12 11. 70 00'2 n'S 11 (0) ex (15) in (3) in ב בארשן אן ון אצ פ אן ס גיפש תמובן אונים פי אן וולי DILK WING BUNK ANKE SINDA ELVUN LIK 3 2450 Feeder STUNIX KLUCIX IKOL SONOK NEV 2 אפר (בין מונכא) 41. Pm 323 14-31 30 x la Est 1 22 3 C 6 IN ENDER LYNNIN JKEN COM ONE DE I 535/4 WW IN 1.26 RI 1.7 VKI RRIFLY & 1cmo,/ 1,51.73 HOMENTE 2503 LOGE, LAVE SHILK & איצא אלצברה באשה וששיין ברבה וו ובן לאמר אורכש המאניב וציל [פין الماع كالحائد TINGE ASTRIBLE SOURT IS [X[3 : 25241 2523 1.2621 14 ברו עפֹד ציוני נו 23 x [1 x [n] x] x [1] x [1] x [1] x [2] x [1] ام النبوم - ويه والما ما JIN 20 5 20 1 12 MJUNEU 18 18 MJULE 18

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- 1 בשמ(ך) רחמ(נא) נעשׁ(ה) ונצליח
- 2 כאנת] אלולאדה אלסעידה באדן אללה פי אלוקת
- [אל]מחתום פי אליום אלאחד אול יום מן דו אלח[גה]
- 4 וואפקה אלולאדה ארת[פאל פי סת[ה וס]הין [וכ]אן
 - 5 [פי] תלתי אלכמסה וכאן אלטאלע אלמחקק סבעה
 - 6 עשר דרגה כן ברג אלאסר ואפק דלך אליום
 - 7 אלשמס וסט נהא[ר ב]ה תלאת דרג פן ברג
 - 8 אלבוזא ואחנין ועשרין דקאיק כן אלברב א[יצא]
 - 9 אלקמר אתנין ועשרין דרבה וכמסין דקיקה
 - 10 [פן] אלברג איצא אלזהרה כפסה ועשרין דרגה
 - וו א[רב]נה וכמסה דקיקה מן אלברנ אי [צא] עטארד
 - 12 ותו צאהב אלברב תמאניה ועש[רין דרבה ודקי]קה
 - [ואחדה אלבוזהר באלחות אלכאק [. . . . תלאת 13
 - 14 ועשרין דרבה וארבעה דַקאיק
 - 15 בווה מן ברב אלעקרב בקספה [
 - 16 [..]ב וואפק בוו אלסהם כן אלולאד[ה
 - 17 תפע דרב פן ברב אלתו[ר
 - 18 אלולאדה אלטעידה [

公の大学をあるというでは、 おきないとう ないない

^{5.} אלכמטה] צ"ל: אלכאמטה. 11. ארבעה וכמטה] צ"ל: ארבעה וכמטין.

- 1. In the mame of You, the Merciful, may we succeed in our undertaking.
- 2. The auspicious birth took place, thanks to God, at the time
- which was preordained, on weekday one, the first day of Dhû al-(hijja).
- 4. [At the time of] the birth, the alti(tude) [of the Sun] corresponded to (six)ty-si(x) [degrees]. It was
- 5. (in) two-thirds of the fifth [hour]. The verified ascendant was seven
- 6. [and] ten degrees of the sign Leo. On that day
- 7. the Sun at noo(n) corresponded to three degrees of the sign
- 8. Gemini and (t)wenty-two m(inu)tes of the sign a(lso).
- 9. The moon was [at] twenty-two degrees and (f)ifty minutes
- 10. of the sign also. Venus was [at] twenty_five degrees
- 11. and fifty-f(ou)r [7] minutes of the sign also. Mercury,
- 12. which is the lord of the sign, was [at] twen(ty)-eight (degrees and)
- 13. one (minu)te. The ascending node was in Pisces, the . . . (. . . three)
- 14. and twenty degrees and four minutes. (. . .)
- 15. its degree in the sign Scorpio in the divisor [?] of (. . .)

- 16. (. . .) and the degree of the lot [?] corresponded, from the nativit(y, . . .)
- 17. [to (?)] nine degrees of the sign Tau(rus . . .)
- 18, the auspicious birth (. . .)

