

## Judaism in Space

### As humanity goes into space, how do you practice Judaism there?

- On a spaceship: No day, no night, no seasons, no sun, no moon, no gravity, no Israel.
- On a planet: Days, years, and seasons are different.
- How would aliens from outer space relate to Judaism?
- Too early for definitive answers, but some responsa available
- Only after lots of observant Jews go into space will minhagim and definitive halacha arise.

### Jewish astronauts

14 so far:

- First: Boris Volynov, USSR, flew Soyuz in 1969 and 1976
- Second: Judy Resnick, USA, flew Shuttle in 1984 and 1986
- Third: Jeffrey Hoffman, USA, flew shuttle 5 times, 1985-1996
- Also flew 5 times: Marsha Ivins, USA, 1990-2001; John Grunsfeld, USA, 1995-2009
- Others are:
  - Israeli Ilan Ramon, 2003
  - Americans Ellen Baker, Jerome Apt, David Wolf, Martin Fettman, Scott Horowitz, Mark Polansky, Garrett Reisman, and Gregory Chamitoff.

### Space jokes

- First rabbi in space returns exhausted: "We went around the earth every 90 minutes. For us, a day was 90 minutes -- Shacharit, mincha, maariv, shacharit, mincha, maariv -- no time for anything else!"
- Why were the nine little green men so happy to see the first Jewish astronaut land on Mars? Answer: He made a minyan!
- A man returns from the first bar mitzvah on Pluto, disappointed: "The band was very good, the food was out of this world, but there was no atmosphere."
- At beginning of Torah service, we say:  
Gadlu l'Hashem iti u'nrommemah shmo yachdav [Ps. 34:4]  
Wrong translation: Declare the greatness of God with me and let us exalt His name together

Correct translation: Declare the greatness of God, E.T., and let us exalt His name together.

(It is an invitation to extraterrestrials to join us in praising God.)

### **Talmud twist on whether Jews may take time from Torah study for secular subjects:**

Ben Damah, the son of R. Ishmael's sister, once asked R. Ishmael, "May one such as myself, who have studied the whole of the Torah, learn Greek philosophy [chochmat yevanit]?"

He [R. Ishmael] then read to him the following verse, "This Book of the Torah shall not depart from your mouth; but you shall meditate on it day and night" [Joshua 1:8]

Go then, and find a time that is neither day nor night, and then you may learn Greek philosophy. [Menachot 99b]

-Was he telling him to go off on a spaceship? Why did he phrase it that way, rather than just saying "No"?

(Note: There was opposition to this view. The Talmud continues:

This, however, disagrees with the view of R. Samuel b. Nahmani, [who] said in the name of R. Yonatan, This verse is neither a duty nor a commandment, but a blessing. For when the Holy One, blessed be He, saw that the words of the Torah were most precious to Joshua, as it is written, "His minister Joshua, the son of Nun, a young man, departed not out of the tent" [Ex. 33:11], he said to him, 'Joshua, since the words of the Torah are so precious to you, [I assure you,] this book of the Torah shall not depart from your mouth!')

### **Is space exploration religiously mandated?**

-Torah says:

God blessed them and said to them, 'Be fruitful and multiply; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground.' [Genesis 1:28]

-Some interpret "the earth" as "the entire universe".

### **Humanity may have to go into space out of necessity**

-The Sun is an ordinary star, so is expected to die in 5 billion years. It does not have enough mass to explode as a nova, so it will turn its hydrogen into helium, become a red giant, expand to engulf the earth, then contract and heat up.

-Talmud: When that happens, God will grant us wings to escape the earth:

And should you ask, in those years during which the Almighty will renew his world [after destroying it], as it is written, 'And the Lord alone shall be exalted in that day' [Isaiah 2:11], what will the righteous do? The Lord will make them wings like eagles, and they will fly above the water, as it is written, 'Therefore we will not fear when the earth will be removed and the mountains be carried into the midst of the sea.' [Ps. 44:3.] And should you imagine that they will suffer pain, Scripture says, 'But those who wait upon the Lord shall renew their strength; they shall soar on wings like eagles; they shall run and not grow weary; and they shall walk and not faint.' [Isa. 40:31] [Sanhedrin 92b]

-Zohar goes one step further:

The Holy One, blessed be He, will provide them with wings as of eagles, enabling them to fly across the whole universe. [Zohar, Bereshit 1, page 12b]

-Midrash already mentioned God creating other worlds before ours, and destroying them because He did not like them:

R. Abbahu said: Hence we learn that the Holy One, blessed be He, went on creating worlds and destroying them until He created [heaven and earth], and then He said: 'These please Me; those did not please Me.' [Midrash - Genesis Rabbah 9:2]

This implies there will be refugees, like Noah and his family, only this time they will go into space.

