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Guillaume Charloux, Romolo Loreto

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Dûma 3

The 2012 Report of the Saudi–Italian–French Archaeological Project at Dûmat al-Jandal, Saudi Arabia

Guillaume CHARLOUX & Romolo LORETO

With the participation of Stéphanie Anthonioz, Mounir Arbach,
Marianne Cotty, Paul Courbon, Andrea D'Andrea, Majeed I. al-Faqir,
Giancarlo Iannone, Frédéric Imbert, Emmanuel Lanoë,
Michael C.A. Macdonald, Martin Makinson, Thamer A. al-Malki,
Bruno Marcolongo, Abdul M.N. al-Marshd, Hervé Monchot,
Laila Nehmé, Mousa al-Garni, Ahmed A. Al-Qaeed,
Dara'an al-Qahtani, Hammoud M. al-'Arjan, Christian Robin,
Pierre Siméon, Samir al-Tawati, Olivier Testa, Ariane Thomas,
Matthieu Thomas & Rosario Valentini

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الحروف الصوتية	Long vowels ā, ū, ī
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Arabic Alphabet & Transliteration
(contemporary personal names excluded)

الحروف العربية ومقابلها باللاتينية

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The 2012 Season at Dûmat al-Jandal

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- The University of Naples “*L’Orientale*”, *Dipartimento Asia, Africa e Mediterraneo – CISA, Centro Interdipartimentale di Servizi di Archeologia*

Participants

The project is directed by Dr. Guillaume Charloux and Dr. Romolo Loreto. The following specialists took part in the project in 2012:

Saudi component

Ahmed A. Al-Qaeed (director of the al-Jawf Museum, SCTA)
Abdul M.N. Al-Marshd (vice-director of the al-Jawf Museum, SCTA)
Thamer A. Al-Malki (historian-archaeologist, SCTA)
Mousa Al-Garni (historian-archaeologist, SCTA)
Hammoud M. al-Arjan (assistant curator, SCTA)
Majeed al-Faqir (archaeologist, SCTA)
Dara'an al-Qahtani (archaeologist, SCTA)
Samit al-Tawati (archaeologist, SCTA)

Italian component

Dr. Romolo Loreto (archaeologist, University of Naples *L'Orientale*)
Dr. Andrea Marcolongo (architect, CNR)
Dr. Bruno Marcolongo (geoarchaeologist, CNR, Institute of Applied Geology IRPI)
Andrea D'Andrea (architect, University of Naples *L'Orientale*)
Rosario Valentini (architect, University of Naples *L'Orientale*)

French component

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Dr. Guillaume Charloux (archaeologist, CNRS/UMR 8167)
Marianne Cotty (archaeologist, Louvre Museum, Department of Oriental Antiquities)
Paul Courbon (speleologist, French Federation of Speleology)
Frédéric Imbert (epigraphist, university of Aix-Marseille)
Emmanuel Lanoë (archaeologist, Municipality of Rezé, France)
Martin Makinson (archaeologist, university of Genève)
Dr. Hervé Monchot (zooarchaeologist, Labex Resmed, university of Paris IV Sorbonne)
Prof. Christian Robin (historian, CNRS/UMR 8167)
Olivier Testa (speleologist, French Federation of Speleology)
Dr. Ariane Thomas (archaeologist, Louvre Museum, Department of Oriental Antiquities)
Matthieu Thomas (speleologist, French Federation of Speleology)

Activities carried out during the season

The 2012 campaign was carried out by the joint Saudi-Italian-French archaeological project at Dûmat al-Jandal between September 20th and November 20th. Our fourth campaign focused on the continuation of activities set up during the 2009-2011 campaigns, and on new systematic analyses of the archaeological site and its surroundings. Research topics ranged from the identification of palaeoenvironments in the ancient al-Jawf landscape to a better understanding of the site's chronology, by means of extensive excavations, without omitting the use of many archaeometric methods and the setting up of fieldwork training activities, but above all the conservation of local ancient and Islamic monuments which are in danger of disappearance.

1. Survey

A study of the paleo-hydrography of the region east of Dûmat al-Jandal has made it possible to suggest the existence of ancient caravan routes from Adummatu to Assyria (see Marcolongo's contribution). Geomorphological analyses, conducted at a macroscopic scale on aerial photographs and satellite images enable various paleo-water courses to be traced leading to the east, and two main hypothetical trade routes passing through the major oasis of 'Ar'ar (see Marcolongo's contribution).

In order to understand water resources at the scale of the Dûmat al-Jandal oasis, a study was conducted by a team from the French Federation of Speleology (see Courbon, Testa & Thomas). Twenty-four wells with water were explored during the 2012 season, these being between 12 and 28 m in depth. About ten waterless wells were also researched. Inside three wells qanâts were found opening into rock faces at a depth of 15 m. The longest exceeds 150 m. On the top of the qanâts several climbing pits were recorded, but these have all been blocked.

The survey of the landscape around Dûmat al-Jandal has increased our knowledge of occupation in the oasis and of the regional historical context (see Arbach *et al.*). Nine new sites were added to the list established in 2010-2011 (a total of 39 archaeological and epigraphic sites), both to the east of the oasis, in the Jabal az-Zilliyat, on the road leading to the wâdî al-Sirhân, and to the north in the Jabal Hamâmiyât. One is essentially dealing here with the

rock carvings of the Neolithic and Classical periods, with human representations as well as dromedaries, ibexes, bulls, felines, etc., sometimes of large dimensions, or Thamudic, Nabataean and Arabic graffiti carved by passers-by. Frédéric Imbert took over research on Arabic inscriptions of the Islamic period. In parallel, the systematic survey of the oasis, combining a grid of “squares” (300 × 200 m) containing data provided by GPS instruments, both manual and Trimble differential, as well as an interconnected data base (photographs, sites, GPS coordinates, etc.), were made in tandem with the region’s survey.

2. Excavations

The 2012 excavation in Sector A focused on trench 1, which was extended in a southerly direction, increasing the excavated surface to 25 × 18 m. The aim of the 2012 campaign was to reach the structures related to Building A, a Nabataean monumental construction identified in 2010. While the 2011 campaign had focused on the early Islamic re-occupation of Building A, the 2012 activity focused on the pre-Islamic level tentatively dated to the Nabataean period. The excavation provided new data both on the Nabataean Building A and on previous structures identified after a sounding (S4) was opened in the Locus 9, the southern main room of Building A. Pottery and faunal remains were studied by specialists P. Siméon and H. Monchot.

Excavations in Sector C (Dûmat al-Jandal’s Western Sector) - whose exploration began in 2010 - were continued in 2012, thanks to the opening of four new soundings in the sector’s lower part (SD6, 7, 8, 9), in order to better understand space encircled by the ancient enclosure wall, and therefore to explain its function (see Charlux, Cotty *et al.*). Research was continued in 2012 on the rocky promontory of al-Burj, where a vast structure identified as a triclinium the previous year was cleared (SD4) (Charlux, Thomas *et al.*). One should also recall the activities carried out by the expedition in order to preserve the ancient remains. The team decided to infill soundings SD1, SD3, SD7 and SD8 with sand and earth moved by a bulldozer, in order to safeguard ancient structures unearthed in 2010 and 2012. The 2012 season, moreover, provided new opportunities to become involved with the protection of the Western enclosure: a presentation was given at the Jawf Archaeology and Ethnology Museum on November 21st 2012, together with participants of the al-Sudairi Foundation symposium on the protection of Saudi Arabian Heritage, and on November 28th 2012, we also presented the expedition’s activities to

His Excellency Ahmad Âl-Sheikh, Vizier of the Jawf Emirate, who favourably received our requests for the protection of the enclosure area.

During the on-field campaign (September 29th to October 4th) a systematic architectural reconstruction of the Enclosure Wall's excavated structures (Sector C) was carried out in order to obtain 3D documentation prior to a restoration project of the wall, built both in stone and mud brick. 36 shots were made with a phase-shift Laser Scanner Imager 5003. The project focused on a track of approximately 85 m from unit 3. Flat targets were located around the monument to guarantee the alignment of contiguous scans in the post-processing phase. In order to produce a photorealistic rendering they also took pictures of the walls (see D'Andrea, Iannone & Valentini).

Survey technologies play a leading role in the acquisition of knowledge on cultural heritage insofar as they are finalized for data acquisition used to describe geometric features and peculiarities of historical monuments, which in themselves allow their conservation and safeguard. During the 2012 survey campaign at Dûmat al-Jandal, new technologies in the digital photogrammetric field were also tested by Andrea Marcolongo. A Photo Scanner 3D system was chosen: this is a photogrammetry-based survey technology for point cloud acquisition and 3D model configuration derived from digital image processing. This technology allows one to obtain clouds of points (xyz coordinates) with RGB information and geometries at different levels of complexity, by processing a number of images taken with a limited set of constraints, thanks to the use of a simple acquisition equipment and through an image-matching algorithm (ZScan, by Menci Software). The aim of this season was to accurately reconstruct the entire archaeological site so as to obtain the 3D model of all remains and plan all interventions aimed at restoration.

3. Lectures

1. Charloux G. Wâdî Sirhân and the 'Eastern Caravan Road'. Round Table *The Arabian Trade: Between Image and Reality* in Paris (May 2012).
2. Loreto R. Epigraphical sources and new archaeological evidences of the Nabataeans from Dûmat al-Jandal, ancient Adummatu (al-Jawf Province, Saudi Arabia). *The first International Conference on Nabataean Studies*, University of Jordan, Petra (May 2012).

3. Charloux G. & Loreto R. 2011 Season at Dûmat al-Jandal. at the XVI^{es} *Rencontres Sabéennes* in Pisa (June 2012).
4. Loreto R. The Saudi-Italian-French archaeological project at Dûmat al-Jandal, ancient Adummatu (Saudi Arabia). New Neolithic evidence from al-Jawf region: an outline of the historical development of Dûmat al-Jandal, at the *Seminar for Arabian Studies*, London – British Museum (July 2012).
5. G. Charloux & M. Arbach, Results of the Saudi-Italian-French Archaeological Project at Dûmat al-Jandal, Jawf Museum of Archaeology and Ethnography & al-Sudairi foundation colloquium (November 2012).
6. Loreto R. The activities of the Saudi-italian-french project at Dumat al-Jandal. New archaeological Evidence for a Definition of the Historical Development of Northern Saudi Arabia. Chicago, American School of Oriental Research, Annual Meeting (14-17 November 2012).

4. Publications

1. Charloux G. 2012. Known and Unknown Archaeological Monuments in Dûmat al-Jandal. *Proceedings of the Seminar for Arabian Studies* 42 (2011): 46-51.
2. Charloux G., Loreto R., al-Tirâd A. K., al-Qa'îd A. A., al-Dayîl A. I., al-Mâlikî T. A., Marcolongo A., Morel Q., al-Qahtânî D. M., al-Qahtânî M. H., Schiettecatte J. & Si-méon P. 2012. Dûmat al-Jandal, Immémoriale oasis d'Arabie Saoudite. *Archéologia* 495 (january): 46-55.
3. Charloux G. & Loreto R. The Saudi-Italian-French archaeological project at Dumat al-Jandal: an historical and archaeological overview. In A.Sedov (ed) *Rencontres Sabéennes XV*, Mosca, State Museum of Oriental Art – Institute of Oriental Studies, Russian Academy of Science, p. 131-154.
4. Loreto R. 2012. The Saudi-Italian-French Archaeological Project at Dûmat al-Jandal (Ancient Adumatu). A first relative chronological sequence for Dûmat al-Jandal. Architectural elements and pottery items. *Proceedings of the Seminar for Arabian Studies* 42 (2011): 165-182.

Adummatu, Qedar and the Arab Question in Neo-Assyrian Sources

Stéphanie Anthonioz (Faculty of Theology, Lille)

The Arab question in Neo-Assyrian sources is mainly connected to the Babylonian crisis and the support that came to Babylon from Elam, the Arabs and the Levantine coast. The sources are scarce regarding the Arabs in particular and they always reflect the point of view of the Assyrian empire. In fact this imperial discourse tends more to mirror the ideology of an empire than shed light on peripheral matters. In this article we review the available Neo-Assyrian sources concerning Adummatu (nowadays identified with Dûmat al-Jandal) and more broadly the Arab question, following the chronological order of the sources, and analyse the details of the sources in terms of the main data (persons, titles and places).¹ The analysis focuses on three main points:

- 1- Adummatu and the “Arab queen” in the sources of Sennacherib (704-681 BC)
- 2- Adummatu and the Arab kingship in the sources of Esarhaddon (680-669 BC)
- 3- The Qedarite kingship in the sources of Assurbanipal (668-630/627 BC)

This chronological order will allow us to point out both the coherence and incoherence between one reign and another. Our aim is not so much to achieve a coherent interpretation of history from incomplete sources but to highlight the Assyrian royal rhetorical discourse and its peculiarities concerning the Arab organization, Adummatu and Qedar.

¹. I would like to thank here in a particular way F. Malbran-Labat and C. Robin for the time taken to discuss the views presented here and improve this paper in general and in detail.

Adummatu and the “Arab queen” in the sources of Sennacherib (704-681 BC)

In 703 BC Merodach-baladan, on his return from Elam, conquered Babylon. This was the objective of the first campaign of the Assyrian king Sennacherib as it is narrated in his annals: in that campaign Sennacherib met *Ba-as-qa-a-nu* brother of *Ia-ti-'e* “queen of the Arabs” (*šarrat* ^{lu}*A-ri-bi*).² The geographical situation of this people ^{lu}*A-ri-bi* is not easy to locate as the process of Arab penetration into Babylonia through the wādī al-Sirhān (Dûmat al-Jandal) had begun several decades before Sennacherib’s campaign (cf toponym of cities and villages).³ Moreover the available sources make it difficult to gauge the nature of the relations between Arabs settled in Babylonia and nomads on the fringes of the Syrian Desert.⁴ For this reason, we cannot know if Basqanu and his sister Iati’e were nomads or not.

The Assyrian conquest enabled them to regain Babylon but in 694 BC another revolt arose and Sennacherib finally had Babylon destroyed in 689 BC: this was his eighth campaign. The Arab question is thus discussed as follows:

22. [... ^tTe’elhu]-nu šarrat ^{lu}Arabi (^{lu}A-ri-bi) ina qereb madbari
 23. [... x]000 gammadē ēkim qātušša šî itti ^mḪaza-ilu (Ḫa-za-ilu)
 24. [...ḫarbašu tāḫāzi]ya išḫupšunūti kultārīšunu umaššerūma
 25. [...]lu ‘Adummate (‘A-du-um-ma-te) ana napšāti innabtū
 26. [...] ‘Ad]ummatu ša qereb madbari šitkumat šubatsun
 27. [...] šūme ša rītu mašqītu lā bašū qerebšun

22. [... Te’elhu]nu queen of the Arabs, in the midst of the desert,
 23. [... x] 000 camels I took from her. (And as) she was with Hazael
 24. [... the terror of] my [fight] enveloped them, (and) they had to abandon their dwelling tents.
 25. [...] to Adummatu they fled for their lives.
 26. [... in Ad]ummatu in the midst of the desert they settled
 27. [...] thirst where there is neither pasture nor water.⁵

2. Arab queens are already known from cuneiform sources, *Za-bi-bi-e* and *Sa-am-si* under the reign of Tiglath-pileser III. Cf. Tadmor 1994: 225-230 (Stele III A 1-30).

3. Eph’al 1982: 115f.

4. On this point see Frame 2013: 88.

5. Luckenbill 1924: 91-92 and Frahm 1997: 131.

It is to be noted that among all the different versions known from the annals of Sennacherib, only this abbreviated version written on a slab in Nineveh mentions this Arab war. As all other versions end with the eighth campaign (691), it is possible that the operation took place after 691 but before the destruction of Babylon in 689.⁶ Besides, no geographical record is given for this campaign. However, even though the precise location of Adummatu cannot be determined (another oasis might have been cited in the break, line 26)⁷ it can help us on one point: the city is a place of refuge. It is in the midst of the desert where neither pasture nor water can be found (l.27).⁸ Therefore it cannot be deduced that Adummatu is the capital city of Te'elhunu's kingdom.

Moreover from this fragmented source, Te'elhunu alone receives the title “queen of the Arabs”, while neither Hazael nor his relation to the queen is identified. But both are clearly allied against the Assyrians.

So from the sources regarding the reign of Sennacherib, we can gather the following information:

Persons	Names	Titles	Other information
First campaign	<i>Ia-ti-'-e</i>	queen of the Arabs (<i>šarrat</i> ⁱⁱ <i>A-ri-bi</i>)	
	Basqanu (<i>Ba-as-qa-a-nu</i>)		brother of <i>Ia-ti-'-e</i>
Eighth campaign	[... ^f Te'elhu]-nu	queen of the Arabs (<i>šarrat</i> ⁱⁱ <i>Arabi</i> (ⁱⁱ <i>A-ri-bi</i>))	
	Hazael (^m <i>Ha-za-ilu</i>)		
Places			
	'Ad]ummatu		in the midst of the desert (<i>ša qereb madbari</i>)

6. Retsö 2003: 154; Eph'al 1982: 118.

7. The identification of Adummatu with Dûmat al-Jandal is generally admitted. See Charloix & Loreto 2012: 38-41.

8. The only biblical oracle concerning Dûma is of little help: “The burden of Dûma. He calleth to me out of Seir, Watchman, what of the night? Watchman, what of the night?¹² The watchman said, The morning cometh, and also the night: if ye will inquire, inquire; return, come.” (Isa 21:11-12). Moreover the Greek version of the Septuagint gives as a variant Edom or Idumea (το οραμα της Ιδουμιας, *to orama tês Idoumias*).

Adummatu and the Arab kingship in the sources of Esarhaddon (680-669 BC)

This very operation against Adummatu is further developed in the sources of the successor of Sennacherib, his son Esarhaddon. We learn that Adummatu has been conquered. Here is the most detailed version of this war (Prism A IV):⁹

1. ^{uru}Adummutu (^{uru}A-du-mu-tu) āl dannūtu ^{lú}Aribi (^{lú}A-ri-bi)
2. ša ^{md}Sin-aḥḥē-erība šar māt Aššur^{ki} abu bānūya
3. ikšuduma būšašu makkūršu ilānišu
4. adi ^fApkallatu šarrat ^{lú}Aribi
5. išlulamma ana māt Aššur^{ki} ilqâ
6. ^mḤaza-ilu šar ^{lú}Aribi itti tāmartišu kabittu
7. ana Ninua^{ki} āl bēlūtiya
8. illikamma unaššiq šēpēya
9. aššu nadān ilānišu ušallannima rēmu aršišuma
10. ^dA-tar-sa-ma-a-a-in ^dDa-a-a ^dNu-ḥa-a-a
11. ^dRu-ul-da-a-a-ú ^dA-bi-ri-il-lu
12. ^dA-tar-qu-ru-ma-a ilāni ša ^{lú}Aribi
13. anḥussunu uddišma danān ^dAššur bēliya
14. u šiṭir šumiya elišunu ašturma utīrma addinšu
15. ^fTa-bu-u-a tarbīt ekalli abiya ana šarrūti
16. elišunu aškunma itti ilāniša ana mātīša utīrši
17. 65 ^{anše}gammalē 10 imērē eli maddatti
18. maḥriti uraddima ukīn šēruššu

⁹. Prism A (known from different Ninevite prisms) is dated to 673. We give here an Akkadian transcription followed by a translation. In parallel to Prism A, Monument B from Tel Barsip and a fragment B from Nineveh are also known, as well as fragments F and G dated to 670. The oldest document is Prism B also called Heidel Prism dated to 676 but less detailed. See Borger 1956: 53f (Prism A); 100f (Monument B); 110f (Fragment B); 111f (Fragment F); 113 (Fragment G); Heidel 1956: 9-37.

