher food from NASA.

Says Ramon: "My mother is a Holocaust survivor who was in Auschwitz, and my father fought for the independence of Israel not so long ago. I was born in Israel and I'm kind of the proof for my parents and their generation that whatever we've been fighting for in the last century is coming true.

"I feel I'm representing the whole Jewish people."

No wonder, then, that one of our students recently came back from a trip to Universal Studios with a poster not of Eminem, but of this 48-year-old veteran of the Israel Air Force.

Unlike so many Jewish celebrities Ramon isn't blurring his Jewish roots ... By being proud to display his heritage, Ramon is making a massive contribution to Jewish continuity.

C. Shabbat is an essential component of every Jew's week. One day out of seven must be unique. Even the Jew lost in the desert, who is, in effect, keeping Shabbat every day out of doubt (except for continuing to travel and basic survival needs) must set off one day when he makes Kiddush and ends with Havdalah. Remembering the sanctity of Shabbat is so important that even the Jew in space, not obligated in time-bound mitzvot, must keep it.

26. Ner Le'Elef Thinking Gemara (quoting an observer of the conversation below) – How do you begin observing the Torah?

A man approached the head of an Israeli yeshivah, with the following request: I want to start keeping the Torah but I have no idea where to start. Please tell me, where should I start keeping the Torah?

His response: Start where the Jewish people started. The Torah tells us that before the Jews even reached Mount Sinai, they came to a place called Marah. The Torah tells us (Shemot [Exodus] 15:25), "... There he placed before them a statute and an ordinance ..." Rashi explains, "He gave them a few of the sections of the Torah to already get involved in – Shabbat, the Red Heifer, and civil laws."

“Start getting involved in Torah by taking on three things,” said the Rosh Yeshivah to the man.

“Civil law: A Jew must know that Judaism is not just between man and God, but also between man and man. Take on some interpersonal mitzvah.

“The Red Heifer: A Jew must know that the Torah is God-given; the human mind cannot understand everything. Take on one thing you do not understand.

“Shabbat: It is essential that every week include the holiness of Shabbat. Do something special on Shabbat – light candles before, make Kiddush and enjoy a Shabbat meal with family and friends, go to the Beit Kneset – do something that will make Shabbat special.”

KEY THEMES OF SECTION IV

- The somewhat extreme situations we spoke about in this class teach some lessons for all Jews, even those living an extremely “normal” life.
- Our relationship with God is with us wherever we go.
- A Jew should be proud of his Jewish identity.
- It is unthinkable that a Jew should go one week without a Shabbat.

CLASS SUMMARY

Is a Jew in space obligated to keep the mitzvot?

Yes, but not all of them are necessarily applicable. Our relationship with God of course applies to all places and times, and we are obligated in His mitzvot wherever we go. But we are not required to perform every mitzvah in every place. Some mitzvah obligations are for particular times (e.g. holidays), people (e.g. Kohanim), or places (e.g. the Land of Israel). On a biblical level it is plausible that the time-bound mitzvot are not applicable outside the earth's system of time, which is dependent on the earth's position vis-à-vis the sun and moon. Yet, Shabbat and other time-bound mitzvot would still be rabbinically obligated, so they should not become forgotten.

If he is, when should he keep the Shabbat?

He should keep time based on the location of his takeoff from Earth, but can, according to some, keep Israel time (or take on Israel time the moment he flies above it). He will take in and keep Shabbat just when the people in that location on Earth do.

When does a Jew keep Shabbat in areas where the sun does not set for months?

Halachic authorities were divided into a number of schools of thought on this issue. Minority opinions maintained: a. the day continues until the sun sets (if the first day the sun does not set is a Shabbat, they will have Shabbat for several months!), or b. the time-bound mitzvot are not applicable in such places, so they should be avoided. The prevalent opinion is that they should continue to count days, even though sunrise and sunset are on hold for those months. There are three approaches to counting time – a. based on the traveler's home location, b. based on Israel time, or c. based on a 6 AM to 6 PM day.

What should someone do if he or she is detached from civilization and forgets when Shabbat is?

God forbid this should happen, but if it does, proper practice is to do whatever necessary to keep traveling to reach civilization (since it is permitted to transgress Shabbat in order to survive), but to otherwise keep Shabbat constantly, for each day might be Shabbat. He should count six days, and distinguish the seventh as Shabbat by ushering it in with Kiddush and concluding it with Havdalah.

What do these extreme situations teach us earth-bound Jews living in places with conventional latitudes?

Here are three of many lessons that could be reaped:

- A.** Our relationship with God is not limited by time and space, even though not all people are obligated in the identical set of mitzvot, and different places have different mitzvah obligations.
- B.** A Jew, even one (especially one!) in a prominent and visible position in non-Jewish society, should never be ashamed of his Jewish identity. On the contrary, Jews should always be proud of their heritage, and see themselves as representatives of the Jewish people.
- C.** The holiness of Shabbat is essential for Jewish life. Even in extreme situations, where it is either not applicable, or otherwise indistinguishable from the other six days of the week, Shabbat should be kept, at least by making Kiddush and Havdalah. Doing something to make Shabbat special is a good first step in becoming an active Jew.

**RECOM-
MENDED
ADDITIONAL
READING**

“In Memory of Ilan Ramon z”l,” the most extensive collection of links, articles, videos, and images about Ilan Ramon, collected by Jacob Richman, available online at <http://www.jr.co.il/pictures/israel/history/space.htm>

Ilan Ramon's Diary

<http://www.aish.com/jw/id/48910512.html>

Detailed map of the Arctic Circle:

<http://athropolis.com/map2.htm>

“When Does One Pray When There Is No Day?” by Rabbi David Heber, available online at <http://www.star-k.org/kashrus/kk-whendoesonepraywhenthereisnoday.htm#f3>

Hebrew

“אם אסק שמים: קיום מצוות בחלל,” מאת הרב לוי יצחק הלפרין, בהוצאת המכון המדעי טכנולוגי להלכה, ירושלים תשס”ג

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“קיום מצוות בחלל,” ו”זמני היום והלילה בארצות הצפוניות,” שיעורים וחומר לימוד מאת עולמות - <http://olamot.net>