

Survey of Recent Halakhic Periodical Literature

MIZVOT IN THE POLAR REGIONS AND IN EARTH ORBIT

I. THE PROBLEM

Some time during the early period of space exploration, this writer was present at a gathering at which Milton Himmelfarb delivered a talk on the state of the Jewish community. After pointing out that Jews had achieved acceptance, and indeed prominence, in the professions, public service, finance etc., he digressed to note that there had been no Jewish astronauts. To explain that exception to the already well-established norm, Himmelfarb lapsed into Yiddish in explaining that no Jew wished to become a pioneer in space travel: "*Dort ken men doch derharget veren*—A person could get killed out there!" Afterward, this writer commented, only partially tongue in cheek, that Jews perforce abjure space travel because of a quandary with regard to the proper time for prayer and because of confusion with regard to observance of *Shabbat*.

Although Himmelfarb's comment was ominously prescient, with regard to Jews choosing space travel as a profession, time has proved both of us to have been wrong. In the ensuing years there have been a significant number of Jewish astronauts. The first was Dr. Judith Resnick who flew on the maiden voyage of Discovery in 1984 and who was aboard the ill-fated Challenger in which she perished with the rest of the crew shortly after takeoff. At the time of her planned flight there were reports, perhaps apocryphal, that she had expressed curiosity with regard to determining the proper time for kindling Sabbath candles. Later, for some reason, another Jewish astronaut, Scott Horowitz, took with him an artifact described as a "space Torah" and subsequently presented that memento to a temple in Houston. David Wolf flew on three shuttle flights and spent four months, including Chanukah, on the Russian space station Mir. Although kindling a menorah would have been dangerous in the oxygen-rich atmosphere of the space station, he

did spin a *dreidel* which Wolf claims he was able to spin in zero gravity for an hour and a half on a single twirl.¹

Most recently, in January of 2003, after repeated postponements, Colonel Ilan Ramon, the first Israeli astronaut, joined a crew of NASA astronauts aboard the space shuttle Columbia on a mission that ended in tragedy sixteen days later on February 1st. Kosher food of a type that can be reconstituted in space was prepared for the Jewish astronaut by a company in Illinois. He also consulted a rabbi identified with the Lubavitch movement serving in the vicinity of Cape Canaveral with regard to the proper method of determining when to observe *Shabbat*. Colonel Ramon indicated to one reporter that he was not strictly Sabbath observant and would also find it impossible fully to observe *Shabbat* during his mission in space, but that he nevertheless felt that in participating in the space program he was “representing all Jews and all Israelis” and therefore should endeavor to conduct himself accordingly.²

One may surely hope that the interest and discussion evoked by Colonel Ramon’s query will impress upon others the importance of Sabbath observance. In any event, the sentiments he expressed are themselves quite salutary: A Jew may not have developed the spiritual fortitude that fosters consistency in abiding by the demands of Judaism but may nevertheless intuitively shrink from public transgression. The Jewishness that was at the core of his being caused him to recoil from unnecessary Sabbath desecration that was *be-farhesiya*, i.e., public and notorious. With the eyes of the world focused not only upon the flight of the space shuttle but upon the Israeli crew member in particular, the actions of that individual were indeed public and were perceived as representative of the Jewish people as a whole.

The issue of Sabbath observance aboard a space ship is a novel extension of the much older question of Sabbath observance in the polar regions and adjacent areas in which daylight and darkness extend for months at a time rather than alternating in periods of approximately twenty-four hours. Determination of the prescribed time for morning, afternoon and evening prayers as well as for other time-bound *mizvot* presents the identical problem. Jewish commercial travellers reached areas relatively close to the North Pole long before anyone, Jew or gentile, seriously dreamed of space travel.