1. The city Adummutu, fortress of the Arabs,¹⁰
2. Sennacherib, king of the land Assur and father who nurtured me,
3. had taken it, capturing its possessions, its goods and gods.
4. The Apkallatu, queen of the Arabs,
5. he brought in the land Assur.
6. Hazael, king of Arabs, with a sumptuous gift,
7. came over to Nineveh, city of my sovereignty,
8. he kissed my feet
9. and begged me for his gods. And I had pity.
10. ^dA-tar-sa-ma-a-a-in ^dDa-a-a ^dNu-ha-a-a
11. ^dRu-ul-da-a-a-ú ^dA-bi-ri-il-lu
12. ^dA-tar-qu-ru-ma-a gods of the Arabs¹¹
13. I restored them. The victories of Assur¹² my lord
14. and the inscription of my name I wrote on them. Then I gave them back to him.
15. Tabuwa who had grown up in my father's palace
16. I installed her queen over them and with her gods I turned her back to her country.
17. I added 65 camels (and) 10 asses to the preceding tribute
18. And I imposed it upon her.

At this point of the inscription, new information is given. Concerning Adummatu/Adummutu, one learns that the city (ideographic determinative ^{uru}) is not only in the midst of the desert (*'AdJummatu ša qereb madbari*), but that it is fortified (*āl dannūtu* ^{lu}*Aribi*) and Arab.¹³ No other oasis is associated with it. Moreover one learns that the queen has been taken captive in the land of Assur whereas Hazael, if he were not already, has become “king of the Arabs” (*šar* ^{lu}*Aribi*). Certainly it is at the cost of a heavy tribute and a submission without condition that this person remains in place or becomes king. Nothing indicates that he was the husband of queen Te'elhunu, here called Apkallatu using her title of great priestess.¹⁴ This accession of Hazael to the throne seems to be the result of Assyrian strategy in a conquered land: in exchange for submission, Hazael receives his title from the Assyrian. His title could thus reflect the Assyrian imperial strategy. One may wonder what title Arab chiefs adopted in the desert and what

10. ^{lu}*Aribi*: note the determinative referring to people. However note the variant ^{kur}*Aribi*, “Arab land” in Prism B. Same concerning l.6. This variant is important: it shows that people and land bear the same name. However, the geography of the land is never precisely delimited in Assyrian sources, reflecting the lack of knowledge or interest on the part of the scribes.

11. Concerning these gods see Knauf 1989: 81f.

12. *Danān dAššur* literally means the strength of Assur but also his great deeds and victories. Cf. *Chicago Assyrian Dictionary* D: 81.

13. But is she Qedarite, as assumed by Gallagher, on the assumption that Hazael is king of Qedar in Assurbanipal's sources? Gallagher 1999: 53 see particularly note 18. See also Eph'al 1982: 223-227 and 224-225: “(...) the descriptions of Sennacherib's campaign against Hazael who, as we have learned, was king of the Qedarites, and against Te'elhunu, “queen of the Arabs” in the Assyrian royal inscriptions, suggest an important Qedarite center in Dumah (...)”.

14. Borger 1957: 9-10.

the titular king or queen really meant for them.¹⁵ Moreover, lines 15-16 state that Tabuwa is installed queen (*‘Ta-bu-u-a tarbīt ekalli abiya ana šarrūti elišunu aškunma*). One thus logically understand that she replaces Te’elhunu. But is she her daughter? And again what is her relation to Hazael? Should one understand that they share the same throne or that their title “king or queen of Arabs” is general and refers to different Arab entities? If so, it is no wonder that different kings or queens of Arabs are attested at the same time in history. The inscription goes on:

19. ^mḤaza-ilu šīmtu ūbilšuma ^mIata’ (^mIa-ta-’) mārušu
 20. ina ^{giš}kussīšu ušēšibma 10 manû hurāšu 1000 abnē bīrūti
 21. 50 ^{anše}gammalē 100 ^{kuš}kunzi riqqē^{há}
 22. eli maddatti abišu uraddima ēmidsu

19. When destiny had taken Hazael, I placed his son Iata’ (^mIa-ta-’)¹⁶
 20. on his throne. 10 minas of gold, 1000 precious stones,
 21. 50 camels and 100 sacks (?) of spices
 22. I added to the tribute of his father and imposed upon him.

The Assyrian policy is actively pursued and Iata’ son of Hazael is placed upon “his” throne (^{giš}*kussīšu*) that is to say upon his father’s (who, as we see, has died). It is thus more plausible to consider Tabuwa’s “queenship” replacing Te’elhunu’s and Iata’s kingships as different ones, referring to different entities from the desert. It is interesting that this point has not been highlighted. If it is true that from our point of view this might be confusing, from the Assyrian point of view would it not simply reflect the royal ideology at work in the Assyrian inscriptions? At this point, it can be considered that the title “king of Arabs” reflects the pragmatic politics of the Assyrian empire and refers indifferently to different Arab entities. What matters for the Assyrians is to install some official(s) representing the different entities that will ensure peace and security in the conquered territories. These representatives are endowed with power and titles as long as they submit to the Assyrian.

¹⁵. This has recently been highlighted by Frame concerning Chaldean tribes: though their chiefs are called ra’šānu (in Neo-Babylonian sources) or ra’sānu / re’sānu (in Neo-Assyrian ones), they sometimes receive the title “king” in these sources according to their power and influence. See Frame 2013: 109.

¹⁶. Note the orthographic variants of the name in the inscriptions of Esarhaddon: *Ia-u-ti-’* or *Ia-[u]-te-’* in Monument B, *Ia-ta-a* in Fragment B.

Other Assyrian attestations of the title “king of Arabs” can here be added. They are found in the plural¹⁷. The expression seems in context to be as general as the expression “kings of Hatti”, an anachronistic designation of all the kings (whatever their identity or territory) from the Levantine coast during the first millennium¹⁸. Moreover this title in the plural is also attested in the Bible. Among the relatively few references to Arabia (1 Kings 10:15; 2 Chr 9:14; Isa 21:13; Jer 25:24; Ezek 27:21; 30:5), three are located in the expression “all the kings from Arabia” (כל־מלכי הערב, *kol-malké há ‘èrèb*, 1 Kings 10:15; כל־מלכי ערב, *kol-malké ‘arâb*, 2 Chr 9:14; Jer 25:24), another in the expression “Arabia and all the princes of Qedar” (ערב וכל־נשיאי קדר, *‘arab wekol-nesi’è qédâr*, Ezek 27:21). I would highlight the undifferentiated generalization of such a royal title (which does not refer to a precise dynasty). This analysis is confirmed by the following passage, from Prism A where we left it:

23. arka ^mUabu (^mÚ-a-bu) ana epēš šarrūti
24. ^{lú}Arubu kališu eli ^mIa-ta-’ ušbalkitma
25. anāku ^{md}Aššur-aḥu-iddina šar māt Aššur^{ki} šar kibrāt erbetti
26. ša kittu irammuma šalip̄tu ikkibšū
27. ^{lú}šābē tāḥāziya ana nārārutu ^mIata’
28. ašpurma ^{lú}Arubu kališu ikbusuma
29. ^mUabu (^mÚ-a-bu) adi ^{lú}šābē ša issišu birētu iddūma
30. ūbilunimma ^{giš}šigaru aškunšunūtima
31. ina lēt abulliya arkuššunūti

23. Afterwards Uabu (tried) to make himself king
24. (and) turned all the Arabs against Iata’,
25. (so) I Esarhaddon king of the land Assur, king of the four rivers,
26. who loves justice (and) hates lying,
27. I sent my fighting troops to rescue Iata’.
28. He crushed all the Arabs,
29. he turned down Uabu and all the troops that were with him,
30. and brought them to me. I put them in chains
31. and attached them at the side of my door.

17. In his Egyptian campaign Esarhaddon had recourse to the “camels of the kings from Arabia” (*gammallī ša šarrāni māt Aribi*). Cf. frag. F in Borger 1956: 112. The plural form also appears in an oracular report which places Arab kings on a par with Kings of Hatti and Chaldea (*šarrāni ša māt Ḥat-ti lu ša māt Kal-di lu ša māt A-ri-bi*). Cf. Waterman 1930: 438-439.

18. The Assyro-Babylonian scribal practices need to be underlined here since “kings of Hatti”, for example, designate indifferently local princes on the Levantine coast during the first millennium. As mentioned by Vanderhooft concerning Neo-Babylonian sources: “Although Nebuchadnezzar campaigned in Syria-Palestine nine times in his first twelve years – a fact that is itself a concession to his failure to subjugate its kings rapidly – he makes no claims for annexation of territory or the installation of Babylonian officials to rule them (...). He collected tribute, but the Chronicle usually asserts simply that this came from all the kings of Hatti (...)”. Vanderhooft 2003: 242.

A certain Uabu (^mÚ-a-bu) thus seeks the throne and tries to have all the Arabs turn against the king officially installed by the Assyrian, Iata' son of Hazael. Certainly this rebellion is not so much against Iata' as it is against submission and tribute. It is not about the throne but rather against the yoke of Assur. And Assyria comes quickly to the aid of Iata' who becomes victorious.

Here is all the information that can be gathered about the reign of Esarhaddon:

Persons	Names	Titles	Other information
	(most probably Te'elhunu, but the queen is not called by name)	^t Apkallatu queen of the Arabs (<i>šarrat</i> ^{lú} <i>Aribi</i>)	
	Hazael (^m <i>Haza-ilu</i>)	king of the Arabs (<i>šar</i> ^{lú} <i>Aribi</i>)	
	Tabuwa (^t <i>Ta-bu-u-a</i>)		made queen by the Assyrian (<i>ana šarrūti elišunu aškunma</i>)
	^m Iata' (^m <i>Ia-ta-'</i>)		son of Hazael (<i>mārušu</i>) placed on his throne by the Assyrian (<i>ina</i> ^{sis} <i>kussišu ušēšibma</i>)
	^m Uabu (^m Ú-a-bu)		wanting kingship for himself (<i>ana epēš šarrūti</i>)
Places			
	^{uru} Adummutu (^{uru} <i>A-du-mu-tu</i>)		fortress of the Arabs (<i>āl dannūtu</i> ^{lú} <i>Aribi</i>)

The Qedarite kingship in the sources of Assurbanipal (668-630/627BC)

This unstable balance could not last. The sources from the reign of Assurbanipal are richer in details but also more complex.¹⁹ I. Eph'al has disentangled these sources beginning from the oldest documents (that is edition B of the annals)²⁰ whereas other studies had usually worked the other way around, starting from the most recent document (Prism A also called Rassam Cylinder dated to 643-642).²¹ Two Arab campaigns may be distinguished:

- Iata'/Iauta', son of Hazael, launches the first attack on the western fringes of the Assyrian empire. This war precedes the Babylonian revolt of Shamash-shum-ukin. Iauta' has to surrender and takes refuge in Nabayati. Rejected by Natnu the king, he remains isolated. Assurbanipal replaces Iata'/Iauta' by Abiate', son of Te'ri, on the throne. But Abiate', also, at some point rejects Assyria (this revolt would now concord with the beginning of the Babylonian uprising).
- The second campaign concerns the Arabs who joined in the Babylonian revolt: Abiate', Natnu and Uaite' son of Birdada whereas Iauta' son of Hazael submits in the hope of recovering his kingly throne.

The major difficulty of Prism A (the latest and most elaborate version) is the scribal confusion between Iata'/Iauta' and Uaite' both written *Ú-a-a-te-e'* (confusion already present in the Letter of Assur) and who both receive the title "king of the Arab land".²² The confusion is added to by the factual changes and additions of episodes mixing up both campaigns. What can we learn about the Arabs from these different and complex sources? Here a chart will sum up the main events described in the different sources from the reign of Assurbanipal.²³ The different episodes follow the letters a-w and their different sequences can be seen in the chart. The events not recorded except in the latest source of Prism A are written in brown:

19. The different sources are edited by Borger & Fuchs 1996: 60-69 (Prism B); 113-117 (Prism A); 122f (Prism C); 76-82 (The Assur Letter); 258-296 (Ishtar slab).

20. Eph'al 1982: 145-169; Retsö 2003: 142-169. See also Gerardi 1992: 67-103.

21. Weippert 1973-1974: 39-85.

22. Note that on the Ishtar slab Uaite' is qualified as "king of Sumu-an". Borger and Fuchs 1996: 280-281. Concerning Sumu-an as a tribe in the region of Taymâ', see Eph'al 1982: 165f; Retsö 2003: 165, 205 note 336. For the association with the biblical Ishmael, see Knauf 1989: 24, 40 and 60 but contra Eph'al 1982: 166-168.

23. This chart is based on the analysis of Gerardi 1992: 67-103.

Episodes	Editions B (649) & D (648)	K & C (647)	Letter of Assur (between 647 and 643)	A (643-642)
introduction to the campaign			a	
Iauta' receives back his gods	b	b	b	b
Iauta' incites the Arabs to revolt	c	c	c ¹⁺²⁺³	c ^{1(Iauta')} +2(Uaite') ^{3(Iauta')}
Surrender of Iauta'	d	d	d	d
Assyrian plunder	e	e	e	
famine of Arabs in flight	f	f	f	
flight of Iauta' (+ to Nabayati)	g	g ⁺	g ⁺	g ⁺
Abiate' submits and receives kingship	h	h	h	II : Uaite' son of Hazael and cousin of Uaite' son of Birdada surrenders of his own will in Assur where he is punished
Ammuladin revolts and is defeated by Kamashalta	j	j	j	jk (Adiya wife of Uaite' ¹)
Adiya captured		k	k	III : Abiate' and Ayamu son of Te'ri joining forces with Babylon (Shamash-shum-ukin) are defeated
Natnu hears of the might of Assur	l	l	l	h
Natnu is frightened		m	m	IV¹ : revolt of Natnu
Natnu submits to the Assyrian	n	n	n	lmn
second campaign against Uaite'			p	IV² : new revolt of Abiate' and Natnu
march from Hadatta to Azalla: defeat of Nabayati			q	q
march from Azalla to Damas: defeat of Uaite'			r	r
march from Damas to Hulhuliti			s	s
capture of Abiate'			t	t
				e
				f
capture of Uaite'				u
campaign against Ushu and Akko on the return			Ushu/Akko	
capture of Ayamu				v
Uaite' as well as the Elamite kings are harnessed to the Assyrian royal carriage paraded in Nineveh				w

1. Note that in the Letter of Assur Adiya is called "queen of the Arabs".

Among the many sources let us start with Prism B, dated to 649, some time after the events recorded. In Prism B one learns that Iata’/Iauta’ son of Hazael (Ia-u-ta-a’ mār Ḥa-za-a-ilu) pays homage to Assurbanipal and begs for the return of his gods. Atarshamayin is given him back (B VII 93-98):

VII 93. ^mIauta’ (^mIa-u-ta-a’) mār ^mḤaza-ilu (^mḤa-za-a ilu)

94. šar māt Qadri (Qa-ad-ri) ēpiš ardūtiya

95. aššu ilānišu imḥurannima

96. ušallā šarrūtiya

97. nīš ilāni rabūti ušazkiršu

98. ^dA-tar-sa-ma-in utīrma addinšu

93. Iauta’ son of Hazael

94. king of the land of Qedar paid homage to me.

95. He approached me concerning his gods (and)

96. begged my kingship.

97. By the great gods, I had him swear.

98. I gave him back ^dA-tar-sa-ma-in.

Different elements enrich but also raise more difficulties concerning our present knowledge. First of all Iata’/Iauta’ who is identified as the son of Hazael, now receives the title “king of (the land) Qedar” (*šar māt Qa-ad-ri*)²⁴ rather than that of “king of Arabs”. One can wonder if this is the same son of Hazael. But there are no reasons to doubt it. So one can surmise that there is an equivalence between the two titles: Qedar is the Arab land, maybe representing the most powerful tribe at that point. Indeed variants from the Letter of Assur and the Prism A present *Ú-a-a-te-e’ mār Ḥaza-ilu* “king of the Arab land” (*šar māt A-ri-bi*). This solution has commonly been preferred on the basis of the double mention *Qid-ri a-ri-bi* in an inscription dating back to Tiglath-pileser III (737) and recording tributes.²⁵ We will come back to this point. Moreover one learns of another capture or deportation of divinities. It is not possible to know what prompted it (the revolt of Uabu would not make sense since Iata’ himself was victorious with the Assyrian aid). One learns also that the divinity Atarshamayin is a major one: could she be the main institutional divinity in the desert as defined by C. Robin?²⁶ Both events and keys to understanding are thus lacking from our sources. The

24. Note the variants Qa-da-ri or Qi-id-[r]i. For other variants see Eph’al 1982: 223-224.

25. Tadmor 1994: 106-107 (Stela of Iran III A 2). Concerning the equivalence of this double reference, see Weippert 1973: 31; Eph’al 1982: 83, 224-25; Knauf 1989: 66, 96f. For Retsö 2003: 163: “We discern a close connection between the Arabs and Qedar but not necessarily identity”.

