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XIV

Un impaziente desiderio di scorrere il mondo

Studi in onore di Antonio Invernizzi
per il suo settantesimo compleanno

A cura di Carlo Lippolis
e Stefano de Martino

LE LETTERE
FIRENZE

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...Eſſendo queſte coſe a me note, come ſon note a ciaſcuno; punto gli anni paſſati da quello ſtimolo della gloria, che è proprio & acutiſſimo ſprone de gli animi non vili: & innamorato altresì con grande ardore delle bellezze di quella Sapienza, che per la varia cognitione di molte coſe, da chi la cerca, ſi ſuole arriuare a godere; mi acceſi d'vn impatiente deſiderio di ſcorrere il Mondo...

Pietro della Valle, *Ragionamento che io penso far nell'Accademia presentando il Libro, Lettera 2. da Spahàn, 19 marzo 1617*.

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Michał Gawlikowski - Krzysztof Jakubiak
Wiesław Małkowski - Arkadiusz Sołtysiak
University of Warsaw

A RAY OF LIGHT FOR MITHRAS

A joint Syro-Polish team has just completed the exploration, began in 1998, of a cave beneath a church in Hawarte, located about 12 km north of Apamea in Syria. This tiny village had been the scene of excavations already in the 1970s, when two 5th century churches were investigated. The main basilica had been dedicated by Archbishop Photios in 483, but it replaced an earlier and smaller church, believed to have been built a century earlier judging by the style of its mosaics. A discovery made recently by Nadim al-Khoury has shown that the older church was founded by Bishop Alexandros as late as 420.

It was under the two sets of floor mosaics from the successive basilicas that a mithraeum cave was accidentally discovered. Its foundation date remains unclear, but a major rearrangement is known to have taken place in the 4th century. A wall was built isolating a room in the northeastern part of the grotto to serve as the secluded scene of the mysteries (Fig. 1). The walls of this room were decorated with successive layers of murals, all being dated to the second half of the 4th century[1]. A niche was built into the rock at the northern end to contain the usual image of Mithras killing the bull. This niche was whitewashed, but not painted like the walls, leaving no doubt that, as in so many mithraea all over the Roman world, it had once contained a sculptural group of the tauroctony. Not a single fragment of the sculpture has been found, however, and it seems likely that the Mithraists themselves removed it to avoid desecration at the hands of Christian monks.

With the construction of the church of Bishop Alexandros above the cave, the west wall of the main room in the mithraeum was partly dismantled. Blocks from the upper courses were taken down and laid against the wall on the inside to form, together with the lower courses remaining in place, a wide foundation under the façade of the first church, which ran at a slightly different angle. Several stones could be restored to the wall, one of them certainly in its original position. This is a block still bearing a large patch of painted plaster featuring a horse's head which matches the body of a horse preserved in place on the lower part of the dividing wall. Although there is no direct connection, the margin of error in the replacement is no more than some 2 cm to the right or left (Fig. 2, Tav. 2a).

Once the stone had been replaced, a slit slanting inwards and downwards was noted in its upper surface (Fig. 3). This opening flares to a width of 30 cm inside the room, at the same time deviating leftwards. The surface is well plastered. The angle of the two sides is such that in theory they should meet on the outer face the wall, but the actual slit stops some 10 cm short of it. It must have opened from a cavity with a rectangular aperture 10 cm wide positioned 1.70 m above the level of the threshold, some 0.65 m to the left of it. As the next course of blocks in the wall is missing, the original height of the opening cannot be determined. It was evident at first glance that the light penetrating into the room through this slit had once illuminated the niche with the tauroctony group (Fig. 4).

It is a well known fact that at least some mithraea, like those in Santa Prisca in Rome, Capua Vetere and the Terme del Mitra in Ostia, featured apertures allowing light to penetrate into the cave and to fall on the god's image. The opinion has been voiced that some of these openings were intended to introduce direct sunlight into the cave at a meaningful moment in the Sun's journey across the sky[2]. This idea has never been, to our knowledge, clearly demonstrated nor the postulated astronomical occurrences fixed. The situation in Hawarte appeared to provide the means to establish the timing of relevant events in the Mithraic calendar.

Precise measurements taken on site by W. Małkowski were checked by A. Sołtysiak against astronomical tables taking into consideration the coordinates of Hawarte (35°31' N and 36°25'57" E), the local astronomical time (GMT +2h25' or UTC -2.428) and the lapse of time since Antiquity (Epoch +300 was chosen, accommodating in practice a quite extended span of time). The data were then integrated with the topographical context of the Mithraic cave.