Those questions received serious attention but hardly unequivocal resolution either because of doubt engendered by disagreement with regard to the proper solution of the problem or because measurement

of time at the antipodes and/or in space is a matter of intrinsic halakhic doubt to which there is no resolution. The rabbinic attitude vis-à-vis proper comportment in the polar regions is eloquently captured in a letter written in 1886 by Rabbi Simcha ha-Levi Bamberger to his son that is published in the former's responsa collection, *Zekher Simbah*, no. 30. Rabbi Bamberger's son was considering a trip to Norway for some business purpose and consulted his father regarding the appropriateness of the halakhic ruling of an unnamed Norwegian rabbi with regard to Sabbath observance. After discussing the problem and offering his own opinion, *Zekher Simbah* concludes: "However, all this is Halakhah but in practice my inclination is: Why should a person, even during weekdays, place himself in a state of doubt with regard to reading the *Shema* and prayer? At the minimum, do not remain in that country on *Shabbat* [where] there is doubt with regard to what to do. Nothing prevents God from bestowing blessing and success wherever your feet tread for good." A rabbinic decisor's fatherly advice and blessing to his son was to avoid halakhic doubt and find divine bounty elsewhere.

II. R. JACOB EMDEN

The first rabbinic authority to address the question of time at the polar regions was the eighteenth-century scholar R. Jacob Emden whose opinion gained wide currency due to its citation in *Sha'arei Teshuvah*, *Orah Hayyim* 344:1. R. Jacob Emden is quoted in that source as ruling that "those traveling below the polar region where the day is prolonged into a month or two months and [in some places] six months should count six days of our twenty-four equal hours," i.e., the advent of *Shabbat* should be deemed to occur after six periods of twenty-four clock hours have elapsed. In context, the implication of *Sha'arei Teshuvah's* citation of R. Jacob Emden's view is certainly that the seventh cycle of twenty-four hours is to be regarded as *Shabbat* in every respect. However, a careful examination of R. Jacob Emden's comments in his *Mor u-Kezi'ah* 334 in their entirety reveals a certain ambiguity in Rabbi Emden's position. *Mor u-Kezi'ah* comments:

It is necessary to reflect upon [the manner in which] those who dwell or travel in the lands near the poles should conduct themselves. For, in proportion to proximity [to the pole], the day becomes lengthened. There [are places in which] a month or two months and even longer may be a day to the extent that there exists a place where the day is

prolonged to half a year and similarly the night is half a year. And under the pole there is no day and night at all; rather there is twilight [during] the entire year for in that place there is no sunrise or sunset because the [celestial] equator is its horizon. If so, how should they establish *Shabbat* there? It seems to me that there it is necessary to count seven equal days of twenty-four of our equal hours, and calculating from the day that one arrived there, one should count days by means of hours and sanctify the seventh in the manner mentioned earlier with regard to a traveller in the desert.

Mor u-Kezi'ah's assertion that there is neither night nor day at the North Pole itself (or at any other place that might be denoted by the phrase "under the pole") because the sun never rises and never sets is simply an empirical error. It is true that a person standing at the North Pole who looks out over the horizon will observe all stars north of the equator because, at the North Pole, the celestial equator can be seen on the horizon. However, it is precisely at the North Pole that day and night are each six months in duration and at no place is there year round twilight. Assuming, however, that *Mor u-Kezi'ah's* description is factually accurate and that, in the absence of sunrise and sunset, the halakhic day is to be calculated as a period of twenty-four clock hours, it remains necessary to determine when the sequence of days begins in order to determine the seventh day of each weekly cycle. Logic would dictate that "time" at the North Pole began when time began for the rest of the planet. However, instead of being contingent upon a sequence of sunrises and sunsets, time at the North Pole is calculated by means of clock hours. If that is the case, then *Shabbat* should be observed on the North Pole on the same "day" that it is observed elsewhere in the globe although, to be sure, *Shabbat* would begin and end throughout the year at the same hour. In effect, the North Pole would have its own "local" time just as the day begins and concludes at every other geographic point on earth in accordance with its own local time. The sole difference being that "local" time at the North Pole is idiosyncratic in that it is to be determined by consulting the clock while elsewhere local time depends upon sunrise and sunset.