26. Robin 2012. See also the Aramaean “seal of Baraq servant of ‘Atarshamin” published by Bordreuil 1986: 75-76.

rhetoric of the passage suggests that Iata'/Iauta' had already revolted once, since he must again swear in exchange for his god. The following episode would also go in that sense because Iata' does indeed revolt:

99. arkānu ina adēya iḥte
- VIII 1. ṭābtī la iššurma iṣlā nīri bēlūtiya
2. ana ša'al šulmiya šepēšu iprusma
3. ikla tāmarti
4. niše māt aribi ittišu ušabalkitma
5. iḥtanabbatū ḥubbut māt Martu^{ki}
6. šābiya mādi ša ina mišir mātšu ašbu
7. uma''era šērušu
8. dabdūšunu iškunū nišu māt aribi
9. mala itbūni urassibū ina kakkī
10. bīti šēri kuštārī mūšabīšu
11. išāti ušaḥizū ipqidū ana ^dgira
12. alpī šēnī imērī ^{anse}gammalī
13. amēlūtu iṣlulūni ina la mēni
14. siḥip māti ana siḥirtišu
15. umtallū ana pāt gimriša
16. ^{anse}gammalī kīma šēni uparris
17. uza''iz ana niši māt Aššur^{ki}
18. qabalti mātiya gammali ina 1 šiḡil ina ½ šiḡil kaspi
19. išāmū ina bāb maḥīri
20. ^{munus}aštammu ina nidni ^{lu}sīrāšū ina ^{dug}ḥābē
21. ^{lu}nukaribbu ina kīši imdanaḥarū
22. ^{anse}gammalī u amēlūtu
23. sīti ^{lu}Aribi ša lapān kakkīya
24. ipparšidū ušamqīt ^dErra qardu
25. sunqu ina bīrišun iššakkinma
26. ana burrišunu ēkulū šir mārīšun
27. arrati mala ina adēšun šaṭru ina pittī
28. išīmūšunūti Aššur ^dSin ^dŠamaš ^dBēl ^dNabū
29. ^dIštar ša Ninua^{ki} ^dIštar ša ^{uru}arba'-ili
30. ilāni rabūti bēliya ^mIauta' maruštu
31. imḥuršu ēdiššišu innabit ana māt [Na]-ba-a-a-ti

99. Later he broke my oath,
 VIII 1. did not save my bounties and rejected the yoke of my sovereignty.
 2. For asking me peace, his feet were kept afar,
 3. he put an end to gifts.
 4. The inhabitants of the Arab land, he had them turn up to him,
 5. they plundered the land of Amurru unceasingly.
 6. My numerous troops stationed at the frontier of his land,
 7. I turned them against him.
 8. They imposed defeat upon him. The dwellers of the Arab land
 9. as many as they were, (my troops) made them surrender with their arms.
 10. The houses from the desert, the tents, their dwelling-places,
 11. (my troops) put fire to them and devoted them to Gira.²⁷
 12. Oxen, sheep, asses, camels,
 13. men, they captured without number.
 14. The country in its totality,
 15. they filled to its fringes.²⁸
 16. Camels like herds, I distributed
 17. (and) shared between the inhabitants of Assur.
 18. In the midst of my country, one bought a camel for one or half a shekel of silver,
 19. at the door of the market.
 20. The inn-keeper for a gift, the brewer for a jar,
 21. the gardener for a bunch²⁹ received in a regular way
 22. camels and men.
 23. The rest of the Arabs who before my weapons
 24. had fled were smitten by the aggressive Erra.³⁰
 25. A famine took place among them.
 26. To fight hunger they ate the flesh of their sons.
 27. The malediction, all that is written in the treaty according to
 28. the decree of Assur, Sin, Shamash, Bêl, Nabû,
 29. Ishtar of Nineveh, Ishtar of Arbela,
 30. the great gods, my lords. Misfortune
 31. came upon Iauta' (^mIa-u-ta-a')³¹ (and) alone he fled to the country of Nabayati ([Na]-ba-a-a-ti).³²

27. God of fire.

28. Literally “to the fringes of its totality”.

29. The exact meaning of *kīšu* is not certain.

30. God of war.

31. Variant: ^mIa-u-ta-'a-a.

32. Variant: [Na]-ba-a-a-te.

This long development gives new information. First of all, Iata’/Iauta’ is guilty of the same infamy as Uabu since he tries to have the Arabs revolt against the Assyrians (*niše māt aribi ittišu ušabalkitma*, 1.4). It is clear here that the Assyrians are not concerned with distinguishing between opposing groups and their identities. The point is the Arab question in general and the danger they represent from the desert. Moreover Iata’/Iauta’ is guilty of plundering the land of Amurru, evidently a buffer zone on the Assyrian border. The lexical field is interesting as no city is mentioned, only the “houses from the desert, the tents, their dwelling-places” (*bīti šēri kuštārī mūšabīšu*, 1.10). One understands better now why the geography of the land is not more precise (cf. 1.6.14). The Arab land is not urbanized, otherwise conquered cities, destroyed and burned according to the usual imperial tactics, would have been named and listed for the glory of Assur.

Faithful to its pragmatic politics, Assyria seeks a loyal personality to play the role of a king who is to ensure peace and security in the conquered territory. A certain Abiate’ son of Te’ri goes to Nineveh to pay homage to Assurbanipal who installs him king:

32. ^mA-bi-ia-te-e’ mār ^mTe-e’-ri
 33. ana Ninua^{ki} illikam unaššiq šēpēya
 34. adē ana epēš ardūtiya ittišu aškun
 35. kūm ^mIa-u-ta-a’ aškunšu ana šarru
 36. ḥurāšu ^{na4}IGI.MIN.MEŠ ^{na4}pappardilû guḥlu ^{anše}gammalū
 37. imērū bitrû mandattu šattišamma
 38. ukīn šēruš

32. Abiate’ (^mA-bi-ia-te-e’)³³ son of Te’ri (^mTe-e’-ri)³⁴
 33. came to Nineveh (to) kiss my feet.
 34. I imposed upon him a treaty so that he would serve me.
 35. In the place of Iauta’ I installed him king.
 36. Gold, precious stones, white stones, antimony and camels,
 37. great asses, (that is) the annual tribute
 38. I imposed on him.

33. Variant: ^mA-bi-ia-ta-a’.

34. Variant: ^mTe-e-ri.

Though it is clear that Abiate' replaces Iata' as king, no clearer title is given. However the treaty mentioned I.34 (*adê*) could well be the fragmentary document known from Nineveh and mentioning Qedar (I.2') in the first part of the inscription (generally dedicated to the divinities invoked) and also Iauta' as the enemy (I.4' and 12').³⁵ Here are the less fragmentary lines recovered offering one clause of the treaty (*adê*):

8'. [ᵐAššur]-bāni-apli šar māt Aššur bēlikunu
 9'. [ša]mna iškunakkanūni
 10'. pānēšu damqūti ina muḥḥikunu
 11'. iškununi
 12'. šumma attunu issi ᵐIa-ú-ta-a'
 13'. ana ṭābti taqarribani
 14'. šum[ma a]ḥḥūkunu aḥḥē abbē (?) [kunu]

8'. (Since) Assurbanipal king of Assur, your lord,
 9'. has anointed you with oil
 10'-11'. (and) turned his kindly face towards you,
 12'-13'. you shall not seek peace with Iauta',
 14'. [...] your brothers, [yours] nephews [...]

If it is indeed the treaty stipulated with Abiate', it becomes possible that Abiate' was recognized "king of Qedar" since his gods are invoked at the beginning of the inscription. Different interpretations may thus be proposed: Qedar may be the equivalent of Arabia in Neo-Assyrian sources, or Qedar as a tribe has become so powerful in the time of Assurbanipal that by metonymy it represents the Arab world. One must then distinguish between geographic definition, politico-historical evolution and also scribal habit. The two first solutions must be understood together and would find another argument in Biblical sources since the name Qedar (קֶדָר) is first connected to the descent of Ishmael (Qedar is his second son after Nebayot cf. Gen 25:13; 2 Chr 1:29). Elsewhere it appears in the classical poetical structures known as parallelismus whether with Arabia or the desert or other cities and kingdoms such as Dedân, Taymâ', Saba or Nebayot or, on the contrary, in opposition to the isles of the Mediterranean. In this last sense Qedar symbolizes the East as opposed to the isles of the West. Here are the Biblical passages:

³⁵. Grayson 1987: 147-150; Parpola & Deller 1968: 464-466. Moreover Parpola mentions four Assyrian treaties (*adê*) involving Arabs, Qedarites or Nabataeans: Samsi Arab queen (2), Iaute' son of Birdada (31), Abiate of Qedar (32) and Iaute' son of Hazael (37). Cf. Parpola 1987: 184-185.

The burden against Arabia. In the forest of Arabia shall ye lodge, ye caravans of Dedânites.

¹⁴ Bring ye water to meet the thirsty! The inhabitants of the land of Taymâ' come forth with their bread for him that fleeth. ¹⁵ For they flee from the swords, from the drawn sword, and from the bent bow, and from the grievousness of war. ¹⁶ For thus hath the Lord said unto me: Within a year, according to the years of a hired servant, all the glory of Qedar shall fail; ¹⁷ and the residue of the number of the archers, the mighty men of the sons of Qedar, shall be diminished: for Yhwh, the God of Israel, hath spoken. (Isa 21:13-17)³⁶

Let the wilderness and the cities thereof lift up (their voice), the villages that Qedar doth inhabit; let the inhabitants of the rock sing, let them shout from the top of the mountains: ¹² let them give glory unto Yhwh, and declare his praise in the islands. (Isa 42:11-12)

Then thou shalt see, and shalt be brightened, and thy heart shall throb, and be enlarged; for the abundance of the sea shall be turned unto thee, the wealth of the nations shall come unto thee. ⁶ A multitude of camels shall cover thee, young camels of Midian and Ephah; all they from Saba shall come: they shall bring gold and incense; and they shall publish the praises of Yhwh. ⁷ All the flocks of Qedar shall be gathered unto thee, the rams of Nebayot shall serve thee: they shall come up with acceptance on mine altar, and I will beautify the house of my magnificence. (Isa 60:5-7)

(Oracle against Tyr) Dedân was thy trafficker in precious riding-cloths. ²¹ Arabia and all the princes of Qedar were the merchants of thy hand: in lambs, and rams, and goats, in these did they trade with thee. ²² The merchants of Saba and Rama were thy traffickers: they furnished thy markets with all the choice spices, and with all precious stones and gold. (Eze 27:20-22)

Therefore will I yet plead with you, saith Yhwh, and with your children's children will I plead. ¹⁰ For pass over to the isles of Kittim, and see; and send unto Qedar, and consider diligently, and see if there has been such a thing. ¹¹ Hath a nation changed gods? And they are no gods; but my people have changed their glory for that which doth not profit. (Jer 2:9-11)

There can be no doubt about the glory of Qedar according to the Biblical data, even though the dating of these texts is dubious. Nonetheless Qedar is seen as the symbol of power in the Arab world, notably commercial power in relation to other oases in the desert (see the oracle against Tyr in the book of Ezekiel) or the isles in the West (see Kittim in Jer 2:10). Qedar is also the symbol of the world's Eastern extremities that will come at last to the New Jerusalem covering it with its riches (Isa 60:5-7). But does not the Isaian oracle against Qedar

³⁶. On that particular oracle see Gallagher 1999: 50-60. The author opts for a date for the oracle in the 8th century, even proposing the year 704, the fall of Jerusalem.

announce at the same time the end of Qedar's glory (Isa 21:16)? Since , as we said, the dating is dubious, the exact historical situation must remain unspecified.

The two first solutions (a geographic equivalence between the Arab land and Qedar and a historico-political implication) are usually accepted.³⁷ However, I would like to insist on the third solution (scribal habit) in the light of the sources so far analysed. If one returns to Prism B of Assurbanipal, one learns that a certain Ammuladin,³⁸ “king of the land of Qedar” (*šar māt Qa-ad-ri*), associated himself to Iata'/Iauta' in plundering Amurru:

39. ^mAmmuladin (^mAm-mu-la-di-in) šar māt Qadri (Qa-ad-ri) ša kīma šašu ikkiru
40. iḥtanabbatu ḥubbut māt Martu^{ki}
41. ina zikir šumiya ša Aššur ^dSin ^dŠamaš ^dBēl ^dNabû
42. ^dIštar ša Ninua^{ki} ^dIštar ša ^{ur}arba'-ili ušarbû
43. ^mKamas-ḥalta (^mKa-ma-as-ḥal-ta-a) šar māt Ma'abi (Ma-'a-a-bi)³⁹
44. ardu dāgil pānīya
45. ina tāḥāzi iškunu dabdīšu
46. ^mAmmuladin (^mAm-mu-la-di) sīti nišīšu
47. ša lapān dāki išītūni
48. ušabbit ina qātī
49. qātī u šēpē birītu parzillu iddinma
50. ana Ninua^{ki} adi maḥriya ušēbila

39. Ammuladin king of the land of Qedar who had rebelled like him
40. and plundered the land of Amurru without ceasing,
41. My fame, Assur, Sin, Shamash, Bēl, Nabû,
42. Ishtar of Nineveh, Ishtar of Arbela, made great.
43. Kamashalta king of the land of Moab,
44. respectful servant before me,
45. in the midst of fighting imposed defeat.
46. Ammuladin and the rest of his people
47. who had escaped death
48. he took (them) by hand.
49. Fists and feet in chains he delivered (them) to me,
50. bringing them before me in Nineveh.

37. With the exception of Retsö, who as we have seen insists on the geographical meaning.

38. Variant: *^mAm-mu-la-di-in* or *^mAm-mu-la-ad-di-in*.

39. Variant: *Ma-'a-a-ba*.

What relation can Ammuladin “king of Qedar” have with Iata’/Iauta’ also “king of Qedar” in the same Prism? Certainly Ammuladin and Iata’/Iauta’ are originally from different groups or tribes. Maybe the land of Ammuladin is situated further to the West if one considers that it is the king of Moab, Kamashalta, in the service of Assyria, who defeats and hands him over to the Ninevite court. It may be that many “kings of Qedar” are allied together against the yoke of Assur in the image of the “kings and queens of the Arabs” in the time of Sennacherib and Esarhaddon.

Finally one learns that Natnu, king of Nabayati (*māt Na-ba-a-a-ti*, Biblical Nabayot cf. Gen 25:13; 28:9; 36:3; 1 Chr 1:29; Isa 60:7), where Iata’/Iauta’ had fled, gets frightened and sends messengers to pay tribute to Assurbanipal (VIII 51-63). This is the end of the Arab question in the oldest source, Prism B of Assurbanipal: one does not know what becomes of Iata’/Iauta’. What is clear is the Assyrian practice and scribal habit: it is not a question of geographic or tribal precision and details, what matters is the glorification of the god Assur and his king through the conquests of lands, the ratification of treaties ensuring peace and security, and the acquisition of gifts and tributes for the welfare of all the empire. Therefore the choice of Qedar rather than Arabia to designate the desert kingship is not decisive: it cannot be strictly analysed as a political or geographical entity; it remains a scribal practice, as general as it is undifferentiated. Certainly Qedar had its hour of glory in its successive rebellions against Assyria and particularly against Assurbanipal, since almost all the references to it are found in his inscriptions.⁴⁰ But the available sources do not, it seems to me, give precise information on geography,⁴¹ and evidently the scribes were not interested in this matter: kings of Arabs, just as kings of Hatti, merit no further development as long as they surrender to Assur and pay tribute to the empire.

⁴⁰. Eph’al 1982: 223-224.

⁴¹. If the geographic extension of Qedar seems extensive, from the fringes of the Fertile Crescent to Babylonia in Assyrian sources, is it necessary to coin a new concept, “federation of tribes with various sub-divisions”? In justification: “Evidence for the existence of such a social structure figures in the inscriptions of Assurbanipal, where both Yauṭa’ b. Ḥazael and Ammuladi, who operated simultaneously in the Western territory of the Assyrian kingdom, were designated *šar kurQidri* (...). Additional evidence for assuming that the Qedarites were a sub-divided federation is the attempt of Wahb (mUabu) to seize leadership of the “Arabs” (certainly the Qedarites) after Ḥazael’s death (...) and the replacement by Abiyate’ b. Te’ri of Yauṭa’ as king of the Qedarites (...). Neither Wahb nor Abiyate’ seems to have been a member of Ḥazael’s family, nor possibly even a member of the same tribe. They could have replaced Ḥazael and his son only if it is assumed that the leadership of the overall Qedarite complex were transferable from one of its components to another” Cf. Eph’al 1982: 226.

Let us sum up before analysing the second campaign and Prism A, the most recent but also the most corrupted document among Assurbanipal's sources. After his accession to the throne in 669, Iata'/Iauta', son of Hazael, is installed as king of Qedar, and a treaty is signed with Assyria. The divinity Atarshamayin is sent back. After some years, however, Iauta' tries to throw off the yoke of Assur and leads a rebellion. Another king of Qedar, Ammuladin, joins in but is defeated by the king of Moab allied to the Assyrian. Iata'/Iauta' takes refuge in Nabayati. Abiate' is installed as king of Qedar in place of Iata'/Iauta'. But Natnu king of Nabayati makes an alliance with Assyria. All this happens before 652.

Let us now recall the point of the Babylonian crisis: the brother of Assurbanipal, Shamash-shum-ukîn, was installed as king of Babylon (667-642) by his father Esarhaddon whereas Assurbanipal received the Assyrian throne. But he rebels and Assurbanipal has to face an insurrection by 652 with the engagement of Elam until 648. If Assyria is victorious, the days of the empire are now numbered.⁴² Therefore the second Arab campaign is again linked to the Babylonian question. But the two campaigns are mixed up in Prism A (the Ras-sam Cylinder), making it very difficult to disentangle the history. The second campaign is led by a certain Uaite' (whose orthography is similar, as we said, to that of Iauta'), but this time he is the son of Birdada. As this source introduces new elements, let us note the new narrative points:⁴³

A VII 82-106: Assurbanipal leads his ninth campaign against *Ú-a-a-te-*' "king of the Arab land" who has joined himself to the revolt of Shamash-shum-ukin.

VII 107-124: Assurbanipal marches towards *U-da-me* (Edom), *Bīt Am-ma-ni*, through the regions of *Ha-u-ri-na*, *Mu-'a-ba* and *Šu-pi-te* where *Ú-a-a-te-*' is defeated. The latter flies to the land of Nabayati.

A VIII 1-14: *Ú-a-a-te-*' son of Hazael (cousin of *Ú-a-a-te-*' son of Birdada "king of the Arabs") surrenders to Assurbanipal who locks him in a cage at the door of Nineveh.

A VIII 15-29: *Am-mu-la-di* "king of Qedar" confronts Assyria, he is defeated and *A-di-ia-a*, spouse of *Ú-a-a-te-*' "king of the Arab land", is captured.

A VIII 30-41: *A-bi-ia-te-e'* and his brother *A-a-mu* son of *Te-e'-ri*, supporting the Babylonian troops, are defeated and flee. *A-a-mu* is captured.

A VIII 42-47: *A-bi-ia-te-e'* surrenders to Assurbanipal who installs him as "king of the Arab land" in place of *Ú-a-a-te-*' son of Hazael.

A VIII 48-64: *A-bi-ia-te-e'* makes an alliance with *Na-at-nu* against Assyria.

A VIII 65-IX 8: Assurbanipal crosses the Euphrates, chases the troops of *A-bi-ia-te-e'* and

⁴². For a detailed chronology, see Grayson 1991: 142-161.

⁴³. Retsö 2003: 169f. This narrative also gives the route of the campaign, see in detail Eph'al 1982: 160f.

Ú-a-a-te-’ “king of the Arab land”. He defeats ^{lú}I-sa-am-me-e’, the “confederation” of Atarshamayin (^{lú}GIŠ-DA / a’-lu ša ^dA-tar-sa-ma-a-a-in), and Nabayati (^{lú}Na-ba-a-a-ta-a-a).

On his return he again defeats the “confederation” of Atarshamayin (^{lú}a’-lu ša ^dA-tar-sa-ma-a-a-in), the people of Qid-ra-a-a with Ú-a-a-te-’ son of Birdada “king of the Arab land” who is captured and taken to Damascus.