Direct sunlight coming through the slit from the southwest was determined as falling in the range between azimuths 225.0407° and 252.4736°, the Sun's altitude being 22.5321° or less. In the relevant time

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[1] Cf. most recently Gawlikowski 2007 (2008), 337-361. Updated: Hawarte Excavations 2009-2010, *PAM* 20, 2011 (in print).

[2] Cf. Lentz 1975, 358-377 (Rožanec, CIMRM 1481; Bourg St Andéol, TMMM, 895-7, CIMRM, 309; Angera, TMMM, 263); Caesarea Maritima: Holum *et alii* 1988, 148; cf. Gordon 2001, 79 and figs. 2-3. Cf. Turcan 2000, 76-77. A ray of Sun hitting the head of Mithras is represented in painting in Marino (Vermaseren 1982, pl. III), Capua (Vermaseren 1971, pl. IX) and Mitreo Barberini in Rome (*Ibidem*, pl. XI).

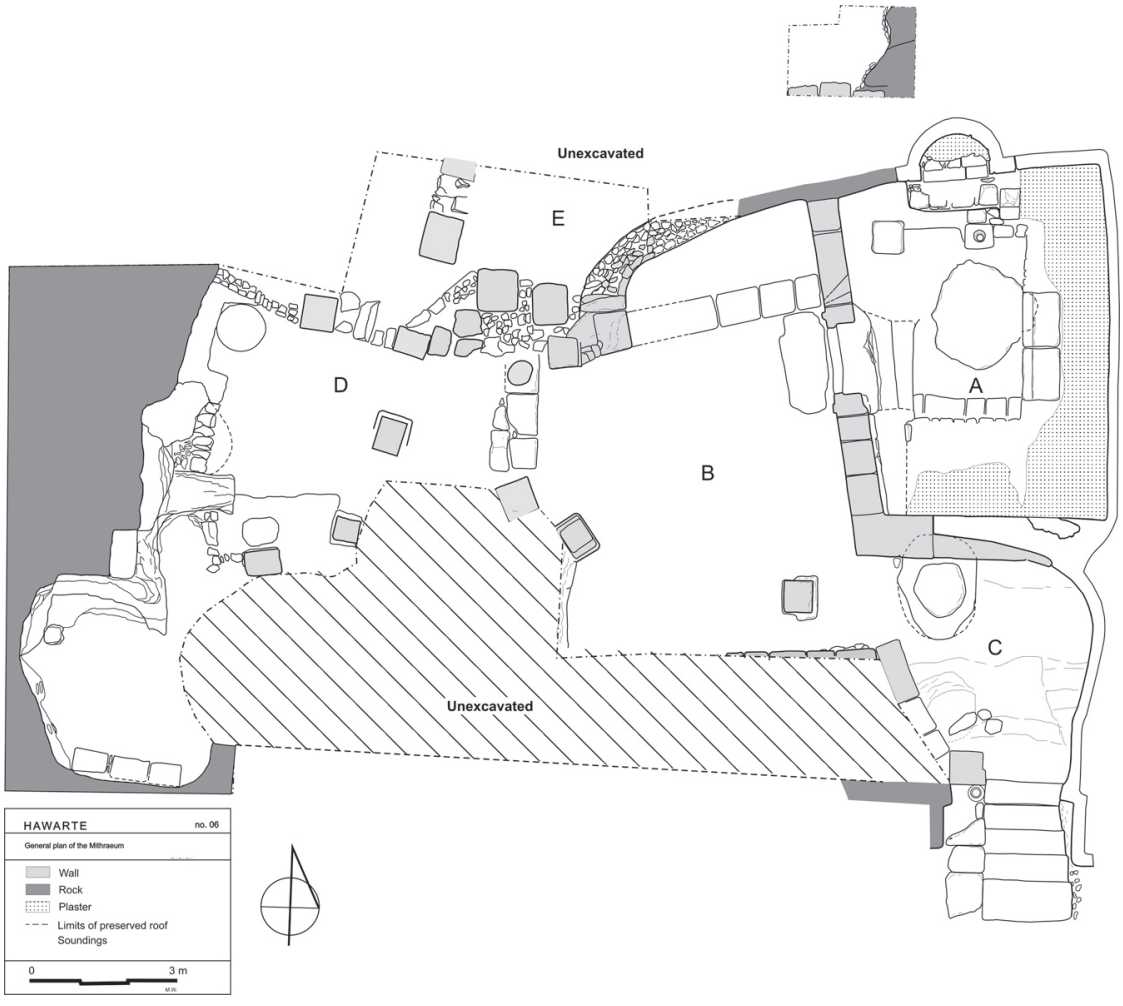

Fig. 1 - General plan of the cave at Hawarte.

bracket direct sunlight would have penetrated through the slit between September 24 and November 12 and again between January 29 and March 20, the altitude being always close to the possible maximum and the time of the day between about 15.00 and 16.00 hours (3 or 4 p.m.) local solar time. Other dates are admissible assuming a lower altitude.