- 5. The text reads: five; emended to: fifth.
- 11. The text reads: four and five; emended to: fifty-four.
- 11_12. Mercury is the lord of Gemini (cf. Biruni, Astrology, p. 256).
- 15-17. The divisor and the lot are not identified.
- 18. The malevolent planets, Saturn and Mars, are not mentioned anywhere in the text.

The date of this horoscope is 18 May 1113 shortly before noon, which was a Sunday, 1 Dhû al-hijja 506 Hijra. The positions of the planets were:

Text		Computation	
Saturn		Aries 20	
Jupiter		Cancer 220	
Mars		Virgo 90	
Sun	Gemini 3;220	Gemini 30	
Venus	Gemini 25;540	Gemini 260	
Mercury	Gemini 28;10	Gemini 24°	
Moon	Gemini 22:50°	Gemini 220	
Ascending node	Pisces 23:40	Pisces 230	
Ascendant	Leo 17°	Leo 14°	

When the solar altitude on that day reached 66° in Cairo (latitide 30°), it was about 5 1/5 equinoctial hours after sunrise. Since sunrise was 6;51 equinoctial hours before noon, 5 1/5 equinoctial hours corresponds to about 4 3/5 seasonal hours, very near the textual value of 4 2/3 hours. (Note that a seasonal hour is 1/12 of the time from sunrise to sunset, or 1/6 of the time from sunrise to noon.) According to my computation, Leo 14° was rising at that time, and this is quite close to the value in the text.

^{1.} Cf. Nadi Nadir, "Abu al-Wafa' On the Solar Altitude,"

The Mathematics, Teacher, 53 (1960), pp. 460-463.1 For.

Islamic tables that were constructed to transform solar altitude to time, see D.A. King, "Ibn Yûnus' Very Useful Tables for Reckoning Time by the Sun," Archive for History of Exact Sciences, 10 (1973), pp. 342-394.

Please return
with corrections
after your

הורוסקות בכתב ידו של החזן הלל בן עלי

TS 12.512 1 בשמ(ך) רחמ(נא) נעשׁ(ה) ונצליח 2 כאנת) אלולאדה אלסעידה באדן אללה פי אלוקה 3 אלן מחתום פי אליום אלאחד אול יום מן חד אַלְוַ [ל 4 רוא אפקה אלולאדה ארת []פי סת [ה ום] תין (ד [רבה] 4 תלתי אלכמסה וכאן אלטאלע אלמחקק סבעה דרגה מן ברב אלאסד ואפק דלך אליום 7 אלשמם וסט נהאר ה תלאת דרג מן ברג' 8 אלגווא ואתנין ועשרין פן אלברג אלגווא ואתנין ועשרין פן 9 אלקמר אתנין ועשרין דרבה וכמסין דקיקה 10 [אן אלפרן איצא אלזהרה כמסה ועשרין דרגה 11 אניבן את וכמסה דקיקה אן אובניון איננאן אטארה 12 והו צאתב אלברג תמאניה ועש [רין] קה 13 ואחדה אלגון הי באלחות .י. 14 ועשרין דרגה נארבעה דקאים 15 בווה מן ברג אלעקרב בה קמר 16 [הי] וואפק בֿוונתבר מן אלולאות 17 חסע דרג מן ברג אלתו[ר 18 אלולאדה אלסעידה

Translation of T-S 12.512

- (invocation)
- The auspicious birth took place, thanks to God at the
- preordained time on Sunday at the beginning of the day on the 8th of al-[
- 4. (At the time of) the birth the altitude (?) (of the Sun) corresponded to 66 (?) degrees,
- 5. (and) 3/5 (of a degree). The ascendant as carefully determined a was at
- 6. 17 degrees of Leo. On that day
- 7. the Sun at noon $^{\mathrm{b}}$, was at 3 degrees of
- 8. Gemini and 22 minutes of the sign; also
- 9. the Moon was at 22 degrees and 50 minutes
- 10. of the sign^{c)}; also Venus was at 25 degrees
- and forty (?)-five^{d)} minutes of the sign^{e)}; also Mercury,
- 12. and it is the ruler of the sign, f) was at 28 [degrees of the sign and -?- min]utes (?)
- 13. Alone, the node was in Pisces ...
- 14. and 20 degrees and 4 minutes g)
- its lot^{h)} in the sign of Scorpio ...
- 16. [the sig]n; and the lot (of the demon?) corresponded to, at (the time of) the birth, [
- 17. 9 degrees of Tau[rus