But *Mor u-Kezi'ah* says something astoundingly different. He rules that the week commences with the arrival of the traveller who then counts six days before sanctifying the seventh. Apparently, every traveller begins calculating his own weekly cycle upon arrival regardless of which day of the week it might be elsewhere on the globe.³ The resultant situation is certainly anomalous: Not only do two travellers observe *Shabbat*

on two different days but neither of them observe *Shabbat* on the day of the week on which it is observed by Jews elsewhere in the world! ⁴

Moreover, *Mor u-Kezi'ah* rules that the identical procedure must be followed not only in fictitious places where the sun always shines but also in areas in which the cycles of daylight and darkness are a month, two months or six months in duration despite the fact that in those locales the phenomena of sunrise and sunset do occur, albeit at intervals that vary greatly from other places.

It seems to this writer that the key to understanding the import of *Mor u-Kezi'ah's* ruling is in his concluding phrase: "and he sanctifies the seventh in the manner that has been mentioned earlier with regard to a traveller in the desert." If one reflects upon that comment for but a moment it seems to be entirely inappropos. To be sure, the rule codified in *Shulhan Arukh, Orach Hayyim* 344:1, is that a traveller in the desert who becomes confused and no longer knows which day of the week it is counts six days and sanctifies the seventh. But the days that he counts are conventional solar days, not twenty-four hour clock days. Moreover, that halakhic provision in no way reflects the notion that the days of the week are to be determined in an arbitrary, subjective or individual manner. Quite to the contrary, doubt with regard to the identity of each day of the week—and hence the objective determination of *Shabbat*—is not at all dispelled by adoption of an arbitrary convention. For that reason, the rule as recorded by *Shulhan Arukh* is that since the traveller remains in a quandary he must refrain from activity forbidden on *Shabbat* on each and every day.⁵ The traveller is permitted to perform any act necessary to sustain life and such acts are permitted even on the day that he observes as *Shabbat*. Thus, he may cook as much food as necessary to meet his minimum requirements on each day of the week, including the day that according to his arbitrary calculation is Saturday. He is also permitted to do whatever is necessary in order to emerge from the desert as quickly as possible so that he may return to proper Sabbath observance and he may engage in such travel even on the day that he observes as *Shabbat*. The confused traveller observes the day designated as the Sabbath solely through recitation of *kiddush*, *hav-dalah* and *Shabbat* prayers.⁶ Those observances are rabbinically ordained for the day designated by the traveller as his personal Sabbath lest the confused traveller forget the very concept of *Shabbat*.⁷

Application of that rabbinic decree to a hypothetical geographic area in which there is perpetual daylight is problematic to say the least. Its application to locales in which the day is inordinately long in dura-

tion is even more baffling. There is no hint in that rabbinic decree indicating that in a place where there is no sunrise or sunset the day is to be calculated as twenty-four clock hours in length and certainly no suggestion that where there is sunrise and sunset that the “days” cannot be weeks or months in duration. Moreover, the rabbinic decree is limited solely to matters of liturgy and ritual but does not permit transgression of even rabbinically ordained strictures on any day of the week.