A IX 9-52: Assurbanipal leaves Damascus and takes over the « confederation » of Abiate’ son of Te’ri of Qedar (^{lú}a’-lu ša ^mA-bi-ia-te-e’ mār ^mTe-e’ri māt Qid-ra-a-a). An immense tribute is taken to Assur.

A IX 55-128: Ú-a-a-te-’ and his troops are defeated by Erra. His troops revolt against him. He flies to Assur, is captured and locked up in a cage at the door of Nineveh.

A X 1-5: A-a-mu son of Te’ri is also taken to Nineveh.

If one is not surprised to see Abiate’ rebel in turn, whether he is king of the Arabs or of Qedar, it is a surprise to find a new denomination concerning the Arab’s organization, the “confederation” of Atarshamayin (^{lú}a’-lu ša ^dA-tar-sa-ma-a-a-in) which could reflect more properly the organization of the desert. But is it only question of a confederation, and if so, what was its nature? Only this source attests to this expression ^{lú}a’-lu in all the Akkadian sources so that it makes any definition very tentative.⁴⁴ And is this confederation a religious one as recognized by the *Chicago Assyrian Dictionary*? In truth the immediate context cannot entail a religious definition since the term is equally applied to Atarshamayin and Abiate’ (A IX 9-52). One should thus remain prudent on the ultimate meaning of the term, though it might well reflect some Arab peculiarity in the Assyrian sources, viz. the alliance of chiefs or kings. In this sense, the expression would throw some light not on the royal ideology at work in Assyrian rhetoric but on the organization of the Arabs in the desert.

⁴⁴. For a’lu or i’lu the *Chicago Assyrian Dictionary* gives “confederation, amphictyony” and the following commentary: “The context demands in all instances a word denoting a confederation, probably even an amphictyony under divine leadership (^dAtar-samāin), so that the reading i’lu “league” from Akkadian e’ēlu is possible. If the reading a’lu is to be accepted, it has to be connected with the Syr. *iahlā* “gens” rather than with Arabic *ahl* which denotes people and not a tribe. Moreover, the cited refs. all deal with the Arab tribes who, at that time, spoke Aramaic”. Concerning the religious interpretation, see Cross 1983: 36 n. 63; Ibid. 1973: 7 n. 13 and 105 n. 49; Weippert 1973-74: 68-69; G. Ryckmans 1934: 27.

We can now sum up the main information regarding the reign of Assurbanipal before proposing some conclusions:

Persons	Names	Titles	Other information
	Iauta' (^m <i>Ia-u-ta-a'</i>)	king of Qedar (<i>šar māt Qadri (Qa-ad-ri)</i>)	son of Hazael (<i>mār ^mḪaza-ilu (^mḪa-za-a ilu)</i>)
	Ú-a-a-te-e'	king of the Arab land (<i>šar māt A-ri-bi</i>)	son of Hazael (<i>mār Ḫaza-ilu</i>) [cousin of the son of Birdada (<i>Ú-a-a-te-e'</i>)]
	Hazel (^m <i>Ḫaza-ilu</i>)		
	Abiate (^m <i>A-bi-ia-te-e'</i>)		son of Te'ri (<i>mār ^mTe-e'-ri</i>) installed king in place of Iauta' (<i>kūm ^mIa-u-ta-a' aškunšu ana šarru</i>)
	Ammuladin (^m <i>Am-mu-la-di-in</i>)	King of Qedar (<i>šar māt Qa-ad-ri</i>)	
	Kamashalta (^m <i>Ka-ma-as-ḫal-ta-a</i>)	king of Moab (<i>šar māt Ma-'a-a-bi</i>)	
	Natnu	king of Nabayati (<i>māt Na-ba-a-a-ti</i>)	
	Ú-a-a-te-e'	king of the Arab land (<i>šar māt A-ri-bi</i>)	son of Birdada
Places			

Conclusions

From all the information gathered from the royal inscriptions of Sennacherib, Esarhaddon and Assurbanipal, I would propose the following conclusions:

- There is no reason to make Qedar and the Arab land a single geographic entity. But if Qedar does belong to the Arab land, its specific geographic delimitation cannot be further defined. Since the dynasty of Hazael is mentioned in all the sources examined and is connected to the fortified city of Adummatu, it appears plausible that Adummatu is the centre and capital of Qedar.
- From the point of view of the royal inscriptions, the only ones available, it is clear that scribes of Esarhaddon preferred the term “Arab” whereas those of Assurbanipal referred more usually to “Qedar”.
- Many kings and queens of Arabia or Qedar happen to be contemporaneous (Tabuwa’s queenship and Iata’s kingship in the time of Esarhaddon; Ammuladin and Iata’ in the time of Assurbanipal), which bears out the idea that Assyrian scribes were not interested in geographical nor political details beyond the supremacy of Assur. There seems no need for a new concept such as *sub-divided federation* to give a definition of Qedar. The rhetoric and ideology at work in the royal inscriptions tend to demonstrate the political pragmatism of the Assyrian empire.
- Certainly the term confederation (^{lu}a’-lu), implying a group of persons (as signalled by the determinative ^{lu}) under the governance of one person or divinity, better reflects the Arab reality in the desert at the time of the Neo-Assyrian empire.

As a final word, I wish to quote the conclusions of A. Tourovets on the subject of the Medes on the Eastern border of the Assyrian empire in mountainous fringes. The political and geographic situation seems to have been no less confused than that in the desert and somehow mirrors the Western frontier of the empire:

« Toutefois, contrairement aux écrits des auteurs grecs, les documents assyriens ne parlent pas d'empire, ni même d'état centralisé. Ils évoqueront plutôt l'existence des « Mèdes lointains », des « Mèdes dont le territoire est lointain », des « Mèdes près du mont Bikni », ou des « Mèdes qui vivent près du lac salé ». (...) Les rapports des premières expéditions trahissent le manque d'habitude des scribes quant à reproduire différents noms et toponymes étrangers. Le cas de double graphie voire les confusions et les incohérences sont nombreuses dans les listes et dans l'ordonnement les uns à la suite des autres des différents territoires traversés par les Assyriens. À de très rares exceptions, les sources ne contiennent pas – ou peu – de descriptions de type « ethnologique » concernant les peuples du Zagros. Beaucoup de noms commencent par Bit. Dans la langue assyro-babylonienne ce terme désigne un territoire tribal à la tête duquel se trouve un chef local, le Bêl Ali et plus rarement le sharum c'est-à-dire un roi ou plutôt un roitelet. L'étendue de leur domaine et leur puissance politique restent pourtant toujours très floues. Les noms des personnages cités ne donnent que très rarement des indications sur leur origine. »⁴⁵

It becomes clear, I believe, that Arab geopolitical organization cannot be understood from Neo-Assyrian sources alone, which throw more light on the ideology of empire than on a scientific concern with the world around them. There are only some hints regarding the Arab question, Qedar and Adummatu; there is a need for more data to achieve any precision.

⁴⁵. Tourovets 2011: 59.

A “Confederation of Atarsamain”?

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Studies on Northern Arabia in the Assyrian period never fail to refer to the “confederation of Atarsamain”, *a’lu ša Atarsamain*, against whom king Assurbanipal (668-630/627 BC) is thought to have campaigned. These studies assert more or less explicitly that this expression in Akkadian points to a set of North Arabian tribes united by the worship of the goddess Atarsamain, and which therefore congregated around a sanctuary, in a manner slightly akin to that of Greek amphictionies. Amongst these tribes is Qedar, whose centre was probably at Adummatu.

In this note which, as for Assyrian sources, is based on Stéphanie Anthonioz’s contribution, I consider whether Arabian sources shed any light on the meaning of *a’lu ša Atarsamain*. This examination will be carried out in two stages. Firstly the Assyrian textual sources will be carefully examined. Secondly a detailed assessment of contemporary Arabian epigraphy will be conducted in order to determine whether expressions exist which are similar in either form or meaning to those from coeval documents.

I. Assyrian data: the Confederations “of Atarsamain” and “of Abiyate”

The Assyrians used an entire series of terms and circumlocations in order to name populations of the Adummatu region they attempted to subdue. In texts quoted by Stéphanie Anthonioz, one mainly finds:

1. A generic term for the “Arabs” (^{lú}*A-ri-bi*). It appears on its own:

— “All of the Arabs” (^{lú}*Arubu kališu*)

— “The rest of the Arabs” (*sīti* ^{lú}*Aribi*)

Or in several phrases:

— “The land of the Arabs” (*māt Aribi*)

— “The gods of the Arabs” (*ilāni ša* ^{lú}*Aribi*)

— “Adummatu, the fortress of the Arabs” (^{uru}*Adummutu āl dannūtu* ^{lú}*Aribi*)

— “The queen of the Arabs” (*šarrat* ^{lú}*Aribi*)

— “The king of the land of the Arabs (*šar māt Aribi*).”

In a text (Prism B of Assurbanipal), the “land of the Arabs” stands clearly in contrast to the “land of Amurru” (*māt Martu*^{ki}).

2. Proper nouns plausibly naming tribal groups, in general preceded by the word “land” (*māt*):

— Qedar (*māt Qadri*);

— Nabayati (*māt [Na]-ba-a-a-ti*).

The precise physical location of these tribes is a matter of contention. The hypothesis that Adummatu would have been the centre (or one of the centres) of Qedar is plausible, but not secure. Nabayati is probably to be looked for in the Syrian Desert,¹ even if other places have been suggested, and some have even located it in Central Arabia.²

The texts quoted above also mention Amurru (*māt Martu*^{ki}) and Moab (*māt Ma’abi*), which are well within the Assyrian realm.

1. Parpola 1970, see map at the end of the book.

2. Knauf 1989: 95, “somewhere in the north of Central Arabia” or 1990:208, “in the vicinity of Tayma”; Winnett & Reed 1970:100, Ḥā’il.

3. Personal names, most often followed by a title:

— “Ammuladin king of the land of Qedar” (*^mAmmuladin šar māt Qadri*); “Ammuladi king of Qedar”.

One should note that this king exerted authority neither over the land of Amurru (*māt Martu^{ki}*) — since he plundered it — nor over the land of Moab (*māt Ma’abi*) — since he was captured by its ruler.

— *Ba-as-qa-a-nu* brother of *Ia-ti-’-e* “queen of the Arabs” (*šarrat^{lú}A-ri-bi*).

— “Hazael, king of the Arabs” (*^mHaza-ilu šar^{lú}Aribi*); “Iauta’ son of Hazael king of the land of Qedar” (*^mIauta’ mār^mHaza-ilu šar māt Qadri*);

— “[... Te’elhu]nu queen of the Arabs” (*[...^fTe’elhu]-nu šarrat^{lú}Arabi*).

— “*Ú-a-a-te-’* king of the land of the Arabs”.

— “*Ú-a-a-te-’* son of Birdada, king of the land of the Arabs”; “*A-di-ia-a* wife of *Ú-a-a-te-’* king of the land of the Arabs”.

4. A religious title followed by an additional title:

— “The priestess, queen of the Arabs” (*šapkallatu šarrat^{lú}Aribi*)

5. A term referring to a social group, followed by a god’s name

— “the *a’lu* of Atarsamain” (*^{lú}a’-lu ša^dA-tar-sa-ma-a-a-in*).

6. A term referring to a social group, followed by a personal name

— “The *a’lu* of Abiate’ son of Te’ri, of the land of Qedar” (*^{lú}a’-lu ša^mA-bi-ia-te-e’ mār^mTe-e’ri māt Qid-ra-a-a*).

The precise manner in which these denominations, which Stéphanie Anthonioz has thoroughly examined, are connected to each other is not easily understood. I intend to restrict myself to what the noun *a’lu* means; it is usually translated by “confederation”. It occurs in in two expressions as follows:

— *a’lu ša Atarsamain*

A VIII 65-IX 8: Assurbanipal crosses the Euphrates, expels the troops of *A-bi-ia-te-e’* and of *Ú-a-a-te-’* “king of the Arab land”. He defeats *^{lú}I-sa-am-me-e’*, Atarsamain’s “confederation” (*^{lú}GIŠ-DA / a’-lu ša^dA-tar-sa-ma-a-a-in*), and Nabayati (*^{lú}Na-ba-a-a-ta-a-a*).

Upon his return, he once more defeats the “confederation” of Atarsamain (^{lu}*a’-lu ša^d A-tar-sa-ma-a-a-in*), the people of Qedar (*Qid-ra-a-a*), together with *Ú-a-a-te-’* son of Birdada “king of the Arab land.” The latter is captured and brought to Damascus.

The substantive form *a’lu*, in this example, is determined by a god’s name, Atarsamain, the name of Adummatu’s main deity. The mention of a priestess, *apkallatu*, in Esarhaddon’s Prism A IV (680-669) in conjunction with additional clues suggests the view that Atarsamain is a goddess.³

Yet the issue of who had authority over the “*a’lu* of Atarsamain” remains unknown. Was it this priestess or the “queen of the Arabs”? An additional question is whether both authorities were not exerted by the same woman.

One should be aware that the “*a’lu* of Atarsamain” appears in lists naming the enemies of the Assyrians. These lists include not only military forces, but also tribal groups such as Nabayati, Qedar and ^{lu}*I-sa-am-me-e’*, whom some scholars identify with the Ismaelites of the Bible.

— *a’lu ša Abiate’*

A IX 9-52: Assurbanipal leaves Damascus and seizes “*a’lu* of Abiate’ son of Te’ri, of the land of Qedar” (^{lu}*a’-lu ša^m A-bi-ia-te-e’ mār^m Te-e’ri māt Qid-ra-a-a*); a huge tribute is brought to Assur. The determinative of the word *a’lu* here is a personal name.

A’lu ša Atarsamain and *a’lu ša Abiate’* are the only two occurrences of the word *a’lu* in Akkadian. This leads to the tentative conclusion that, in all likelihood, both phrases are transcriptions of a term used by the Qedarites.

The *Assyrian Dictionary* (from the Oriental Institute of the University of Chicago, *CAD*) vocalizes *a’lu* or *i’lu* and suggests the following translation: “confederation, amphictyony”. It adds the following comment: “The context demands in all instances a word denoting a confederation, probably even an amphictyony under divine leadership (^d*Atar-samāin*), so that the reading *i’lu* “league” from Akkadian *e’ēlu* is possible. If the reading *a’lu* is to be accepted, it has to be connected with the Syr. *ahlā* “gens” rather than with Arabic *ahl* which denotes a people and not a tribe. Moreover, the cited refs. all deal with the Arab tribes who, at that time, spoke Aramaic”.

The statement that “Arab tribes ..., in those days, spoke Aramaic” warrants at least some comment. It is undoubtedly based on the fact that the Taymā’ oasis inscriptions were predominately written in the Aramaic language and script. It is also based upon the conviction that the name of the god Atarsamain had Aramaean origins. The name has been ana-

3. Cogan 1974: 15-21; Knauf 1989: 82.

lysed as a double noun, consisting of the god’s name *Atar* (= ‘*Athtar*’) and the Aramaic noun *samain* meaning “heavens”. Consequently the word Atarsamain would mean “‘Athtar of the heavens”.

Moreover, it is unlikely that *samain* is North Arabian. The first reason is that the deity’s name is written ‘*trs’l’m* in graffiti in Thamūdīc type B from the area between the vicinity of Taymā’ and southern Syria.⁴ The second one is, based on philological observations: in North Arabian the plural of “heaven” (**s’lmy*) is broken, not suffixed. *Samain* can no doubt be interpreted as a dual, i.e. “both heavens”, but such an interpretation does not agree with the known portrayals of the heavens.

If the name of the god Atarsamain is Aramaic, is this also the case for the noun *a’lu*? Unfortunately, answering this question with any measure of certainty is problematical. One can simply note that Aramaic does not provide any clues, while Arabian languages offer two different ones. It is clear that Aramaic was used as a written language at Dūma, and a little later at Taymā’, and then in the region of Petra. Yet it is also certain that the population itself spoke a North Arabian language. It is therefore not inconceivable that a nominal phrase such as *a’lu ša Atarsamain* is a juxtaposition of the North Arabian term (*a’lu*), an Akkadian particle (*ša*) and finally an Aramaic name for a deity. The Nabataean language, which itself is Aramaic, but where the North Arabian noun ‘*l*⁵ is found, offers multiple examples of this kind of lexical diversity.

The meaning of the noun *a’lu*, given by the *Assyrian Dictionary*, also raises a few additional problems. If its rendering “confederation, amphictiony” conveys an acceptable meaning to the expression “*a’lu* of Atarsamain”, it becomes hardly suitable when *a’lu* is determined by the name of a living person. Indeed, in the tribal society of first millennium BCE Arabia, the basis of political units was always the practicing of a common cult. No example has been found whereby a tribal group is designated by the name of its prince.

4. Macdonald *et alii* 1996: 477-480.

5. See Michael Macdonald and Laila Nehmé’s contribution, below.

2. The meaning of the Arabian and Nabataean noun forms $\text{'}l$ (Arabic $\bar{a}l$) and $\text{'}hl$ (Arabic ahl)

The ancient written languages of Arabia used two terms which can be transcribed by the Akkadian $a'lu$. It is clear that, even if a little later than the Assyrian period, they are nonetheless from a time much closer to the one when Syriac was spoken (the language referred to by the *Assyrian Dictionary*). These languages are of interest to scholars in that they originate from a tribal environment, i.e. from populations whose social structure was comparable to that of the North Arabian steppes. But this observation does not hold true for Syria's sedentary and urban populations.

a. The noun $\text{'}l$

The noun $\text{'}l$ is commonly used in inscriptions from Eastern Arabia, traditionally defined as “Ḥasā'itic” (from al-Ḥasā', a Saudi province of Eastern Arabia). I have postulated that these texts ought to be called “Hagaric” after the kingdom of Hagar which developed in that region at the time.⁶ Even if it is difficult to suggest a precise date for each of these inscriptions, it is clear that the great majority originate from the Persian and Hellenistic periods (c. 5th-2nd century BCE). The most recent study which focused on this small corpus of inscriptions was undertaken by Alexander Sima (2002).