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- 18. the auspicious birth [
 - a. This expression (al-tāli^C al-muḥaqqaq) is not common, and thus my translation may not convey the technical sense intended. However, tāli^C is the common term for the ascendant.
 - b, The usual phrase for noon is nisf al-nahar.
 - c. It is natural to assume that Gemini is the sign meant, but that is incompatible with the 8th day of a lunar month (the Moon travels about 13° per day).
 - d. Text; "four and five" seems impossible; emended to 45.
 - e. Again, presumably Gemini.
 - f. Mercury is the ruler of Gemini according to the astrological rules (cf. Biruni, Art of Astrology, ed. R. Wright, p. 256).
 - g. It is not clear to what this refers. I doubt that it could still refer to Pisces in the previous line.
 - h. The word for "lot" should be sahm (cf. Biruni, Art of Astrology, p. 279) rather than juz', but I see no alternative explanation.

Professor S. D. Goitein November 8, 1971 Page 2

is more or less compatible with a reading of 66° in line 4 of the text.

During the daytime the lot of fortune, F, is computed by the following formula:

$$F = H + (\lambda_m - \lambda_s)$$

where H is the longitude of the ascendant, λ_m the longitude of the Moon, and λ_n the longitude of the Sun. If F is in Scorpio (an interpretation of line 15), i.e. F \approx 235°, then

$$235 = 137 + \lambda_m - 63$$

or

$$\lambda_m = 161^{\circ}$$
, or Virgo 11°

but this shows no agreement with the text. If we accept the reading for λ in the text as Gemini 23° (= 83°), then

$$F = 137 + 83 - 63 = 157^{\circ}$$

≈ Virgo 7°

i.e. the positions of the Moon and of the lot of fortune disagree.

The lot of the demon, D, is symmetric to the lot of fortune, i.e.

$$D = H - (\lambda_m - \lambda_s)$$

If D = Taurus 9° (39°), then

$$39 = 137 - (\lambda_m + 63)$$

or

$$\lambda_{\rm m}$$
 = 161° (or Virgo 11°) as before.

But this simply says that

$$\lambda_{m} + \lambda_{s} = H - D$$

$$= F - H$$

and adds no new information.

In sum, this date does not work, but I could find no other near the latter half of eleventh century that was better. I am not at all satisfied with this conclusion but have nothing to suggest at this time. To be sure, I will continue to try various other alternatives.

I enclose a photo of the text which you may keep, an annotated transcription, and a rough translation.

Best regards.

Sincerely,

Bernard R. Goldstein

Bener R. Golfstein

BRG:1s

Notes to the Transcription of T-S 12.512

- line 2. The het reasonably clear. I don't think Elul is possible for two reasons.

 After the aleph-lam enough of the next letter appears to rule out a waw;

 it looks to me like a resh. The only Muslim month that ordinarily takes
 the definite article is al-Muharram, and no other Jewish month begins with
 aleph-lam.
- line 4. I would like to read: irtifac of which only the first three letters appear. Nevertheless the syntax is difficult.
- line 5. One, possibly two, letters are missing at the beginning of the line.
- line 7. The aleph in mahar is clear under ultra-violet light; the resh cannot be seen. After mahar there seems to be room for a two-letter word of which the second letter seems to be he.
- line 11. The final he in wakhamsa is visible in ultra-violet light.

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- line 13. Read al-jawzahr. Several letters are visible after bil-hut, but I cannot make sense of them. The vertical stroke in the letter following the aleph may belong to the line below.
- line 16. After juz[†], there may be a symbol (rather than a word) for "demon," but I have never seen anything like it. I also cannot explain the letter (final mem?) that comes after it.

References

- A1-Biruni, The Book of Instruction in the Elements of the Art of Astrology, translated by R. Ramsay Wright, London, 1934.
- Neugebauer, O. and H. B. Van Hoesen, Greek Horoscopes, Memoirs of the American Philosophical Society, Volume 48. See especially pages 8 9. (1959).

Tuckerman, Bryant, Planetary, Lunar, and Solar Positions A.D. 2 to A.D. 1649 at Five-day and Ten-day Intervals, Memoirs of the American Philosophical Society, Volume 59. (1964). _FS.12.512

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תורוסקום בכתב ידו של תחון חלל בן עלי

TS 12.512

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