It seems to this writer that *Mor u-Kezi'ah* regarded the establishment of halakhic time, and hence of the Sabbath, in the places under discussion to be a matter of unresolvable doubt. To be sure, as clearly enunciated by R. David ibn Zimra, *Teshuvot ha-Radvaz*, I, no. 76,⁸ determination of the onset and conclusion of *Shabbat* is determined locally. Leviticus 23:3 mandates that the Sabbath be observed “in all your habitations.” That phrase is understood by Radvaz⁹ as signifying that the onset and conclusion of *Shabbat* is to be determined in accordance with sunset at each particular “habitation.”¹⁰ *Shabbat* is designed as a “sign between Me and between you” (Exodus 31:13) and accordingly, is to be observed during the period representing the culmination of six days of labor in each person’s locale. The Sabbath day, which includes a period of darkness and a period of daylight, is roughly twenty-four hours in length in all places other than in the extreme northern and southern regions. As a result, the Sabbath is observed on the same day of the week in all parts of the globe. Accordingly, *Mor u-Kezi'ah* assumes that in locales in which that cannot be the case there is no discernible method for determining the days of the week. Hence, determination of the advent of *Shabbat* remains either a matter of irresolvable doubt or, alternatively, there is no concept of halakhic time in such places. Therefore, *Mor u-Kezi'ah* rules that a person finding himself in such a place faces a problem that is no different from that confronting a person lost in the desert or confused with regard to a sequence of days and must conduct himself in an identical manner. That is precisely the import of *Mor u-Kezi'ah*’s concluding phrase “in the manner indicated earlier with regard to one who travels in the desert,” i.e., he may perform no forbidden act on any day of the week and must recite *kiddush* and *havdalah* on the seventh day of every seven-day cycle subsequent to his arrival.

But even that understanding of *Mor u-Kezi'ah*’s position remains problematic if there is no halakhic time in such regions. Were that the case, there would be no *Shabbat* and hence no forbidden acts. Rabbinic legislation regarding *kiddush* and *havdalah* might well be cogent as a means of keeping the concept of *Shabbat* alive but the element of doubt

that renders proscribed acts impermissible on any day that might possibly be *Shabbat* is not at all present in an area in which there is no time and hence no *Shabbat*. Accordingly, it would seem that *Mor u-Kezi'ah* should be understood as assuming that halakhic time does exist in the polar regions but that a method of calculating the passing of time in such areas is not available to us. Accordingly, all matters requiring a determination of time remain a matter of irresolvable doubt in such areas.

Understood in this manner, *Mor u-Kezi'ah's* position is cogent but nevertheless open to objection. As a matter of general principle, rabbinic legislation was designed for the usual and the anticipated but *mita de-lo shekhikhah lo gazru ba rabbanan*, the unusual and the unanticipated are not subsumed within the ambit of rabbinic legislation. For the Sages, the possibility of becoming lost in a desert was certainly not farfetched; however, travel to the polar regions would not merely have been unanticipated but would have been inconceivable. Moreover, rabbinic legislation is to be interpreted on the basis of the principle of strict construction. Talmudic decrees apply only to specified conditions under specified circumstances. The Sages promulgated an edict requiring recitation of *kiddush* and *havdalah* in a situation in which the proper day for observance of the *Shabbat* is known to one and all with the exception of an isolated traveller who has become confused. Even the confused traveller is obligated to observance of the proper day as a matter of objective certainty; the problem is that he does not know what everyone else does know, viz., which day that is. Hence the Sages promulgated a decree requiring at least some form of observance for even this individual lest he become entirely desensitized to the notion of *Shabbat*.

However, *Shabbat* in the polar regions is a matter of doubt for everyone. There is no evidence of a rabbinic decree requiring *kiddush* and *havdalah* on any day in a situation in which no one knows and no one can possibly know which day is *Shabbat*. Even though we might think it wise and spiritually edifying to legislate some form of positive *Shabbat* observance even in such circumstances, the notion of strict construction would lead to the conclusion that, since such a contingency is technically outside the parameters of existing rabbinic legislation, there is, in reality, no such obligation.

There is a much more fundamental difficulty in understanding the view that *Mor u-Kezi'ah* apparently espouses. If halakhic time does exist even in the absence of sunrise and sunset but its calculation is always a matter of irresolvable doubt it is not clear why such doubt does not persist even after the phenomena of sunset and sunrise reappear with

the change of the seasons. Since there is no intrinsic reason why a single day must be twenty-four hours in duration, the "time" elapsed may be more or less than on the rest of the globe. If so, in any place in which there is no sunset or sunrise for any extended period during the year there is no way to gauge the period of time that elapses during that interval. Hence, the entire calendrical system in such a locale becomes subject to doubt that is generated during the period of constant daylight or constant darkness.