The noun $\text{'}l$, found some 25 times, points to a tribal unit which was physically either small, middle or large. It could be best translated in English by the terms “clan”, “fraction” or “tribe”. The following text is an excellent example, since it describes the physical manner in which the three boxed $\text{'}l$ fitted each other:

wgr w-qbr ⁽²⁾ly' bn 'yny b⁽³⁾n S²sr d-'l S⁽⁴⁾mm d-'l D'b ⁽⁵⁾ d-'l S²db

“Stela and tomb of $\text{'}ly'$ son of $\text{'}yny$ so|n of S^2sr of the clan of $S^l|mm$, of the fraction of Dhi'b, of the tribe of S^2db ”

(Sima 28 = Cornwall 1, from al-Qaṭīf)

The Hagarites who had the inscriptions carved in Yemen use the same term to name the tribal group they belong to. This is clearly indicated in two documents attributed to them. The first one is dated to the second year of king Seleukos, i.e. the year 303 / 302 BCE, and the

⁶. Robin 2010 b: 122; Robin & Prioletta 2013.

second to his seventh year, i.e. 298 / 297.⁷

In Taymanite, Nabataean, Ṣafā’itic or “Thamūdic” inscriptions of North-Western Arabia, Jordan and Syria, this term *’l* (sometimes preceded by *dy mn* or by *d-*) is frequently used to label tribal units of any physical size.⁸

In contrast, in the South, the noun *’l* is not used to designate a tribal unit, except at Qaryat al-Fa’w, which is an oasis located some 300 km to the north/north-east of Najrān, an area more pertinent to this discussion, as it is more part of *Arabia Deserta* than of the region where South Arabian civilization developed. In the very few texts where this is not the case, the authors were usually foreigners originating from either Qaryat (present-day Qaryat al-Fa’w) or from the Arab-Persian Gulf region. This is particularly clear in the following documents:

— **CIH 450** of unknown provenance, but whose authors are from Qaryat al-Fa’w, according to the clan’s name :

ll. 1-3, *nfs^l w-qbr Ġnm^{(2)m} bnt ‘zm^m dt ⁽³⁾l ’l ’ḥnkt*,

“Stele and tomb of Ghānim^{um} daughter of ‘zm^m, of the c|lan of al-Aḥnikāt”;

ll. 3-6, *nfs^l ⁽⁴⁾ w-qbr bny ‘sy^t ⁽⁵⁾ bn Blḡt d-’l ⁽⁶⁾l ’l-’ḥnkt*,

“Stele and tomb of the sons of ‘sy^t | son of Blḡt, of the clan {c|lan} of al-Aḥnikāt”.

— **A-20-247** from al-Bayḏā’ in the Yemeni Jawf:

Ġwṯ^m D[?]m(y)n d-⁽²⁾([’])l Ḥmym,

“Ghawth^{um} D[?]m(y)n, of | the clan Ḥmym”;

— **A-20-216 and Ry 547** of unknown provenance, maybe from Ma’rib, even though its authors are foreigners originating from the kingdom of Hagar.⁹

It is difficult to imagine that all populations who used the noun *’l* are to be included inside a group identical with the “Arabs” of Assyrian texts. However, these populations were undoubtedly related to these “Arabs” through language, social structure, worship or material culture.

7. Priolella 2011 (A-20-216 and Ry 547).

8. See the contribution by Michael Macdonald and Laïla Nehmé, below.

9. For a complete list and a study of these texts, see Robin & Priolella 2013.

b. The noun *'hl*

The communes (tribes which are exclusively sedentary), which are referenced in inscriptions of Southern Arabia, are called *s²'b*.¹⁰ The sub-groups are also called *s²'b* when the definition is also territorial, but the term *'hl* must be applied when one discusses tribal units based either on real or fictitious ancestry. Indeed, it is clear that within the kingdom of Ma^ʿīn, a same *'hl* is attested in inscriptions of several cities and that the geographical distribution of mentions of the same *'hl* does not translate into contiguous and homogeneous territories.¹¹

The Minaeans' identity, found in lists of foreign wives brought back to the country, comprises the following names, always in the same order: the man's name, that of his father, that of his "lineage" introduced by *q-* and finally that of his "clan" introduced by *q-'hl*:

Gdn bn Hfd q-Zlwm⁽²⁰⁾ q-'hl Gb^{ʿn} s'krb⁽²¹⁾ w-ḥs³r 'bb' bn Ġzt

"Gadan son of *Hfd* dhu-*Zlwmⁿ*, of the clan *Gab'ān*, has brought back and paid the price for *'bb'* from Gaza"

(Ma^ʿīn 93 C / 19-21).

One might think that inscriptions could also refer to *'hl* as units of inferior size like in the following example of text from Barāqish (ancient Yathill):

Dḥml w-bhn-s'w Bdyt w-'bdt q-qhlth 'ttr q-Yhrq w-y.[... ..]⁽²⁾lhtⁿ 'hl Zlwmⁿ 'hl Gb^{ʿn},

"*Dḥml* and his two sons *Bādiyat* and *'Ubdāt*, (members) of the brotherhood of *'Athtar* dhu-Yuharīq¹² and ..[... ..]|... , *Zlwmⁿ* family, clan of *Gab'ān*"

(M 197 = RES 2975 = B-Mur 1).¹³

In fact, in this case, *'hl* is the plural of *q-*.¹⁴ This homography obviously makes analysis difficult when *'hl* is encountered in a text without the *q-* usually preceding the mention of a clan.

The noun *'hl* is frequently used in inscriptions in the Ma^ʿīnic language of the Yemeni Jawf, i.e. texts of the kingdoms of Ma^ʿīn, Haram, Kamināhu and Nashshān.¹⁵ This noun can be translated by the terms "clan, family" and perhaps "descendancy" because an ancestor's name is used as a determinative for the word.

10. Tribes speaking Old Arabic or Ethiopian languages are called *s²'rt* (Arabic *'ashīra*) and *ḥzb* (Gueez *ḥizb*), respectively. However, that these terms only appear much later, in the first centuries of the Christian era. In some texts, the meaning of *s²'b* is "community", for instance a community of people with the same occupation.

11. The same remark holds true for the great Sabaean families of Ma^ʿrib, even though the inscriptions never call them *'hl*. By which word or expression they were named is yet unknown.

12. It seems that *Dḥml* only is a member of a brotherhood, because the relative pronoun *q-* (which introduces *qhlth*) is in the singular.

13. See also M 203 (RES 2980 bis ; Robin 1993: 488-489, fig. 25), B-Mur 73 (Na 82-RES 3053-RES 3056 = M 416-M 275A-M 275B), B-Mur 256 (RES 2972-RES 2970--RES 2971-RES 2971 bis B-RES 2971 bis A = M 194-190-191-193-192).

14. See also Kamna 26, commentary below, and texts with a verb in the imperfect, preceded by *'hl* which can only be analysed as a plural relative pronoun, for instance in MŠM 116 / 2 : *w-q 'trh-s'm w-'nt-s'm 'hl ys'qkrnn k-s'm* (l. 2).

15. See also Ja 859 from Najrān.

An additional difficulty arises with regard to the etymology of *’hl* in Ma‘īnic. This is because it is by no means certain that the letter *hā’*, which is used sometimes as a *mater lectionis* for the sound /a/ has a consonantic value. It is therefore conceivable (and this is my provisional hypothesis) that the Ma‘īnic noun *’hl* is in fact a graphic variant of Qaryat al-Fa’w and of the Gulf’s *’l*. But, in contradiction with this hypothesis, one must observe that *’l* and *’hl* are found together in an unpublished text from Qaryat al-Fa’w, in which the plural of *ḡ-* is *’lw* (and not *’hl* or *’l*):

... *bnw Mrm ’l Tymmnwt (’lw ’(2)h)l Mlkⁿ ...*

“... *banū Mrm*, family of Taymmanawāt, those of the clan of Milkān ...”¹⁶ (Inscription of *Tymwd* in the so-called Temple of Wadd)

In Saba’ic, a noun *’hl* is known. Yet this noun never points to a social group of tribal nature; this agrees with the hypothesis just put forward.

For the *Sabaic Dictionary*, the noun *’hl* (plural *’hlht*, with a reference to Fa 127 / 4 and to CIH 546 / 5) means “folk, people, community” or “religious community”. A noun *’hl* is attested in the singular in inscription Ir 12 (paragraph 2), with the clear meaning of “population”:

w-s’twfy kl ’wtⁿ hgrⁿ w-’hl s²’bⁿ Ḥs²d^m,

“He protected all the borders of the city and the population of the commune of Ḥāshid^{um}”.

16. Read *Mlkⁿ* (Milkān) rather than *mlkⁿ* (“the king”): compare with Müller 2 (*R²t^m bnt Hn’t ḡ’t³ ’hl-Mlkⁿ*). A tribe called Milkān is mentioned in that region in Islamic times: see Caskel 1966-I, Table 261 (Milkān b. al-Ḥārith b. Rabī’a b. al-Ḥārith b. Ka’b b. ‘Amr b. ‘Ula b. Jald b. Mālik [Madhhij]).

In the Ḥimyarite inscription written in the Saba'ic language Louvre 11 = *RES* 4230, 'hl appears to be restricted in its meaning to “family, blood relations, kin”:

... w-l-wfy-m^{d(7)}bt-hmw-s²bⁿ-ḥwr-hgrⁿ-S^llyt-w⁽⁸⁾'hl-hw w-'rd-hmw ṣrb^m-w-qyz^m (9)
w-'ywn^m d-kwn b-'s²qt

“... For the good health of their subjects, (i.e.) the commune of inhabitants of the city of Silyat, (that) | of his family and (that) of their land (planted) with autumn and summer cereals | and with vineyards, in terraced fields”.

The pronominal suffix in the singular attached to 'hl points to the author of the text and not to the commune, which agrees in the plural form.¹⁷

The *Sabaic Dictionary* finally gives 'hl the meaning of “religious community” because of the expression 'hl 'ttr which is to be examined separately.

As for the two mentions of 'hl in the plural with the spelling 'hlht (Haram 53 = Fa 127 / 4 and Haram 8 = *CIH* 546 / 5), they are very dubious. I would strongly argue that, in this instance, this spelling is an example of an unusual plural of 'l, “god” (transcribing Arabic *āliha*).¹⁸

In conclusion, the substantive form 'hl is attested in Southern Arabia inside two linguistic areas. In the inscriptions of the Yemeni Jawf in the Ma'īnic language, it would be a local spelling of the 'l of *Arabia Deserta*, pointing to the lineages or clans who together constitute the commune. In Sabaean and Ḥimyaritic inscriptions, this term occurs with a less precise meaning (“group of population” or “family”).

In Arabia broadly speaking, the noun 'hl is also found at Qaryat al-Fa'w (see above), in Ṣafā'itic inscriptions, and in Arabic.¹⁹ These three languages are the only ones where both nouns 'l and 'hl are present. It appears that in this case 'hl refers to the “family” or “kin”, while the noun 'l is a name for “clan” or “tribe”.

¹⁷. In *CIH* 392 and MAFY-dhū 'l-Ṣawla' 1, 'hl points to a hydraulic device and not to the “family.”

¹⁸. The usual plural of 'l, “god”, is 'lt.

¹⁹. Michael Macdonald and Laïla Nehmé's contribution, see below.

3. *’hl* determined by a deity’s name

The *a’lu* of Assyrian sources is determined either by a god or a ruler’s name. But whether the same conclusion can be drawn for *’hl* and *’l* remains to be seen. No evidence has been found for *’l* with this written form, but it is true that it is known only in poorly documented epigraphic tongues. Nevertheless, several examples of *’hl* exist where it is determined by a god’s name.

a. The *’hl S’hr* of Ma’īn

A Minaean clan named *’hl S’hr* is twice attested in the above mentioned lists of foreign women who were granted “citizenship” at Qarnā (*Qrnw*, nowadays Ma’īn):

— *Ma’īn 93 A / 21-22*

Wfd bn ’ws’ d-S²bⁿ d-’hl⁽²²⁾ S’hr s¹krb w-ḥs³r ’brḥm⁽²³⁾ w-’m(t) ’t bn Ġzī^m,

“Wafd son of Aws dhu-Shab’ān of the clan of | Saḥr has brought back and paid the price for *’brḥm* | and *’mt’_t* from Gaza”;

— *Ma’īn 93 D / 6*

Rz’ bn D’b d-’b⁽⁶⁾ wkl d-’hl S’hr [s¹]⁽⁷⁾ krb w-ḥs³r Fltt⁽⁸⁾ bn Ddn,

“Rz’ son of Dhi’b dhu-Abī|wakal of the clan of Saḥar has brought back and paid the price for *Fltt* | from Dedān”.

It was recently established that *S’hr*, a deity principally venerated in Ma’rib, always forming a couple with ‘Athtar, was also worshipped at Qarnā, capital of the kingdom of Ma’īn:

’mḍr’ bn Y’ws⁽²⁾’l d-’hr w-d-S’hr⁽³⁾ qyn Wd w-’ttr d-⁽⁴⁾Qbd w-Nkrḥ w-’l⁽⁵⁾’lt M’n w-’lyf⁽⁶⁾ w-Wqh’l rs²w S’hr⁽⁷⁾ s³l’ ’ttr d-Qbd w-⁽⁸⁾s’ḥdt m’mr S’hr b-⁽⁹⁾’lt M’n w-b⁽¹⁰⁾lyf’ w-Wqh’l

“‘Ammīdhara’ son of Ya’was|’īl dhu-’hr and dhu-Saḥar, | minister of Wadd, of ‘Athtar dhu-|Qabḍ, of Nakrah, of the | gods of Ma’īn, of Īlīyafa’ and | of Waqah’īl, priest of Saḥar, | has dedicated to ‘Athtar dhu-Qabḍ and | has inaugurated Saḥar’s chapel; with | the gods of Ma’īn and with | Īlīyafa’ and Waqah’īl” (Ma’īn 101).

That *S’hr* was a name for a god is reflected in the fact that he is worshipped by a priest (*rs²w*).

Interpretation of this data is awkward. A clan called Saḥar exists at Qarnā (*ʿhl Sʿhr*). Its members were in charge of a cult of a god called Saḥar. With the lists of foreign women it is certain that *ʿhl Sʿhr* is a clan, not a religious brotherhood. Yet at Maʿrib, the capital of Sabaʿ, it is clear that a lineage named dhu-Saḥar (*ḡ-Sʿhr*) worshiped specifically and maybe exclusively the divine couple ʿAthtar and Saḥar (*ʿttr w-Sʿhr*). It is crucial to add here that Saḥar is probably not a deified ancestor.²⁰ It is equally evident this word is not attested as a personal name, either in ancient South Arabia or in the Arab-Islamic Tradition, but is also a god in the Near East.²¹ These clues enable one to posit the hypothesis that the *ʿhl Sʿhr* probably considered themselves the descendants of the god Saḥar. The *ʿhl Sʿhr* are therefore certainly not a tribal “confederation”.

Another Minaean clan, the *ʿhl Nsʿwr* (Maʿīn 93 B / 45; 93C / 46; 95 / 2; 97 / 3), bear a deity’s name, but this is less significant in that the god *Nsʿwr*, mentioned in Sabaʿ, does not appear at Maʿīn.

b. The *ʿhl ʿttr* of the Yemeni Jawf

Three inscriptions of the Jawf which mention the *ʿhl ʿttr* were put aside in the examination of the instances of *ʿhl* in Sabaʿic. A fourth inscription, written in Maʿīnic, ought to be added to complete the list of references to *ʿhl ʿttr*. It should be recalled that ʿAthtar is the supreme god of South Arabia’s pantheons (if one considers the fact that this god is mentioned before others).

These four inscriptions stand out if one looks at standard texts in the Maʿīnic language: *ʿhl* is never written together with a personal name. They also deserve special treatment because the question of whether *ʿhl* is a noun or a plural relative pronoun in Maʿīnic (*ḡ-*, pl. *ʿhl*) is still pending. In the past, I posited that *ʿhl* was a substantive form which meant “descendancy” because *ḡ-ʿttr* does not occur.²² This seems to have been a mistake.

In effect, it appears that *ʿhl* can alternate with *ʿlt* which is clearly a plural relative pronoun (see below Haram 13). It is also obvious that *ʿhl*, in the expression “the *ʿhl* commune of *ʿhl ʿAthtar*” (*s²bⁿ ʿhl ʿttr*) cannot signify “clan”.

20. As a likely example of a deified ancestor, see *ʿwhn / ʿhn* in YM 24 905 (*ʿttryhn bhn ʿwhn nt#ḡr k-ʿhn b-hn ...*, “The *ʿttryhn*, sons of *ʿwhn*, have done penance towards *ʿhn* because of ...”) and YM 24 942 + 24 943 [...(*s³l*)⁽²⁾] *ʿttr Mtbqbd ʿl ʿwhn w-(ʿwh)n msʿlm w-mʿfmy ḡhb*”, “... have dedicated to *ʿttr Mtbqbd* the god of *ʿwhn* and to *ʿwhn* the offering table and two bronze braziers”].

21. Bron 1999: 438.

22. Robin 1992: 54.

— Kamna 26

This inscription, dating to the 6th century BCE, it originates from Kaminahū (present-day Kamna), a city-state and kingdom of the Yemeni Jawf. It is also written in the Maʿīnic language. The interpretation of this inscription is fraught with difficulty, particularly because the third to the seventh line and the beginning of the eighth line were intentionally erased.

The text begins with the following line:

ʾhl ʾttr s³lʾ ʾttr⁽²⁾r d-Rḥbh ywm ṣdq / ⁽³⁾ b-mḥd ʾttr w-Mdhww ⁽⁴⁾ [...,

which editors translate as:

“The Community of ʾAthtar has dedicated to ʾAthtar | dhū-Raḥbah, when they claimed proprietorial rights(?) | over the domain of ʾAthtar and Madahwū”.

It is quite unlikely that those who made an offering to a god would have claimed to hold rights over this god’s landed property. Instead, it should be understood in the following manner:

“The ʾhl ʾAthtar have offered to ʾAthtar dhu-Rḥbh the day when they obtained satisfaction in ʾAthtar and Madahwū’s sentence.”

While this article is not the opportunity to examine the text’s remaining lines which deal with juridical litigation, it is important to remember that it mentions the “decree of | Nabaʿalī Dhariḥān son of Yashhormalik¹⁴ and those of the Twelve” (*b-ftḥ Nb¹³tʾly Drḥⁿ bn Ys²hr⁽¹⁴⁾mlk w-ʾhl tny ʾs²rⁿ*). Nabaʿalī was the local ruler.

In *ʾhl tny ʾs²rⁿ*, *ʾhl* is certainly the relative pronoun *d-* in the plural. It is sufficient to compare Kamna 26 with two parallel inscriptions. In the Sabaeen city of Ṣirwāḥ, Gl 1533 / 2 mentions the existence of a council of six ministers, (“those of the six ministers of Ṣirwāḥ”), by using *ʾly* which is the plural relative pronoun in Sabaʿic: *ʾly sʾt ʾqyn Ṣrwḥ*.

Moreover, the same wording, with the relative pronoun in the singular, exists in a Minaean text from Yathill (present-day Barāqish). It is possible to deduce this information because only one person is concerned, and not all of the council’s members:

Sʾd(ʾl) bn W(d)d(ʾ)l d-tny ʾs²r w-d-q(hl)t ʾttr d-Y(h)r[q ...,

“Saʾdʾil son of Wadadʾil, he of the Twelve and he of the brotherhood of ʾAthtar dhu-Yuhāri[q ...” (B-Mur 267 = M 242 = RES 3017 bis / 1).

Like the text from Kamna, this inscription, which commemorates the construction of a section of the enclosure wall around the 3rd century BCE, mentions two institutions: the

council of the Twelve²³ and a kind of religious brotherhood called *qhlt*,²⁴ which was devoted to the cult of the god ‘Athtar dhu-Yuhāriq. It is likely that the neighbouring and contemporary cities of Kaminahū and Yathill had comparable institutions. The *qhlt* ‘*ttr d-Yhrq* of Yathill could be the equivalent of the ‘*hl* ‘*ttr* from Kaminahū. In this instance, the ‘*hl* ‘*ttr* might have also been a brotherhood.