-Worse: Heat Death of universe. Entropy expected to increase until all particles mill about in random motion

-Second Law of Thermodynamics. Will happen in  $\sim 10^{100}$  years.

-*Adon Olam* foresees this:

Ve-acharei kichlot ha-kol, levado yimloch nora

And **after everything shall cease**, God will still reign in majesty

-Science has no clue on periods before Big Bang or after Heat Death.

## How to observe time-bound mitzvot where time and seasons are different?

Problem dates from 18th century, when Jews started moving north, where daytime or nighttime can last for days or weeks.

-Talmud is guide:

Rav Huna says, if a man is wandering in the desert and he does not know when Shabbat is, he should count six days [as weekdays] and keep one day as Shabbat. [Shabbat 69b]

Rava says, "...every day he may do whatever he needs in order to survive, even on Shabbat."

-The law: A wanderer who lost track of time keeps six "weekdays" followed by one "Shabbat", but he may not do anything forbidden on Shabbat, on any day,

except to survive. He must act out of concern that the real Shabbat may be on ANY day. [Shulchan Arukh, Orakh Hayyim 344]

-Same logic originally used to observe two holy days in the Diaspora vs one in Israel.

When day or night last for six months (near poles):

-**Rabbi Jacob Emden** (18<sup>th</sup> century):

-Count 6 days of 24 hours and keep the 7th as Shabbat.

-**The Tiferet Yisrael** [Mishnayot Yachin U'Boaz - Brachot: End Chap 1,(1782-1860)]:

-Use times for prayers of place from where you came.

-**The Ben Ish Chai** [Teshuvot Rav Pa'alim - Sod Yesharim 2:4, Sephardic, 1832-1909]:

-Consider 6am to be sunrise and 6pm sunset.

-**The Moadim U'Zmanim** [Chalek Bais (2) Siman 155 in the glosses]:

-In summer, when sun does not set, consider that a day begins and ends when sun is at its lowest point in the sky, usually around midnight.

-In winter, when sun does not rise, consider that a day begins when sun is closest to the horizon, usually around noon.

In space, two opinions:

-**Rabbi Ben Tzion Firrer** [5730 issue of Noam]:

Mitzvot are only applicable on earth, because Torah says:

These are the statutes and judgments, which you shall take care to do, in the land [ba-aretz], which the Lord God of your fathers gives you to possess all the days that you live upon the earth [ha-adamah]. [Deuteronomy 12:1]

But note: It does not say: Don't do mitzvot outside the Land or the Earth.

-**Rabbi Menahem Kasher** [5730 issue of Noam]: Mitzvot are incumbent in every environment. The themes of the festivals, of Shabbat remembering creation, of the daily prayers, are always relevant. So apply same rules on the moon and in space as for the North Pole.

-Second opinion most likely to prevail. Possible details:

-When orbiting earth, use only time measured at place you left from

-Some say: Keep Shabbat anytime it is Shabbat anywhere on Earth.

-When going far from earth, use clock on spaceship wall, synchronized at liftoff with time and place you left earth, and follow sunrise/sunset times and Jewish calendar for that place after that.

-Observance can't ever truly "be" simultaneous with place of origin because of relativistic twin effect (one twin stays on earth and the other travels in space, and when the traveler comes back he is younger than his twin – he has actually experienced less time).

-On Earth, pray towards Jerusalem. So, in space, pray towards earth.

-May do essential ship maintenance on Shabbat and holidays (pikuach nefesh)

-When on a planet in space, pro-rate length of day or year:

-**Rabbi Azriel Rosenfeld**: On Mars, a "day" is 24 hours and 39 minutes in earth time and a "year" is 687 days in earth time, so modify observance calendar accordingly (pro-rate?).

-Also, when on the moon, one need not bless the full moon (Kiddush Levana, done at night outside between Rosh Hodesh and time of full moon).

-**Lubavitcher Rebbe** concurred.