That problem is even more severe than may appear to be the case. For Rabbenu Tam who maintains that *zet ha-kokhavim*, or night, occurs only when the sun's angle of declension is 16.1 degrees below the horizon there is no "night" during some days of June as far south as London. If one were to adopt the theory herein outlined all calculations of the days of the week as well as the dates of the month in areas north of fifty-two degrees latitude would, according to Rabbenu Tam, be subject to doubt. Indeed, the identical problem presents itself north of sixty degrees latitude, an area that includes places such as St. Petersburg, even according to those who disagree with Rabbenu Tam.¹¹

III. TIFERET YISRA'EL

Perhaps the most widely cited source with regard to Sabbath observance at the North Pole is a note authored by the nineteenth-century authority R. Israel Lipschutz and published in his classic commentary on the Mishnah, *Tiferet Yisra'el*, as an addendum to his commentary on the first chapter of *Berakhot*. *Tiferet Yisra'el* carefully distinguishes between places such as his own city of Danzig, as well as Copenhagen and Stockholm, in which there is always at least a brief period of dusk and places further north in which "there is no night at all but only daylight during the months of June and July." He also expresses concern with regard to people who sail close to the North Pole in order to catch "whalefish" because in that locale there are a number of months during the summer in which there is only daylight. *Tiferet Yisra'el* does not cite *Mor u-Kezi'ah* but adopts a position that is remarkably similar to that of R. Jacob Emden in one salient aspect. As did his predecessor, *Tiferet Yisra'el* rules that each twenty-four hour period constitutes a day. In support of that conclusion he draws upon the fact that the sun can be observed as completing a full circle above the horizon each twenty-four hour period. However, his position is fundamentally different from that of *Mor u-Kezi'ah* in that *Tiferet Yisra'el* maintains that the day is deter-

mined objectively rather than individually by each traveller. Thus throughout the year *Shabbat* occurs at the North Pole the same day as it does on the rest of the globe and is objectively determined by the “revolutions” of the sun in the sky. In the polar regions the sun is observed as moving in a circular pattern and completes a full circuit in the overhead sky every twenty-four hours. Each of those twenty-four hour circuits, maintains *Tiferet Yisra’el*, represents a single day.¹² However, *Tiferet Yisra’el* fails to identify a phenomenon that might serve to demarcate successive days during the polar night when the sun is entirely concealed.¹³

Adoption of that thesis serves to establish the “day,” i.e., the twenty-four hour period, on which *Shabbat* occurs but provides no method for determining when *Shabbat* begins or when it concludes. Nor does it provide a means by which one can determine the proper time for recitation of the *Shema* or the several daily prayers. Without citing evidence or precedent for his view, *Tiferet Yisra’el* opines that the traveller should adopt the clock of “the place from which he departed” (*makom she-yaza me-sham*) in determining the beginning and end of each day and the various divisions thereof.¹⁴ There is some ambiguity with regard to *Tiferet Yisra’el*’s precise meaning: Does “the place from which he departed” connote the locale of the traveller’s former residence or his port of embarkation?¹⁵ A similar position is advanced by R. Pinchas Eliyahu Hurwitz, *Sefer ha-Brit*, I, *ma’amar* 4, chapter 11. With regard to a person who finds himself in the polar regions, *Sefer ha-Brit* declares that “after he counts six times twenty-four hours on the clock he should make *Shabbat*.”¹⁶ *Sefer ha-Brit* presumably means that the clock to be used for this purpose is one that shows the current time at the port of embarkation.¹⁷