A key difference between Yathill and Kaminahū must be mentioned within the context of this discussion. At Yathill, the term ‘*ttr d-Yhrq* is a characterization of ‘Athtar found only in the local pantheon and is emblematic of the city, while at Kaminahū, by contrast, ‘Athtar is not distinguished in any way specific to the city-state kingdom.

Although it is unclear whether that ‘*hl* ‘*ttr* of Kaminahū was a religious brotherhood it is difficult to imagine that it might have been a tribal “confederation”. It is arguably a hard task to find other members of this “confederation” within the context of the Yemeni Jawf, whose first millennium BC history is relatively well-known thanks to numerous inscriptions.

It should be noted that the date of Kamna’s text is very close to that of the Assyrian sources under examination.

— *Haram 10*

Inscription Haram 10 which, according to its content, is from the last centuries before the Christian era, comes from the temple of Arathat^{um} of Haram, a city of the Yemeni Jawf close to Kaminahū and to Yathill. The inscription is written in the Saba’ic language where the regular plural *d-* is not ‘*hl*,²⁵ and it commemorates a public confession to the god Ḥalfān whose authors are the ‘*hl* Amīr^{um} and the ‘*hl* ‘Athtar, [[’]]*hl-’mr^m w-’hl* ‘*ttr*.

It is known that Amīr^{um} is an important Arab tribe and it was recently established that the Amīr^{um} was identified as the tribe from the great oasis of Nagrān.²⁶ Consequently it was suggested that the ‘*hl* ‘*mr^m* meant the clan, the tribe, or even any related term called Amīr^{um}. However, this is probably a mistake because “the Amīr^{um} clan” would have been called ‘*hlⁿ* ‘*mr^m* with ‘*hl* provided with a determinative, as is generally the rule in South Arabian. By contrast, if the ‘*hl* is analysed as the plural of *d-*, no difficulty should exist as ‘*hl* ‘*mr^m* is the plural of *d-’mr^m*, dhu-Amīr^{um}. The latter expression designates the ruler of Amīr^{um}, as clearly shown by Ja 832, where “dhu-Amīr^{um}” is described as “brother” (meaning “ally”) of the Sabaean kings:

23. At Haram, it would appear that the council had only eight members: according to the inscription Haram 8, the city is represented in a public confession by “the Eight and the Elders | from the country and the territory of the city of Haram^{um}”, *tmytⁿ w-’b’l² s’yr w-mfrⁿ hgrⁿ Hrmⁿ*.

24. The *qhlt* ‘*ttr d-Yhrq* is known in ten other texts from Barāqish, plus an eleventh one in which it is simply called *qhltⁿ*, “the brotherhood”.

25. It appears however under very diverse forms: ‘*hl*, ‘*lt*, ‘*l*, ‘*lw* / ‘*ly*, ‘*lh* ou ‘*lht* (Stein 2003: 147-150).

26. Robin 2010 c: 47.

[...]hwtr *d-ʿmr^m ʿh* Ydʿʿl w-Ytʿʿmr,

“[...]hūwatar dhu-Amīr^{um} brother of Yadaʿʿīl and of Yathaʿʿamar”.

The *ʿhl ʿmr^m* would consequently point to the royal family of Nagrān, just as the banū dhu-Raydān would refer to that of Ḥimyar.

If, when it is placed before *ʿmr^m*, *ʿhl* is the plural relative pronoun, it is likely that the same can be said of it when placed in front of *ʿttr*. The inscription in the following paragraph, Haram 13, appears to demonstrate this.

— *Haram 13*

The inscription, of the same date and provenance as Haram 10, regulates the pilgrimage made to the god Ḥalfān. Interestingly enough, it provides in particular a penalty, i.e. the “payment as fine ten (coins) *hyʿly* to those of ʿAthtar and the priests”, (*l*)-y(z)*lʿn l-ʿlt ʿttr*⁽⁴⁾ w-ʿrs²w^w ʿs²r *hyʿly^m*. The term *ʿhl* is here replaced by the relative pronoun *ʿlt*, another masculine plural of *d-*, since nothing in the text suggests that *ʿlt* could be feminine. One can presume that the variety of dialects spoken in the Yemeni Jawf would have made those involved in the text’s carving hesitate between two forms of the relative pronoun, either the one in Maʿīnic or its Amīric equivalent.

— *Haram 18*

The inscription, which is also identical in date and origin to Haram 10, commemorates the rehabilitation of the Arathat^{um} temple by *ʿhl ʿttr* ... (l. 1).

— *Haram 38*

The inscription, tentatively dated to the first century BCE, commemorates the construction and roofing of a temple dedicated to ʿAthtar dhu-Dhibān (*mhy⁽²⁾m ʿttr d-Dbⁿ*). Since the inscription originates from Haram the temple was in all likelihood at that location.

The text’s authors are “the commune of *ʿhl ʿAthtar*”, *s²bⁿ ʿhl ʿttr* (l.1). In their undertakings the text’s authors are assisted by a list of personalities:

w-⁽¹³⁾hrd²-h^mw s²fr W⁽¹⁴⁾hb^m bn Ms¹ʿd^m m⁽¹⁵⁾lk Kmnhw w-Nhy⁽¹⁶⁾(t) bn Mlk^m w-Gr(h)⁽¹⁷⁾ (^m bn Whbʿl w-ʿ)....,

“And have helped them the men of Wa | hb^{um} son of Masʿūd^{um}, ki | ng of Kaminahū, of Nihāya | t son of Mālik^{um}, of Garrāḥ | ^{um} son of Wahbʿīl, of ..[...”

In the formulation *s²bⁿ ʿhl ʿttr*, the term *ʿhl* can hardly be interpreted as the substantive “clan” because *s²b* is an established means of designating a group. This is another clue leading to the analysis of *ʿhl* as a plural of *d-*.

Finally, it can be argued that the *'hl 'ttr* can be identified with the *'ttryhn* attested in a particularly ancient text (YM 24 905), which is attributed to either the end of the 8th or the beginning of the 7th century BCE:

'ttryhn bhn 'whn nt#ḏr k-'hn ...,

“The *'ttryhn*, sons of *'whn*, who have done penance towards *'hn* ...”

bhn is the plural of *bn*, “son.” The consequence is that the first word, *'ttryhn*, refers to a group. This could be an adjective formed on *'ttr* with the ending of the suffixed plural *-hn*: “the followers of *'Athtar*.”

Between the two possible translations of *'hl 'ttr* meaning “the descendancy of *'Athtar*” and “those of *'Athtar*”, the latter should be favoured.

The *'hl 'ttr* are known at Kaminahū, at Haram and with a slightly different title at Yathill. They appear to constitute a religious brotherhood which, whilst it spread beyond the borders of city-states and kingdoms, was confined to the Yemeni Jawf. This observation can be linked to the distribution of temples decorated with the motif named the “daughters of ʾĪl” concentrated within the Jawf region.²⁷

However, if the *'hl 'ttr* were truly a regional religious brotherhood which dedicated its efforts to the celebration of the god *'Athtar*, it is surprising its members worshipped in a temple consecrated to Ḥalfān (Haram 10, 13 and 18). Nevertheless one can suggest that Ḥalfān, whose name could mean “the Covenant” or “the Ally”,²⁸ is really a local cultic appellation of *'Athtar*.

c. Quraysh, *ahl Allāh*

As an appendix to epigraphic attestations, mention must be made of an interesting use of *ahl* in Arabic. If one follows the Arab-Islamic Tradition, the Quraysh, the tribe of Makka from which Muḥammad b *'Abd Allāh* originated, were called “the people of God” (*ahl Allāh*) after having resisted Abrahā’s assault.²⁹

In fact the term *ahl* has comparable meanings in Arabic to those already discussed in Saba’ic, meaning that of “people” or “family”. One example whereby the term means “people” occurs in the following quotation from al-Ṭabarī:

wa-lammā balagha ahl Najrān wafāt Rasūl Allāh ṣl'm wa-hum yawma'idhⁱⁿ arba'ūn alf muqātil min banī 'l-Af'à al-umma al-latī kānū bi-hā qabl banī 'l-Ḥārith...

“When [news of] the death of the Prophet of God reached the people of Najrān, amongst

27. Antonini 2004.

28. The traditional vocalization Ḥalfān is arbitrary. We have kept it for reasons of commodity. For the meaning of this theonym, see Arabic *hilf*, “alliance”, or *halīf*, “ally”.

29. Kister 1972: 75.

whom were 40,000 warriors of the banū ʿl-Afʿà, the community they belonged to before the banū al-Ḥārith....”³⁰

The “people” could in fact just be the “family” which is made up of the next of kin as mentioned in the Qurʿan (XXXIII, “The Coalitions”, *al-Aḥzāb*, 33):

Inna-mā yurīdu ʿllāh li-yudhhiba ʿan-kum al-rijsa ahla ʿl-Bayt wa-yuṭahhira-kum taḥhīr^{an},

Allāh ʿs wish is but to remove uncleanness far from you, o Folk of the Household [of the Prophet], and cleanse you with a thorough cleansing.”

For commentators, in this sura, the question was whether the expression only concerned the wives of Muḥammad, as clearly established by context, or if they included his daughter Fāṭima and his son-in-law ʿAlī b. Abī Ṭālib, as put forward by the Shīʿa. A Shīʿa tradition recalls how Muḥammad once covered ʿAlī, Fāṭima and their children with his mantle declaring “Here are the people of my house.”³¹

The expression *ahl Allāh*, “people of God”, cannot designate a “confederation” around the Quraysh. It emphasizes that the Quraysh were distinguished by their great holiness and that they maintained a specific link to God, which in turn gave them privileged protection.

30. al-Ṭabarī, *Taʿrīkh* I: 1987.

31. Lammens 1912: 97-99.

4. Arabic substantivated forms $\text{'}l$ (Arabic $\bar{a}l$) and $\text{'}hl$ (Arabic ahl): an incidental remark on Semitic comparatism

As in Ṣafā'itic, the Arabic language has two words, ahl and $\bar{a}l$. Kazimirski's *Dictionnaire arabe-français*, which is based on Arab lexicography, provides the following meanings:

— ahl : “family, house, including servants (compare $\bar{a}l$, which is meant to mean the family as race, house)”.

— $\bar{a}l$: under the root $\text{'}WL$, “family; race, dynasty”.

The *Dictionnaire des racines sémitiques*³² deals with these two terms by deriving them from the root $\text{'}HL$: 1. $\text{'}uhl$ - “tent”: Akkadian $\bar{a}l$ - “town, city”; Ugaritic $\text{'}ahl$ “tent, tabernacle”...; Syriac $yahlā$ “family”; Arabic $\text{'}ahl$ -, Ṣafā'itic $\text{'}l$, Dedānitic $\text{'}hl$, “Thamudic” $\text{'}l$, $\text{'}hl$, South Arabian $\text{'}hl$ “family, clan”...; akkadian $a'l$ “beduin tribe (?)”. Yet curiously, though it does indeed mention $\text{'}l$ and $\text{'}hl$ for languages attested only in epigraphy, it only mentions ahl (and not $\bar{a}l$) in Arabic.³³

The classical Arabic lexicon frequently contains doublets, i.e. words deriving from a same original primary root. These doublets reflect the several vocalic and consonantic variations, as in the case of $kusūf$, “solar eclipse” and $khusūf$ “lunar eclipse”. These variations indicate dialect forms integrated into classical Arabic either due to their presence in ancient poetry or to introduce useful slight semantic differences.

It is tempting to posit the notion that Arabic $\text{'}ahl$ and $\bar{a}l$ derive from an identical noun in Proto-Arabic. The latter would have evolved into two forms according to regions, each recorded in classical language. But this is evidently not the case. Against this likelihood, we have given the joint presence of $\text{'}hl$ and $\text{'}l$ in Ṣafā'itic, that both roots were used in this language attested before Arabic, spoken by a population with a relatively narrow territory. Two distinct words must have been in existence in Semitic languages from a very early phase, despite the fact that only one is attested in each tongue, particularly in Southern Arabia.

32. Cohen 1970.

33. The Arabic substantive form $\bar{a}l$ is not mentioned under the entries $\text{'}L$, $\text{'}WL$ ou $\text{'}YL$.

5. “The offspring of Almaqah” and “the offspring of ‘Amm” in Southern Arabia

A final approach should be followed, i.e. the search for the meaning of expressions whereby one finds a term with a sense similar to that of *’l* and *’hl* and determined by a deity’s name.

a. The “offspring of Almaqah”

The expression “offspring of Almaqah”, implying the descendancy of the Sabaeen pantheon’s paramount god, occurs in three Sabaeen inscriptions which are of very early date, i.e. 720-650 BCE:

— *Şirwāḥ1 = DAI Şirwāḥ 2005-50 / 1*

*’ln hftn Yt[’]mr Wtr bn Ykrbmlk mkrb S’b’ l-’lmqh w-l S’b’ b-mlk-hw ywm dbḥ ‘itr tny^m
w-nyl Hwbs’ w-wfr Ys’rn w-’byn w-h’db ’lmqh w-S’b’ w-Mryb ḍr^m w-ms²ⁿ w-nqm Ykrbmlk
w-S’b’ w-’dnt w-hṭb < > S’r^m l-’lmqh w-l S’b’ w-h’tw wld ’lmqh bn kl gwl^m w-ws^{3f} ḥw-hw Fys²ⁿ
s^{3’}-hw ...,*

“This is what has been taken over by Yatha[’]amar Watār son of Yakrubmalik mukarrib of Saba’ for Almaqah and for Saba’ during his reign, when he sacrificed to ‘Athtar for the second time(?); celebrated the *nyl* ritual in honour of Hawbas; extended the irrigated perimeter at Yasrān and at Abyan; summoned Almaqah, Saba’ and Maryab for the hostilities and avenged Yakrubmalik, Saba’ and Adhanat; attributed *S’r^m* to Almaqah and to Saba’; welcomed among **the offspring of Almaqah** (people) of each conquered land; considerably increased his Fayshān serfs...”

— *Şirwāḥ 2 A = RES 3945 + 3946 / 6*

.....(l) ... (h) *byt-hw Ms'wr w-h'tw wld 'lmqh w-gw^m ḥr-hw w-'bd-hw bn 'bd' d-'ws^m w-'hgr-hw w-ḥtb l-'lmqh w-l S'ib' S'ir^m w-'bd'-hmw w-Ḥmdⁿ w-'bd'-hw w-gn' 'hgr S'ir^m w-šyr 'dḥb-hw w-hbkl-hw [S'ib' ...*

“... [18 letters] ... his palace Miswar; he welcomed among the **offspring of Almaqah** and the allies— his free men and serfs — (people) of diverse provinces of Awsān and its cities; attributed to Almaqah and to Saba' S'ir^m and their provinces, and Ḥmdⁿ and its provinces; provided with an enclosure wall the cities of S'ir^m; had their flooded lands farmed and established Saba' there...”.

— *CIH 363/3*

[... w-h'tw w]ld 'lmqh bn Ngrⁿ d-[...]

“[... and he welcomed among the **off]spring of Almaqah** (people) of Nagrān .. [...”

In the two previous texts, the expression *wld 'lmqh* is introduced by the verb *h'tw* in a construction with *bn* followed by a place name. One might argue that this is also the case here. But it remains impossible to conclude if the campaign against Nagrān, which is briefly described here, was the same as the one described in detail in *Şirwāḥ 2 A = RES 3945 + 3946 / 19-20*.

The offspring of Almaqah are referred to three times with regards to both the conquered and the annexed territories. However, they are not mentioned in relation to numerous other conquests. Yet the three passages no doubt commemorate an exceptional procedure. The issue referred to in this example considers the question of the “naturalization” — more precisely the welcoming of foreign populations within a community of worshippers of Almaqah.

It ought to be added that the offspring of Almaqah are an entity different from Saba' which, together with the god Almaqah, is the recipient of all conquered and acquired territories. It is likely that it is a tribal group which is larger than Saba'.

The inscription *Şirwāḥ 2* not only involves the “offspring of Almaqah”, but also to *gw^m*. The meaning of this term, which appears in various contexts, is just as problematic. It is usually found in a formula which is repeated without any significant modification in many texts and which I have labelled “union pact”:

... *ywm ḥwšt kl gw^m d-'l^m w-s²ym^m w-d-ḥbl^m w-ḥmr^m,*

“... when he formed a total union, with a god and patron, a bond and an alliance”

The noun *gw* is translated by the *Dictionnaire sabéen* as a “group forming a community”. This interpretation was adopted by most scholars, with some slight variations in detail.³⁴ This interpretation also agrees with the meaning of the root GWY in Akkadian, Hebrew and Phoenico-Punic meaning “people; community, guild”.³⁵ In summary, it is evidently a community established on a contractual basis, founded on faith in one or several deities and on their collective celebration and worship. Logically this group should form a tribal group which included the offspring of Almaqah but was somewhat larger.

b. The “offspring of ‘Amm”

The inscriptions of the kingdom of Qatabān have yielded the expression “offspring of ‘Amm”; it parallels the Sabaeen “offspring of Almaqah”. As with Almaqah in Saba’, ‘Amm is the main god of Qatabān’s pantheon. The expression “offspring of ‘Amm” was used extensively, because it held different meanings until the Sabaeo-Raydānite period.³⁶ Its initial meaning is the only one relevant here. Its most ancient attestation once more occurs in the new inscription from Širwāḥ:

— *Širwāḥ1 = DAI Širwāḥ 2005-50 /1-4*

... w-mḥd⁽²⁾ **Wld** ‘m b-bt’ ln Yhnṭl ‘d Tmn’ w-tbr ’hl Ww’l w-Ynhgw w-kl ’hgr **wld** ‘m w-Tmn’-m ḥḥrm bn mtbr^m w-mwf^m w-gbd kl fr’ Qtbⁿ w-qt^l Yww^m mlk Tmn’ w-’mrt’ mlk Ynhgw w-’mkrb mlk Rdmⁿ w-Ḥms^{3m} mlk Yḥr w-Kbrhmw mlk Yhnṭl w-’byf’ mlk d-’Ws’r w-qt^l Qtbⁿ w-Rdmⁿ w-**wld** ‘m s²ltt’ l^fm .|||. w-hb’l⁽³⁾ t’lm l-’lmqh w-l S’b’ w-nqm ’ws^{tn} w-mlk-hw **wld** ‘m w-ḥtb bḏ’ Blw w-’ws^{tn} d-nmy Qtbⁿ w-hmlk S’mhwt^r d-’mr Tmn’ d-’ḥw ’lmqh w-S’b’ w-hmlk Yḥm Rdmⁿ d-’ḥw ’lmqh w-S’b’ w-b-m ’ḥd mns^{2m} mḥd w-ḥfṭn kl **wld** ‘m w-fr-hw w-’dm-hw w-mḥd Kmnhw w-s³wk w-gbd w-nqm Ns²ⁿ w-ḥtb bḏ’ ’rnyd’ w-Ns²ⁿ bn Kmnhw w-hb’l Mnhyt^m/⁽⁴⁾ w-bḏ’-h l-’lmqh w-l S’b’ ...