## How does absence of gravity affect halacha?

Torah mandates building a parapet around a roof for protection:

-When you build a new house, make a parapet around your roof so that you may not bring the guilt of bloodshed on your house if someone falls from the roof.

[Deuteronomy 22:8]

But what if there is no gravity? Do you still have to observe the mitzvah?

-Can we say: This is one commandment stated along with the reason for it, so when that reason does not apply, neither does the commandment?

## Can one keep kosher with recycled food?

-*Star Trek* food replicator recycles everything on the ship and builds food from individual molecules. If they build pork chops, may Jews eat them?

-Halacha would say yes. Pork is the flesh of pigs and may not be eaten. But the replicator product is not the flesh of pigs. It is assembled from individual molecules, so it can be eaten. After all, when you bite into a fresh apple, you are eating some molecules that once belonged to a pig 100 years ago, and it's OK. Nature recycles everything.

-But what if the Torah prohibition is for health reasons? What if eating two strips of bacon a day will lower your IQ by 1 point a year, and we are unable to detect that yet? Then the replicator pork chop and the flesh of the dead pig will have the same bad effect on you, since they have the exact same chemical composition. The apple above does have enough bad molecules in it to hurt you, but the replicated pork chop does.

-But the halacha of food is not chemically based:

-If water comes into contact with treif, it must not be drunk even if boiled, evaporated and condensed in a new pot.

-So eat the replicated pork chops, and if later evidence shows they hurt you, stop eating them. Some food is known to be both kosher and poisonous: Don't eat it.

**-Do all food restrictions, including on Pessah, disappear if replicators are only source of food?**

## What if we encounter intelligent life outside the earth?

-Talmud: World was created for man's sake:

The Holy One, blessed be He, [said]: My daughter, I have created 12 constellations in the sky, and for each constellation I have created 30 hosts, and for each host I have created 30 legions, and for each legion I have created 30 cohorts, and for each cohort I have created 30 maniples, and for each maniple I

have created 30 camps, and to each camp I have attached 365,000s of myriads of stars [1 myriad=10,000], corresponding to the days of the solar year, and all of them I have created only for your sake. [Berachot 32b]

-Note: Talmudic number of stars comes to  $1.06434 \times 10^{18}$ . Best scientific estimate today is  $10^{23}$ , but that follows from assumptions that may change (before Dec 2010 it was  $10^{22}$ ).

- Alien beings are consistent with Judaism:

-Song of Deborah:

Curse Meroz, said the messenger of the Lord, curse bitterly its inhabitants. [Judges 5:23].

-Talmud: Some say Meroz is a person or a city; others that it's a star or planet [Moed Katan 16a], based on

They fought from heaven; the very stars in their courses fought against Sisera. [Joshua 5:20]

-So Sages imply there may be extraterrestrial life.

-In *Ashrei*, we say

Your kingdom is a kingdom of all worlds. [Psalms 145:13]

-Hasdai Crescas [14th century] sees proof of extraterrestrial life in:

The heavens declare the glory of God. [Psalm 19:2]

His *Ohr Hashem* has a chapter where he reconciles extraterrestrial life with Judaism. He cites Talmud:

God flies through 18,000 worlds. [Avoda Zara 3b]

Surely God goes there because they have inhabitants who need Him.

-Rabbi Yosef Albo ("Ikkarim", 15th century): Since the universe was created for the sake of humanity, no other creature can exist possessing free will.

-Sefer Habrit [Rabbi Pinchas Eliyahu of Vilna]: Aliens exist, and may even be intelligent, but do not have free will.

-The Lubavitcher Rebbe: One who declares that there is no life besides on earth is limiting the Creator's abilities.

-Tikunei Zohar (kabbalistic work): Every tzaddik (righteous person) will rule over his own planet.

## Would aliens be allowed to convert to Judaism?

-What if their anatomy is different? What do they circumcize? If a Martian has no arms, how would he wear tefillin?

-He doesn't. Just as a Jew missing arms is exempt from wearing tefillin of the arm. You only do what you can.

-But, if we accept R. Albo's view, aliens have no free will and so cannot convert.

## Conclusion

-Judaism has survived such upheavals as the end of Temple worship and the Exile from the Land, and has adapted, and thrived.  
-It is safe to say that it will adapt to space travel and life outside the earth as well, and thrive.