Tiferet Yisra’el himself notes one resultant incongruity: A traveller arriving at the North Pole from England and a traveller arriving from America would both observe *Shabbat* on the same “day” but at different hours. The European would recite *kiddush* while the American might legitimately perform all manner of labor; some twenty-four hours later the European would recite *havdalah* while the American is engaged in the recitation of the *Shabbat minhah* service. One can only ponder the situation of children born to an American man who marries a European woman at the North Pole. When does *Shabbat* begin and end for the children of that marriage? The issue is not one of custom, with regard to which the father’s custom prevails, but one of law. There seems to be no reason why, normatively, children should be governed

by one parent's clock rather than by the clock of the other parent. Indeed, that situation serves to highlight the underlying problem, *viz.*, why should children be governed by their parents' clock? The time reflected by that clock is neither the time of the child's prior residence nor of the child's port of embarkation. Indeed, by what reason is the traveller himself governed by the clock of his place of embarkation or of previous domicile?

At least in part because of this incongruity, *Tiferet Yisra'el* recognizes that infraction of Sabbath prohibitions in the polar area do not occasion statutory punishment. The phraseology employed by *Tiferet Yisra'el* may be readily understood as implying that *Tiferet Yisra'el* recognizes that *Shabbat* observance in the polar area in the manner that he describes is not biblically mandated but is in the form of a rabbinic obligation, presumably similar to that of a person who loses track of time in a desert.¹⁸

Putting aside the question of how the beginning and end of each day is to be determined as well as the question of whether Sabbath obligations in such areas are binding by virtue of biblical law or rabbinic decree, *Tiferet Yisra'el's* basic position, i.e., that the passing of days is to be calculated on the basis of twenty-four hour periods, is accepted by R. Chaim Joseph David Azulai, *Mahazik Berakhah* 344:4; *Sha'arei Teshuvah*, *Orah Hayyim* 344:1; R. Jehoseph Schwartz, *Teshuvot Divrei Yosef*, no. 8; *Sefer ha-Brit*, I, *ma'amar* 4, chap. 10; *Teshuvot Rav Pe'alim*, II, *Sod Yesharim*, no. 4; *Kaf ha-Hayyim*, *Orah Hayyim* 344:2; R. Yechiel Michal Tucatzinsky, *Bein ha-Shemashot* (Jerusalem, 5789), p. 55; R. Yechiel Michal Gold, *Me'aseph le-Khol ha-Mahanot*, *Orah Hayyim* 18:25; and R. David Spira, *Teshuvot Bnei Zion*, *Kuntres Midot ha-Yom*, secs. 21-23.¹⁹

IV. AN UNCONSIDERED VIEW

Tiferet Yisra'el cites no evidence in support of his view. The phenomenon of the sun's circular movement over the horizon each day is certainly not a demonstration that each twenty-four hour period in which such a revolution takes place constitutes a halakhic day. Quite to the contrary, Scripture records "and it was evening, and it was morning, one day" (Genesis 1:5). Read literally, the day is defined in terms of alternating periods of light and darkness, not in terms of a revolution of the earth upon its axis or of the circuitous movement of the overhead sun. How this might have occurred prior to the creation of the sun on the third

day is a matter that has engaged the attention of numerous biblical commentators, most particularly, Rambam and Seforno, Genesis 1:5; Rabbenu Bahya, Genesis 1:13; Rashbam, Genesis 1:4 and 1:14; R. Isaac Arama, *Akeidat Yizhak, sha'ar shlishi*; and Malbim, Genesis 1:5.