“... ; and he smote the **offspring of ‘Amm** in its entirety(?)³⁷ from Yhnṭl until Tamna’; crushed the Ww’l people, those of Ynhgw and those of all the cities of the **offspring of ‘Amm**; as for Tamna’, he obliterated it with destruction and fire; he ravaged all the harvests of Qatabān; slew Yww^m king of Tamna’, ‘Ammīrata’ king of Ynhgw, ‘Ammīkarib, king of Radmān, Ḥms^{3m} king of Yḥr, Kabīrhumū king of Yhnṭl and Abīyafa’ king of dhu-Wsr, and

34. Walter W. Müller (1991: 544) differs, understanding *gw* as the lower course of the Adhanat river, below Maryab.

35. Cohen 1970, s. v.

36. Bāfaqīh1990: 195 and following pages.

37. See Arabic *abta*’, “in its entirety”.

slew in Qatabān, Radmān and the **offspring of ‘Amm** three thousand (people) —3—; seized | *T’lm* for Almaqah and for Saba’; punished Awsān and its king, **Offspring of ‘Amm**; gave the territory of *Blw* and Awsān dhu-*Nmy* to Qatabān; made Sumhūwatār dhu-’*mr* the king of Tamna’ who is Almaqah and Saba’’s ally; made *Yhm*, who is the ally of Almaqah and of Saba’, king of Radmān; and during one single war, he smote and destroyed by fire all the **offspring of ‘Amm**, their nobles and clients; he smote Kaminahū and *S³wk*; he ravaged and punished Nashshān and re-established the territory of ’*rnyd*’ and Nashshān taken from Kaminahū; seized *Mnhyt^m* | and its territory for Almaqah and for Saba’ ...”

It should be clear from the evidence presented above that “the offspring of ‘Amm” is a large tribal entity which appears to have included Qatabān.

Conclusion

It is awkward to posit a general interpretation of this scattered and heterogeneous data, itself often difficult to grasp.

It appears that three categories can be distinguished. Firstly, it is clear that there were either vast or smaller tribal entities that defined themselves as the descendants of a deity. It is moreover likely that these tribal entities include all those who worship this deity. Examples include the offspring of Almaqah and of ‘Amm, or of the clan Saḥr / dhu-Saḥr.

Other tribal entities defined themselves by the specific link which related them to a deity. This deity was their protector and they saw themselves as the best worshippers of this deity. I would place in this group the term *ahl Allāh*.

The *’hl ‘Athtar* appears to reflect a different reality. The term would refer to a religious brotherhood which united individuals belonging to various tribes. One might compare them to the *ḥums* of the temple of Makka.³⁸

If one returns to the *a’lu ša Atarsamain* of Dūma, each of these interpretations seems possible due to the extreme terseness of Akkadian texts. The fact that must be taken into account is that, besides *a’lu ša Atarsamain*, the *a’lu ša Abiate’* also existed. The *a’lu* are characterized as much by the link with a deity as by the relationship with a ruler. This observation makes me strongly favour the interpretation of “worshippers of Atarsamain” or of “followers of Abiate”. This is however nothing more than an estimation to be confirmed by more substantial evidence, i.e. more explicit texts.

It would be obviously of relevance to determine if *a’lu ša Atarsamain* gathered *Atarsamain*’s worshippers from the oasis of Adummatu only, or from within all of the tribe of Qedar (which apparently included Adummatu) or even from within a larger group such as the “Arabs” of Assyrian sources.

³⁸. Fabietti 1988; Robin 2010 a: 236-237.

Appendix: Qedar in the inscriptions of Southern Arabia

The name Adummatu is not found in Southern Arabia. However, the name Qedar appears in three paragraphs from the lists of foreign women who were “naturalized” at Qarnā (present-day Ma‘īn)³⁹. These lists were carved on pillars inside the city, always following the same structure:

— a man’s identity which consists of his name, his father’s name, that of his lineage (introduced by *d*) and finally his clan’s name,

— the verbs *s’krb w-ḥs³r*, which mean “has brought back and paid the price”, even if their precise sense remains unclear.

— and the name of a woman and her origin, which is always from outside of the Minaean commercial alliance.

These paragraphs go back to as early as the Persian or the beginning of the Hellenistic period. Unfortunately, it is often difficult to provide a more precise date for a particular paragraph, because good illustrations are wanting.⁴⁰

1. Ma‘īn 93 B / 35

Hnbṣ bn Hyw d-B⁽³³⁾z’ d-’hl ‘md s’kr⁽³⁴⁾b w-ḥs³r ‘hlhy bn ⁽³⁵⁾Qdr,

“Ḥanbaṣ son of Hayū dhu-B|z’ of the lineage of ‘md has brought | back and paid the price for Akhīlahà of | Qedar”

2. Ma‘īn 93 C / 38

Ḥm’ bn Ḥmy d-Ḥmy ⁽³⁷⁾d-’hl ‘šrm s’krb ⁽³⁸⁾w-ḥs³r ‘rbyt bn Qdr,

“Ḥm’ son of Ḥmy dhu-Ḥmy | of the clan of ‘šrm has brought | back and paid the price for ‘Arabiyyat of Qedar”

3. Ma‘īn 93 C / 51

Y’ws^{1’} ⁽⁴⁹⁾l bn Frh d-Rmḏⁿ ⁽⁵⁰⁾d-’hl Tmd s’krb w-ḥs³(⁵¹)r Ġny bn Qdr,

“Ya’was’|īl son of Frh dhu-Ramaḏān | of the clan of Tmd has brought back and paid the price for Ghanī of Qedar”

39. Ma‘īn 93, 94, 95, 96, 97, 98 ; Sa‘īd 2009.

40. The squeezes made for Eduard Glaser are preserved in Vienna. Consequently it would be all the more desirable to publish their photographs, since the Qarnā pillars appear to have been destroyed. I established during a visit to the site of Ma‘īn (ancient Qarnā) in 2004 the existence of bases of two new pillars within the enclosure wall. It is likely that these lists were at this location, and not in the temple outside the city walls, as had previously been suggested.

The three women originating from Qedar, *ʿhlly*, *ʿrbyt* and *Ġny*, possess a name more Arabian than Aramaean, based on a distinction maintained between *ḥ* and *ḥ̣*, the presence of a *ghayn* and ‘Arabiyyat’s name itself.⁴¹

The lists yield 24 different origins, of which only 16 have been identified. These are:

— In Southern Arabia

1. Ḥaḍramawt (number of occurrences: 1)
2. Qatabān (2)
3. Awsān (1)
4. Samʿī (1)

— In Eastern Arabia

5. Hagar (1)

— In North-Western Arabia

6. *Yathrib* (2)
7. Dedān (9)
8. Liḥyān (mentioned immediately after Dedān) (1)
9. *Qurayān* (mediaeval Arabic [wādī] ʿl-Qurà) (1)
10. Qedar (3)

— In the Levant

11. *Gaza* (Ghazzat) (30)
12. Moab (Mōʿāb) (1)
13. ʿAmmōn (1)
14. Sidon (Ṣaydān) (1)

— In Egypt

15. Miṣr (8)

— In Asia Minor

16. Yawān^{um} (Ionians) (1)

⁴¹. For an attempt to interpret historically these three mentions of Qedar, one should refer to Lemaire 1996: 41-44.

— Unknown

17. *Tmlh* (5) (Assyrian ^m*Ta-am-ra-a-nu* ? ⁴²)
18. *Wg*³ (2)
19. *Hs²m* (1)
20. *ḏ-³tmrt* / *ḏ³t-Mrt* (Assyrian *māt Martu^{ki}*, Amurru ?) ⁴³
21. *ʿyn¹l* (1) ⁴⁴
22. The Arab tribe of *Yrf^o* (Assyrian ^m*Ya-ra-pa* ⁴⁵) (1)
23. *Nthy* (1)
24. *Ymyt* (1)

Names in Roman letters: communes, tribes, peoples. Names vocalized in Italic characters: place-names. Figures between brackets: the total number of occurrences in the lists.

In these lists, no mention is ever made of Saba^ʿ. The possible explication is no doubt that Saba^ʿ, the tutelary overlord, was not considered foreign.

Great oases are missing. Nagrān and Qaryat^{um} in Southern Arabia are not recorded. It is easy to understand the reason for this omission, since these oases clearly belonged to the Minaean commercial alliance, something shown by the inscriptions which have been found there. Consequently the women originating from both places were not foreign.

In North-Western Arabia it is noteworthy that Adummatu, Taymā^ʿ and Khaybar are absent. It is highly unlikely that these oases were not visited by Minaean traders and it must be presumed that they are hidden behind either an identified or unidentified name for an ethnic group.

Ethnonyms (communes, tribes, and peoples) largely dominate in terms of the origins provided by the lists. Indeed, amongst the place-names, Hagar and Dédān are examples which appear to be simultaneously both a location and a people. It is known that rulers bore the title “king of Hagar” or “king of Dédān”, yet Arabian royal titles invariably refer to populations, not to territories.

⁴². Eph^ʿal 1982: 98.

⁴³. In the al-Sawdā^ʿ 75 fragment copied by Halévy, one reads ... */mlk Ns²ⁿ w-ḏ-³tmr/*... However it is unlikely that we are dealing with the same place-name.

⁴⁴. al-Hamdānī, *Jklīl* 10: 65, mentions a ʿAynīl b. Aṣḥā b. Dāfī^ʿ, brother of Yām, with this commentary: “clan which has entered into ʿAns b. Madhīj”. The mention of Yām and ʿAns leads to the region of Najrān. But it is possible that this is a result of simple homonymy.

⁴⁵. Eph^ʿal 1982: 98-99 et n. 332.

Furthermore, these two categories are not always clearly differentiated by Southern Arabians. Indeed, it is standard practice, in instances when desert fringe populations are concerned, to use the same proper noun for both the commune (*s²'b*) and the city (*hgr*). This can be observed for Şirwāḥ, Haram, Kaminahū, Nashshān or Najrān.

Adummatu's omission from the Qarnā lists can probably be explained by the fact that Adummatu is just a place-name. Minaean scribes must have preferred to use an ethnic denomination. The most likely candidate, without any possible discussion, is Qedar. Indeed, this is an additional clue that allows one to suggest that Adummatu depended on Qedar, and was even probably its central settlement.

Sigla of the inscriptions cited

For inscriptions published before 2000, see Kitchen 2000.

For Qatabanic inscriptions, see Avanzini 2004.

All Qatabanic, Ḥaḍramawtic and Maʿīnic inscriptions are also found on the Web site

Corpus of South Arabian Inscriptions : <http://csai.humnet.unipi.it/csai/html/index.html>

Maʿīnic lists of foreign women : Maʿīn 93, 94, 95, 96, 97, 98 (Bron 1998) ; Saʿīd 2009.

Sima 28 = Cornwall 1 : Sima 2002: 167-200.

YM 24 905 and 24 942 + 24 943 : Arbach & Audouin 2007: 98 and 68-69.

Bny, *’l* and *’hl* in Nabataean and Safaitic

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The present contribution is a brief synthesis on ways of expressing affiliation to a social group (a tribe, clan, or family) in both Nabataean and Safaitic.¹ It begins with an examination of the term *bny* in Nabataean, a term whose meaning is at times ambiguous.

In order to determine if *bny* means “the sons/children of”, in the literal and restrictive sense of the term, or “tribe/clan”, we have examined all the attestations of *bny* in Nabataean inscriptions.² When analysed, these data show that, of the approximately fifty inscriptions in which it occurs, in forty-one the word is preceded by the name of the sons or children who are described as PN w PN *bny* PN. In four inscriptions, however, the names of the children are not mentioned explicitly, but the fact that we are dealing with the children of a named individual is understood.³ On the other hand, in two other inscriptions, the names of the children are not mentioned explicitly and the context is somewhat ambiguous.

The first text is JSNab 2, carved between the two main *loculi* on the back wall of the funerary chamber, in tomb IGN 9 at Ḥegrā, which begins: *’lh try gwhy’ dy ḥwšbw br npyw w’bdlg’ wḥbw bnwhy bny šhm*, “these are the two *loculi* of Ḥwšbw son of Npyw and [of] ‘bdlg’ and Ḥbw, his sons, *bny šhm*”. The inscription therefore clearly states that the two *loculi* belong to the tomb owner, Ḥwšbw, also named in the inscription on the tomb’s façade (JSNab 1), and to his sons, ‘bdlg’ and Ḥbw, who are not mentioned in the façade inscription.

¹. Part of the information contained here is to be found in an article submitted ten years ago to the editors of the Fawzi Zayadine Festschrift (D.F. Graf and S.G. Schmid). However, this Festschrift was never published, we therefore consider it our right to publish the material here.

². This work was done long ago for Palmyrene, see Gawlikowski 1973: 31-33.

³. In the Nabataean inscription in the cave called Dayr al-Kahf in northern Jordan (Macdonald 2006: 285-291), where the *bny* of the Nabataean text are named individually in Safaitic texts on the sarcophagi; in JSNab 9, at Ḥegrā, where the *bny w’lt* of line 2 are, without any possible doubt, the “sons” of the daughter of the owner of the tomb on which the inscription is carved; in JSNab 4, also at Ḥegra, where the *bny šbytw dy ’P*, “the sons of Šbytw mentioned above”, who are mentioned in line 5, refer to the children of Šbytw in line 2: *dnh kpr’ dy ’bd šbytw ... lnpšh wyldh*, “This is the tomb made by Šbytw ... for himself and [for] his children”; in an inscription from Petra, MP 542 (RÉS 1427.3, Savignac 1913: 441), *šlm kl bny zyd’lhy mn qdm dwšr’*, “May all the sons of Zyd’lhy be safe and sound in the presence of Dūšarā”

Healey (1993: 81) took *šhm* as the name of a tribe and translated *bny šhm* as “Sahmites”.⁴ However, *bny šhm* is not a *nisbah* (which would be *šhmy’) and so clearly cannot mean “Shahmites”. By translating it as if it were an indefinite *nisbah* “Sahmites” rather than “the Sahmites”, Healey was trying to avoid a syntactical difficulty, since if *bny šhm* really meant “tribe of Šhm”, the text’s literal translation would be “‘bdlg’ and Ḥbw his sons, tribe of Šhm”, while correct syntax would require ‘*bdlg’ whbw dy mn bny šhm*, “‘bdlg’ and Ḥbw, his sons, of the tribe of Šhm”. One should also recall that the two children’s father is a Taymanite (as explicitly stated in JSNab 1), and that, as yet, no tribe called Šhm has been found in the Aramaic and Nabataean texts from Taymā’, nor a S¹hm or S²hm in the Taymanitic inscriptions.⁵ However, the difficulty can be resolved in another way. It is worth noting that the inscription carved inside the tomb is not necessarily coeval with the one on the façade, dated AD 4/5. One could speculate that it was written at a later date, when the founder’s children were themselves buried, possibly a generation or more after the carving of the hypogeum, which could be why the children’s names were not mentioned in the façade inscription. One might then suppose that *bny šhm* qualifies ‘*bdlg’ whbw* in the same way as *bnwhy*, but adding an additional detail related to the filiation of Ḥwšbw’s two children by identifying their mother, who is not mentioned on the façade inscription, possibly because Ḥwšbw had more than one wife, either simultaneously or consecutively, and this was a way of distinguishing one inheritance group from another.⁶ One can of course object that the personal name Šhm has not been found elsewhere in Nabataean or in the Aramaic and Taymanitic inscriptions at Taymā’, from which the family came, but this is also the case with Ḥwšbw.

The second inscription in which the expression *bny* + PN is difficult to interpret is the dedication of a statue of Isis, found in a small gully which comes out on the Wādī aš-Šiyyagh at Petra.⁷ The text, which is carved in two columns, one on each side of the niche containing the statue of Isis, reads as follows: *bḥd b’yr bšnt ḥmš l’bdt mlk [nbṭw] ’lht’ d’ ’sy dy ’bdw bny brhbl br qywm’ w----br tym’* (reading by Milik and Starcky), “on the first day of ’Iyyār, in the fifth year of Obodas king [of Nbṭw]: this goddess is Isis, made by the sons of Brhbl son of Qywm’ and ---- son of Tym’. Clearly, the fact that *brhbl* is followed by *br* and a patronym

4. For a brief commentary on this tribe before Islam, see Al-Fassi 1997: 53.

5. However, it should be noted that the corpus of inscriptions at Taymā’ is not large and that names of tribes are rarely mentioned in them.

6. There is a parallel to this grammatical construct in JSNab 3: *dnh kpr’ dy ’bd ḥšykw br ḥmydw lnpšh wlyldh wlgzy’t wšlmw ’ḥw{t} h bnt ḥmydw ...*, “This is the tomb that Ḥšykw son of Ḥmydw has made for himself and for his children and for Gzy’t and for Šlmw his sisters, the daughters of Ḥmydw...”. It is clear that ‘*ḥw{t}h bnt Ḥmydw* in this inscription and *bnwhy bny šhm* in JSNab 2 can be compared and that the words *bnt* in one case and *bny* in the other convey additional information about the individuals mentioned immediately before, though, of course, in JSNab 3 it is stated that the sisters are daughters of the father of the owner of the tomb, and their mother is not mentioned.

7. Milik and Starcky 1975: 120-124, n° 5, photo pl. 44.1-2.

shows that it must be a personal name and not the name of a tribe. Moreover, *brhbl* is attested as a personal name in the Puteoli dedication, *CIS* II 158, in an Arabian form, *bnhbl*, while it is not known as the name of a tribe.

The examples given above provide new light on the interpretation of *CIS* II 354, carved inside the main *triclinium* of the so-called “Obodas Chapel” in Petra. This begins: *dnh šlm' dy 'bdt 'lh' dy 'bdw bny ḥnynw br ḥtyšw br pṭmwn {br}:*---- “This is the statue of Obodas the god, made by *bny* Ḥnynw son of Ḥtyšw son of Pṭmwn {son of} ---- ». The term *bny* in this inscription has been translated “sons of” by all editors, but some scholars (e.g. Wenning 1997: 192-193) have wondered if *bny* could not instead refer to a Nabataean tribe or clan called Ḥnynw, and that this sanctuary dedicated to Obodas the god at Nmayr was built by its members. However, in this inscription, *bny* is treated as a plural, since it is the subject of a plural verb (*'bdw*) and is referred to by the third person plural suffix *-hm*. Conversely, *ḥnynw* is singular, since it is followed by *br*, “son of”. In the light of what comes before, and despite the fact that some Arab tribes have a singular ancestor, it seems preferable to consider that in this inscription and in that of the Isis sanctuary, the two Nabataean texts where characters not explicitly named and described as *bny* PN dedicate a divine statue, *bny* means “sons of” and not “the clan of” or “the tribe of”. This is moreover the meaning of this term in Palmyrene: when *bny* is directly followed by a personal name, it means “children of”, and when it is followed by a noun, it means “the members (of a brotherhood, a caravan, a city, etc. ...)”. When it introduces a tribal name in Palmyrene, *bny* is always preceded by *dy mn*.⁸ Similarly, in Safaitic, *bny* always means “sons of”.