It must be kept in mind, however, that the room was not lit directly. Since the cave continued west for another 15 m or so, the only way of getting light to reach the slit was to cut an oblique passage through its roof at a point which would allow a beam of sunlight passing through it to hit the slit and pass through it into the main room. The line connecting the two openings should fall within the azimuth range indicated above, but it should also form an angle of less than 22.5321° and more than 4.4549° above the horizon, that is, keeping above the line of hills to the west and below the slant of the slit's surface. Any hole in the cave roof that could send direct light into the slit could do so only for a limited period of time, assuming of course that it was not excessively big. As the roof in the relevant part of the cave has disappeared, we are left with nothing but arbitrary premises to work on.

Should we assume that December 25, commonly celebrated from the end of the 3rd century as the *dies natalis* of the Sun from which date on the time of day starts to grow, was also of importance to Mithras' devotees[3], then the maximum altitude at the winter solstice, which could have allowed the Sun to be seen from inside the mithraeum, would have had to be about 15° at the azimuth of 225.0407°[4]. Checked

[3] Cf. Turcan 2000, 80; Beck 2006, 209-210. The dates of the Julian calendar for the period around AD 300 differ by one day from the Gregorian dates and no adjustment is necessary: cf. Bickerman 1969, 89.

[4] All astronomical data after Solar Position Calculator by Ch. Cornwall, A. Horiuchi, Ch. Lehman (2010) [www.srrb.noaa.gov/highlights/sunrise/azel.html].

Fig. 2 - The entrance to the main room and the partly restored dividing wall (see also Tav. 000).

Fig. 4 - The slit in the wall from inside.

Fig. 3 - The slit from above (the main room to the left).

against the plan and section of the mithraeum, this particular angle permits a flash of light to hit the right half of the niche in the main room, exactly at the point where the sculptured figure of Mithras must have once been. But the illumination would not have lasted, the sun moving away in a matter of minutes:

Date	Hour	Azimuth	Altitude
25 Dec 300	15:15	224.76	15.66
	15:19	225.50	15.08
	15:20	225.68	14.94
	15:30	227.48	13.47
	16:00	232.61	8.82

The channel cut through the roof at an appropriate angle would have been situated in antechamber B, about 3.5 m from the entrance to the main room. Its position cannot be verified, because the foundation wall of the later church now stands at the spot where it would have opened. For direct sunlight to have operated inside the room for even a quarter of an hour, the hole would have had to be about half a meter wide. A separate opening corresponding to the sun's position at 16:00 hours should be much further away to the west, between two pillars supporting the roof, and assuming its existence is not necessary. At any rate, the phenomenon started right after 15:15, when the edge of the sun disc appeared in the light channel. As the daylight at winter solstice at this latitude lasts 9 hours and 46 minutes, one daily hour corresponded to 48.666 of our minutes. Accordingly, since the beam of light fell on the bull-killing god at 15:19 and the sunset in this period and place occurred at 16:56, it happened exactly two hours before sunset or at the tenth hour in ancient parlance. That should have been the signal to start the feast.

The phenomenon would occur not only on the day of the solstice, but also at the same hour throughout December until January 6 with practically the same parameters (azimuth 225 to 228 and altitude between 14 and 17 degrees). The birthday of the god could thus be celebrated for quite an extended holiday period:

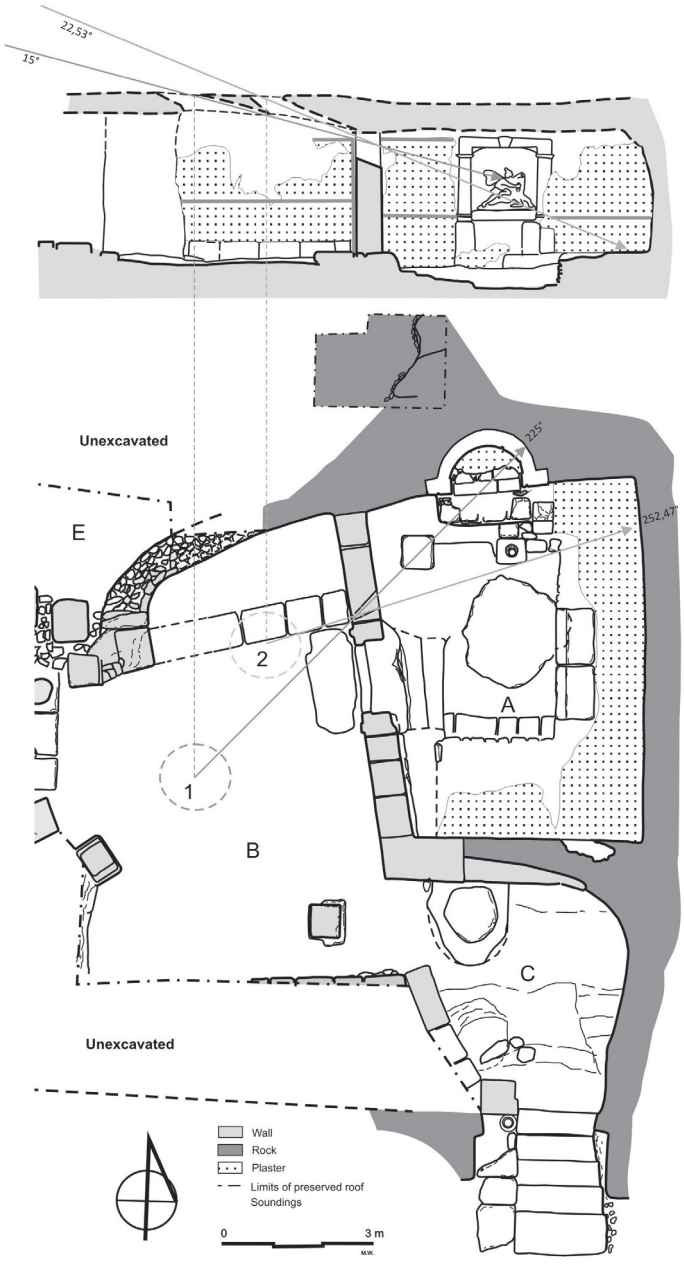

Fig. 5 - Diagram showing the direct illumination of the niche on Dec 25 (1) and of the east wall at the equinoxes (2).

Date	Hour	Azimuth	Altitude
1 Dec 300	15:19	228.63	14.54
10 Dec 300	15:19	227.16	14.32
21 Dec 300	15:19	225.83	14.75
25 Dec 300	15:19	225.50	15.08
6 Jan 300	15:19	225.05	16.65

It is not clear why the tauroctony was linked with the Sun's birthday. Perhaps it was only coincidental and the winter solstice was considered as the day of the founding sacrifice. In any case, it seems that the idea associating the event with the zodiacal Leo and placing it in full summer should be abandoned[5]. At any rate, the summer solstice does not fall in the range indicated by the feature here considered.

The southern limit of the slit (azimuth 252.47°) matches neatly the equinoctial position of the Sun,

[5] See BECK 1994, and more recently, BECK 2006, 214-215; BOWDEN 1910, 187.

while the altitude at the equinoxes is close to the angle of the slanting surface. The light would fall in this case on the east wall of the main room. The data checked here have been calculated for AD 350, about the time when the murals were painted. The days chosen fit the solar data better than the calendar equinoxes on March 21 or September 21.

Date	Hour	Azimuth	Altitude
20 Mar 350	**16:15**	252.34	22.45
20 Mar 350	16:30	254.86	19.53
21 Mar 350	16:15	252.74	22.63
21 Sep 350	16:15	255.99	20.39
24 Sep 350	**15:59**	252.46	22.60

In this case, too, the moment of illumination falls two hours before sunset (at 18:10 in March and 17:55 in September), the daily hours at the equinox being naturally equal to our present clock hours.

However, as we can see on the diagram (Fig. 5), the direct light could not possibly fall on one of the painted scenes (in this place Mithras born from the rock and the young Mithras in a tree), but only on the bench beneath. The placing of the two episodes next to each other shows, by the way, that the latter does not represent another variant of the birth myth[6].

The ray of the equinoctial sun pointed twice in a year to the place on the wall where the birth of Mithras is being figured. It is not a proof that this event fell on one of the equinoxes[7], but it is perhaps worth mentioning in this connection that the autumnal occasion coincides with the beginning of the Pahlavi month of Mihr, that is Mithra, and with the Iranian festival celebrated to this day as Mihragān[8]. On the other hand, it is also possible that the slit in the wall is earlier than the mural paintings and had nothing to do with them, while the direct light at one or both of the equinoxes could have been deflected towards the niche by means of a mirror.

Admittedly, the above reconstruction of Mithraic handling of sunlight rests on the premise that turning points of the solar year were privileged in the Mithraic calendar. Perhaps other moments of the year were also marked with a ray of light entering the cave through special apertures different from the ones presumed here, but the evidence at hand does not support speculation of this kind. It seems reasonable, however, to admit that the Mithraists of Hawarte believed their god to have sacrificed the bull on the winter solstice, that is, on the Sun's birthday.

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[6] As supposed by MERKELBACH 1998, 99.

[7] And not at winter solstice as generally supposed; cf. VERMASEREN 1981, 103.

[8] BOYCE 2001, 72.

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