This concept also appears to be reflected in the words of *Pesikta Rabbati* 15:1. Citing the verse “Who appoints the moon for seasons; the sun knows its going down” (Psalms 104:19), *Pesikta Rabbati* comments, “Because ‘the sun know its going down’—from here [it is derived] that we do not calculate according to the moon unless the sun has set.” In context, *Pesikta Rabbati* declares that even though the nascent moon has been sighted a new month does not begin until the sun sets. The import of that statement would certainly seem to be that a new day can begin only upon the actual setting of the sun.²⁰

There is another way of viewing the passing of days at the poles, a method that is simple and obvious in conception but entirely strange in application. As noted earlier, there is strong reason to assume that the halakhic day is demarcated by sunset and sunrise. There is no obvious reason for assuming that a day must be approximately twenty-four hours in duration. If so, it might readily be argued that a day should always be defined as the period that elapses between one sunset and the next sunset, regardless of how many hours have elapsed between those two phenomena. Thus, if at the North Pole a single sunset is followed by six months of darkness and those six months of darkness are followed by six months of daylight culminating in the next sunset, the length of a “day” at the North Pole is equal to a full year. After six such days elapse the following “day” of twelve months duration would be *Shabbat*. According to that theory, *Shabbat* would occur at the North Pole only once in seven years but would last for an entire “sabbatical” year. Calculation of the sequence of those year-long days would begin no later than from the creation of the sun.

Application of the same theory to other areas in the far north where a summer “day,” i.e., the period between one sunset and the next may be, for example, two months in duration, would result in considering that two-month period to be a single day within the seven day cycle of a “week.” *Shabbat* would then be determined by recalculating the sequence of the days of the week by taking the two-month day into consideration as a single day. Those calculations would also have to be refigured from the day of creation. The result would be highly inconvenient to say the least, both because *Shabbat* would not be observed on the same day as it is observed on the rest of the globe and because

observance of *Shabbat* would fluctuate each year from one day of the week to another.

It should also be pointed out that adoption of this thesis leads to the result that, according to Rabbenu Tam, *Shabbat* may not coincide with Saturday even in areas as far south as London. On days that the sun does not decline at least 16.1 degrees below the horizon it is, according to Rabbenu Tam, at least doubtful whether a new day has begun.²¹ If a new day has not begun, then the entire period during which the sun does not decline 16.1 degrees is part of a single day²² and, accordingly, the ensuing *Shabbat*, and all future Sabbath days, must be calculated on the basis of that consideration.²³

Fortuitously, a thesis of this nature²⁴ has not been espoused by any scholar.²⁵ However, an unnamed interlocutor whose comments are recorded by R. Jehoseph Schwartz, *Teshuvot Divrei Yosef* (Jerusalem, 5622), no. 8, did formulate such a view. That scholar adduces a statement found in *Pirkei de-Rabbi Eli'ezer*, chapter 52, in support of this view. *Pirkei de-Rabbi Eli'ezer*, commenting upon the phenomenon described in Joshua 10:13, maintains that Joshua caused the sun to remain in a fixed position in the sky for a period of twenty-four hours and that the miracle was performed by Joshua on a Friday. That entire period was regarded as a weekday rather than as *Shabbat*, thereby enabling completion of the military engagement without desecration of the Sabbath. The anonymous scholar is reported to have cited those comments as suggestive of the notion that a day may be of indeterminate length.

Divrei Yosef dismisses this argument by citing the full comment of *Pirkei de-Rabbi Eli'ezer* which indicates that Joshua interfered not only with the motion of the sun but also with the motion of the other luminaries, i.e., the moon and the stars. That statement, asserts *Divrei Yosef*, demonstrates that not only the sun but all the celestial bodies remained suspended in the sky. Hence, in effect, Joshua caused time to be suspended. That phenomenon, declares *Divrei Yosef*, is quite different from the purely local phenomenon that occurs at the North Pole.

The anonymous interlocutor is further quoted as rejecting his own proposed thesis because the Palestinian Talmud, *Kelayim* 9:13 and *Ketubot* 12:3, reports that a similar phenomenon occurred on the Friday on which the funeral of R. Judah the Prince took place. However, the Palestinian Talmud reports that on that occasion the participants in the funeral considered themselves to have desecrated the Sabbath. The latter statement, he argues, establishes that the demarca-

tion of successive days does not necessarily depend upon the declension of the sun below the horizon.^{25a}

The reason why such a thesis does not merit consideration is not immediately evident, particularly if there is no intrinsic reason why a day must be approximately twenty-four hours in duration.²⁶ The only reason that suggests itself to this writer is that, although the beginning and end of a day and intermediate divisions of the day certainly depend upon local sundown and sunrise, the identity of any given day is the same throughout the globe with the minor exception presented by the necessary adjustment for the dateline. The dateline phenomenon is not an exception to the basic principle because that phenomenon is the logical result of the movement of the sun as perceived in all places throughout the globe except for the polar areas. The notion that in one locale it may be *Shabbat* while in another it may be some time on Friday and in another locale it may be some time on Sunday is readily understood. But a thesis that will posit that *Shabbat* can occur in some geographic area on a day that is, for example, Wednesday elsewhere is incompatible with the very nature of a calendrical system.

V. AN ALTERNATIVE VIEW

There is however another possibility that, to this writer, seems to be the most cogent way of viewing "time" in the polar regions. It may be suggested that in the absence of the halakhic criteria of sunset and sunrise there is no halakhic day and hence no halakhic time. Locales in which that is the case have no time because they "transcend" time. The result would be that obligations with regard to time-bound *mizvot* are simply non-existent in such places.²⁷

Thus, since a day is defined as the period between sunset and sunrise, allowing for variation in its beginning and end, the day of the week must be the same throughout the globe, there is no "day" at the North Pole and hence no *Shabbat*. Similarly, there are no days of the month and hence no festivals. Since there is no day to be divided into hours, there is no obligation with regard to reciting the *Shema* or any of the time-bound prayers.²⁸

This is true also in northern areas below the North Pole in which the summer day and the summer night are weeks or even months in duration. But this is true only during those periods of prolonged daylight and prolonged darkness. During the periods of the year in which

there is sunrise and sunset, regardless of the brevity of the day or night, time-bound *mizvot* are fully binding and the day of the week as well as the date in those areas is identical to the day and the date everywhere else on the globe.

In order to appreciate this concept fully it is helpful to think of time as a "place." A person in outer space or a person near the polar region in which a single day extends for a period much longer than twenty-four hours "transcends" time and hence is "outside" the "place" called *Shabbat*. When the same traveller returns to earth, when the person in the polar area travels out of that region, or when summer or winter becomes fall or spring in the polar region, the individual has in effect "reentered" the place called "time." He reenters an objectively defined time that is identical for him and for all other individuals. The term "sunset" is used to denote the end of the day. Whether the day ends at sunset or at *zet ha-kokhavim*, i.e., when it is actually night as evidenced by the appearance of stars is, of course, a matter of halakhic doubt. Hence, there will be locales in which obligations with regard to observance of time-bound *mizvot* will be a matter of parallel doubt, i.e., in areas in which, on some days during the year, the sun sets but does not decline below the horizon sufficiently for it actually to become night, the very existence of time is doubtful and hence the obligation with regard to time-bound *mizvot* becomes a matter of doubt.

According to this thesis, the days that elapse elsewhere on earth during the periods of prolonged polar daylight and darkness which are not halakhically recognized as "days" have no effect on subsequent calculation of time in the polar areas. Similarly, the calendrical system is unaffected in those areas during other periods of the year. There is no "time" in those areas either the entire year or for portions of the year, depending upon proximity to the pole, because those areas are *le-ma'aleh min ha-zman*, i.e., in those areas time is transcended. But the reappearance of the phenomena of sunrise and sunset in those areas signifies a return to the realm of time. Moreover, those locales return to the spot on the continuum of time that is shared by the entire globe.

Metaphorically, the matter can be compared to a group of people seated together on a carousel moving round and round in a circle. If one of the group gets off the moving carousel he is no longer in motion or in any way subject to motion. Nevertheless, the person exiting the carousel can observe his companions and, although he is a spectator who "transcends" their motion, he can be fully cognizant of their continued circular movement. If he stands outside and waits