In Nabataean, the name of a social group is indicated by the noun 'l (borrowed from Old Arabic or Ancient North Arabian 'āl)⁹ + the name of the group. Affiliation of an individual to a social group is expressed by *dy mn 'l* + the name of the group or by the *nisbah*. An individual's place of origin is expressed by *mn* + the name of the place.

There are eleven attestations of 'l in Nabataean, including seven in the Ḥawrān:

- ARNANab 130, Ithrā (Wādī Sirḥān): [---] {d}y{'}{b}{d} nš{r}w 'b{d}' br ḥrmw dy mn 'l qmyrw, “[...] that has made Nšrw, the builder/worshipper (?) son of Ḥrmw, who is of the tribe of Qmyrw”. The reading *dy mn 'l*, is clear.

⁸ Gawlikowski 1973: 31-34. See in particular p. 33: “These tribes [the *bny* + proper noun thought previously to designate tribes] are in reality only groups of related individuals who, mindful of concision (one is dealing above all with tesserae) often omit their names”. Further, p. 34: “The lists of tribes thus revised, all remaining names are distinguished by a significant detail: they are introduced most often by the expression *dy mn bny N.*, *dy mn pḥd bny N.*, “who is from the *benē* PN, of the tribe [sic section] of the *benē* PN”, while those that we have discarded [i.e. all the *bny* which are not tribal names], never are”.

⁹ O'Connor 1986: 217.

- CIS II 164, Sīʿ (Ḥawrān): *dnh šlmʿ dy ʿqymw ʿl ʿbyšt ...*, “This is the statue erected by [the members of] the tribe of ʿbyšt ...”. One should note that this inscription is a bilingual (the Greek part is Wadd 2366), and in the Greek part ʿl is translated by δῆμος. It should also be noted that the verb, ʿqymw, is in the plural even though the word ʿl is grammatically singular. This suggests that the author meant “members of” the ʿl (see LPNab 11, below);

- CIS II 165, Sīʿ (Ḥawrān): ----. *l-ʿl qšyw*, “to the tribe of Qšyw”. The reading of the letters immediately preceding *l-ʿl* is uncertain ;

- CIS II 2363 (Sinai): *šlm klbw br ʿmrw mn ʿl ḥttw*, “May Klbw son ʿmrw, of the tribe of Ḥttw, be safe and sound”;

- JSNab 180, Mabrak an-Nāqah (north-western Arabia, not far from Ḥegrā), republished as *RÉS 1192: dkrwn ṭb wšlm l-mʿyrw br ztʿt br yʿmwrw dy mn ʿl zhmn*, “Good memories of and safety to Mʿyrw son of Ztʿt son of Yʿmwrw, who is of the tribe of Zhmn”.

- LPNab 11, Simj (Ḥawrān): *dnh ʿbd ʿl qšyw l-ʿl ḥhm b ʿl} [šmyn]*, “The tribe of Qšyw has made this for their god Baʿalšamīn”. The reading of the text has been checked on photographs taken by Milik and Starcky in 1955 and 1962. Note the plural suffix *-hm* of ʿl ḥhm, in contrast to the singular verb, and compare CIS II 164 where the verb is plural. This apparent confusion of grammatical number suggests that, conceptually, an ʿl could represent both a single unit and some or all of its individual members (cf. Macdonald 1993: 333-334).

- LPNab 24, Šalkhad (Ḥawrān): Littmann’s reading, *[dn]h msgd[ʿ] dy qrb phkwrw¹⁰ br ʿwšw l-ʿl r{b}t ʿl ʿtr*, “[Th]is t[he] altar that Phkwrw son of ʿwšw has offered to Allāt, the La{d}y of the tribe of ʿAtar”. The translation “It, the Lady of the tribe of ʿtr” was suggested by M.C.A. Macdonald in place of Littmann’s “the Lady of the place” and Milik’s “the Lady of al-ʿtr” both of which assume that ʿl represents the Arabic definite article;

- LPNab 43, Umm al-Jimāl (Ḥawrān): Littmann’s reading, *[ʿ] {š}dw{l}s mn ʿl rwḥw*, was corrected by Chabot in *RÉS 2065* to *[ʿ] {šd}w {d}y mn ʿl rwḥw*, “šdw, who is of the tribe of Rwḥw”;¹¹

- LPNab 44, Umm al-Jimāl (Ḥawrān): *[w] {hb}lhy} br mn ʿmw dy mn ʿl šlmw* (Littmann’s reading), “Whbʿlhy son of Mn ʿmw who is of the tribe of Šlmw”;

- Milik 1980: 42 n° 2a, Qaṣr Burquʿ area (north-eastern Jordan) Milik read: *mnw br ʿln{.}ʿ br mlys br {.}dnw dy mn ʿl ʿmlt*, “Mnw son of ... of the tribe of ʿmlt”, and suggested

10. This name was re-read as *ph<z>rw* by Milik (1958, p. 230 n. 1) who considered the *z* and the *w* as mistakes by the stone carver).

11. Note the unexpected ligature between the *l* of ʿl and the *r* of *rwḥw* on Littmann’s copy.

that *'mlt* was a phonetic variant of *'mrt*. However, a re-examination of the photograph (p. 50 fig. 4b) suggests that the reading *'mrt* is entirely possible, and even preferable to *'mlt*, given the form of the letters;

- Milik 1958: 243-246 n° 6, Mādabā; *d' mqbrt' wnpš' ... dy 'bd 'bgr dy mtqr' 'yšywn br mn't dy mn 'l 'mrt ...*, “This is the tomb and the *nefesh* ... that 'bgr, called 'yšywn, son of Mn't, who is of the tribe of 'mrt made ...”.

To the best of our knowledge, the common noun 'l in Nabataean is only attested in these inscriptions, except possibly in a text from the Tabūk region published by S. al-Theeb, which could be read *dkyr 'l šm't* but in which, given the context, *'lšm't* is more likely to be a personal name.¹² The fact that 'l is largely found in texts from the Ḥawrān may seem surprising since the majority of loans in Nabataean Aramaic from Old Arabic and Ancient North Arabian are found in the texts from north-western Arabia, rather than the more Aramaicized regions such as the Ḥawrān. The reason for this usage is probably the geographical proximity of Safaitic inscriptions, where the use of 'l is widespread (see below).

In Safaitic, the common noun *bny* is used exclusively with the meaning of “sons”. The terms used to refer to social groups are, on the one hand, 'l, and on the other 'hl. The former is attested in more than 1700 texts to indicate a social group of any size, from family to tribe or even a nation¹³ (e.g. the Romans are called 'l *rm* or 'l *h-rm*). It is most often used in the expression *d' 'l* + group name¹⁴ (literally, “he who is of the lineage of” + group name), to express an individual’s affiliation to a social group.

In other North Arabian dialects, membership within a social group is expressed by *d' 'l* in Hismaic (formerly, Thamudic E) and in Hasaitic, while in Dadanitic, it is expressed by *d' +* group name, without 'l. In Taymanitic (formerly Thamudic A), it is expressed by 'l + group name placed immediately after the last name in a genealogy.¹⁵

The term 'hl is used in Safaitic to designate what is probably the “family”, in a more restricted sense than 'l. The original meaning of the word 'hl in Semitic appears to have been “tent”, and so it is possible that, while the word *bt* (cf. Arabic *bayt*) means tent in Safaitic, 'hl may have retained the sense of the close family group that lives together in one tent. So far, it has been found in the thirty Safaitic texts quoted below.

12. al-Theeb 1993 a: 143 n° 71.

13. Macdonald 2003: 354: “'l refers to groups of any size from family to tribal confederation or people, whether nomadic or settled”.

14. On this expression and its uses in North Arabian, see Macdonald 2004: 508.

15. Macdonald 1992: 31.

AAEK 93	<i>w ḥrṣ ʾhl -h</i> , “and he was on the look-out for his family”
KRS 1064	<i>w ḥrṣ ʾh[ll]l -h</i> , “he was on the look-out for his family”
SJ 837	<i>w ḥrṣ ʾhl (-h)</i> , “and he was on the look-out for his family”
KRS 36	<i>w ḥr[[s]] ʾhl -h m- ḥkrn</i> , “and he was on the look-out for his family [coming?] from Ḥkrn”
MsNSGWS 1	<i>w ḥrṣ ʾhl -h m- ʾl rm</i> , “and he was on the look-out for his family [coming?] from the Romans”
KRS 1131	<i>{w} ḥrṣ ʾhl -h ḥdr</i> , “{and} he was on the look-out for his family [who] had camped near a permanent source of water”
KRS 26	<i>w ḥdr ʾhl -h b- ʾnzt</i> , “and his family camped near a permanent source of water at ʾnzt”
KRS 1683	<i>w ḥll h- dr b- ʾhl -h</i> , “and he camped here with his family”
AbaNS 1128	<i>w ʾty ʾhl -h</i> , “and his family arrived [?]”
HAUI 180	<i>w ḥrṣ ʾl- ʾhl -h</i> , “and he was watching over his family”
ThSaf 55.1	<i>w ḥrṣ ʾl- ʾhl -h</i> , “and he was watching over his family”
WAMS 2	<i>w ḥrṣ ʾl- ʾhl -h</i> , “and he was watching over his family”
KRS 1834	<i>w tṣr ʾhl -h m b ʾd</i> , “and he waited for his family from far away”
THNSMBA 1	<i>w tṣr ʾhl kṣt</i> , “and he was waiting for Kṣt’s family”
C 1871	<i>w ʾyd ʾhl -h b- ḥbsʾ</i> , “and he celebrated the festival [with] his family in Ḥbsʾ [?]”
C 2192	<i>sʾnt wsʾq ʾhl khl</i> , “the year of the struggle of the family [?] of Khl”
C 2297	<i>(sʾ)nt wsʾq ʾhl khl</i> , “the year of the struggle of the family [?] of Khl”
C 2318	<i>sʾnt wsʾq ʾhl khl</i> , “the year of the struggle of the family [?] of Khl”
CSA 1.1	<i>w tsʾwq ʾl- dd -h w ʾl- ʾhl -h</i> , “and he longed for his paternal uncle and his family”
HaNSB 307	<i>w tsʾwq ʾl- ʾhl -h</i> , “and he longed for his family”
KRS 214	<i>w tsʾwq l- ʾhl -h</i> , “and he longed for his family”
KRS 1257	<i>w tsʾwq l- ʾhl -h</i> , “and he longed for his family”
KRS 1991	<i>w tsʾwq ʾl- ʾhl -h</i> , “and he longed for his family”
NSR 55	<i>w tsʾwq ʾl- ʾhl -h</i> , “and he longed for his family”
HCH 132	<i>w ndm ʾl- bn ʾb -h msʾby ḥwlt fn<<w>>gyf- myt {k}wy blsʾ ʾhl -h</i> , “and he grieved for his nephew the prisoner of Ḥwt and then he escaped and died {k}wy blsʾ ʾhl -h [?]”
C 766	<i>w wgm [ʾ][l] ʾhl h- frsʾ</i> , “and he grieved for the family of the horseman [?]”
C 88	<i>f ʾlt w dsʾr sʾlm w qbl ʾhl</i> , “So ʾlt and Dsʾr [grant] security and familial good will” [?]
KRS 37	<i>f h lt qbl ʾsʾlm {ʾ}hl + -h</i> , “and so O Lt [grant] the benevolence of security of his family”
KRS 1990	<i>f h lt qbl< > ʾhl -h sʾlm</i> , “and so O Lt [grant] ac ceptance to his family [and?] peace”
WH 135	<i>f h lt qbl l- ʾhl sʾlm f nngy</i> , “so, O Lt, [grant] acceptance to the family of Sʾlm so that we may be saved [?]”

Table 1. Attestations of ʾhl in Safaitic (the sigla are given in the bibliography)

Sigla

AAEK	Safaitic inscriptions published in Al-Manaser 2008
AbaNS	Safaitic inscriptions published in Abbabneh 2005.
ARNANab	Nabataean inscriptions published in Milik and Starcky 1970.
C	Safaitic inscriptions published in the <i>Corpus Inscriptionum Semiticarum</i> . Pars V. Paris, 1950-1951.
CIS II	<i>Corpus Inscriptionum Semiticarum</i> . Pars II. <i>Inscriptiones Aramaicas continens</i> . Paris, 1889-1954.
CSA	Safaitic inscriptions published in Clark 1984-1985.
HaNSB	Safaitic inscriptions published in Ḥarāḥiṣah 2010.
HAUI	Unpublished Safaitic inscriptions in the Mafraq Museum, Jordan
HCH	Safaitic inscriptions published in Harding 1953.
KRS	Safaitic inscriptions recorded by Geraldine King in 1989 during the Basalt Desert Rescue Survey, published online at the following address: < http://krcfm.orient.ox.ac.uk/fmi/webd#bdrs >
JSNab	Nabataean inscriptions published in Jaussen & Savignac 1909-1914.
LPNab	Nabataean inscriptions published in Littmann 1914.
MP	Nabataean inscriptions recorded by J.T. Milik and published in Nehmé 2012.
MsNSGWS	Safaitic inscriptions published in al-Maʿanī 1999
NSR	Safaitic inscriptions published in Abdallah 1970.
RÉS	Répertoire d'épigraphie sémitique. Paris, 1900-1968.
SIJ	Safaitic inscriptions published in Winnett 1957.
THNSMBA	Safaitic inscriptions in Ṭalāfahāh and Al-Ḥuṣān 2014
ThSaf	Safaitic inscriptions published in Al-Theeb 1993.
Wadd	Greek and Latin inscriptions published in Waddington 1870.
WAMS	Safaitic inscriptions published in Winnett 1971.
WH	Safaitic inscriptions published in Winnett & Harding 1978.

Geomorphological Survey in Dûmat al-Jandal Area

Bruno Marcolongo (National Research Council of Italy)

The second geomorphological campaign at Dûmat al-Jandal and in surrounding areas, carried out between September 20th and October 4th 2012 as part of field activities of the Joint Saudi-Italian-French Archeological Project, was essentially devoted to the following main objectives:

1) Further assessment and deeper investigation of prehistoric sites, following the discovery in 2011 of the big complex of Neolithic industries at Asfân around the edge of a paleo-lacustrine area called “wâdî al-Sirhân paleolake”, localized about 22.5 km to the SW of the centre of Dûmat al-Jandal;

2) The distribution of possible ancient road networks (“caravan routes”), based on interpretation of detailed satellite images, branching off from the Dûmat al-Jandal oasis towards either the main Euphrates archaeological sites of Mari-Abu Kamal to the north and Babylon to the northeast, or the Mediterranean sea along the wâdî al-Sirhân valley (Jawa-Azraq oasis-Zarqa to the northwest).

Prehistoric sites

To gather a more complete data set on sites with lithic industries around Dûmat al-Jandal, two field excursions were made on Sept. 28 and Sept. 30, respectively in the localities of al-Shuwayhitîya and al-Nazâyim.

Al-Shuwayhitîya

About 5.5 km to the SW of al-Shuwayhitîya village, near the northern shore of a recent lacustrine deposit (Upper Pleistocene-Holocene), two sites with Palaeolithic industries have been surveyed (**Figs. 1-3**).¹ Their vicinity to this body of water or more humid area, characterized by a higher groundwater table, reflects a specific environmental choice by our ancestors.



Fig. 1. al-Shuwayhitîya surveyed track on Google Earth SPOT 5 image taken on Nov. 2011



Fig. 2. al-Shuwayhitîya sites, detailed surveyed track (Palaeolithic site 1: N30°16'53.6" E40°09'04.6" elev. 708 m; Palaeolithic site 2: N30°16'52.9" E40°09'08.1" elev. 698 m)



Fig. 3. al-Shuwayhitîya palaeolake depression and its lacustrine deposits

Various artifacts have been identified from the two sites (**Figs. 4-5**).



Fig. 4. Lithic tool from al-Shuwayhiya

Fig. 5. Lithic tools from al-Shuwayhiya



al-Nazâyim

al-Nazâyim lies on the Cretaceous Wasia Formation (mainly sandstone), scattered and dispersed on conspicuous landforms represented by a series of small hilly outcrops. Most likely it is a lithic industry workshop, utilizing flint cores present in the layered Wasia Formation itself (**Figs. 6-11**).

Coordinates of the highest hill, with an elevation of 619 m, are N30°10'45.1'' E40°20'30.4''.



Fig. 6. Lithic artifacts scattered on the surface of the Cretaceous Wasia Formation (mainly sandstone)



Fig. 7. Tools from al-Nazâyim



Fig. 8. al-Nazâyim surveyed track on Google Earth SPOT 5 image taken on Jan. 2012



Fig. 9. al-Nazâyim detailed surveyed track

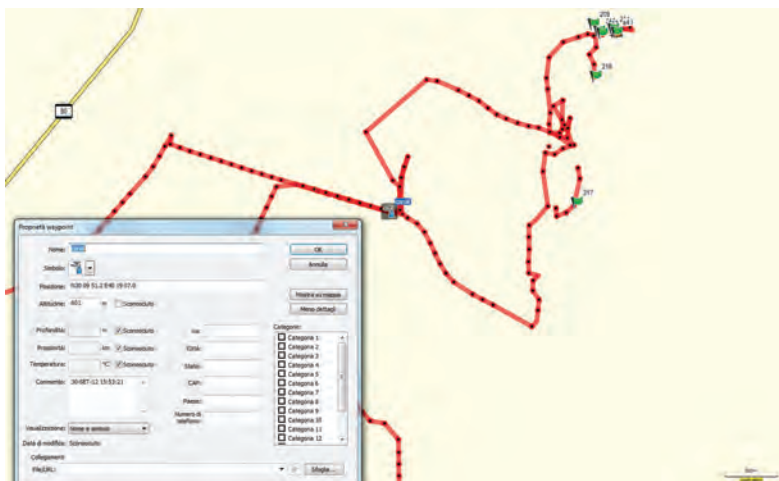


Fig. 10. Coordinates of the western intake of the canal

More survey and artifacts collection should be done to outline the site’s extension and its particular morphology in relation with tool concentration.

About 2.1 km to the SW of the above-mentioned highest hilly outcrop, a very interesting ancient and abandoned water canal has been found (western end coordinates: N30°09’51.2’’ E40°19’07.0’’ elev. 601 m).

The canal extends in an E-W direction and is partly covered by aeolian sand. Thus its role in a probable irrigation scheme is not clear at present and the matter calls for further investigation. Nevertheless, it is most likely that runoff collected on the foothills to the east flowed into the canal towards the west, feeding ground plots along the way.

The network of ancient roads (“caravan routes”)

Other research in the field suggested during the 2012 campaign was related to the reconstruction of the ancient road network, i.e. the “caravan routes” connecting Dûmat al-Jandal oasis either to the Mediterranean coastline or to the Euphrates valley.²

To reach this aim, detailed images from Google Earth were studied and interpreted (mainly SPOT 5 multispectral data with 2.5 m ground resolution), on the basis of some geomorphological assumptions. Caravans, carrying goods through arid and semiarid environments, generally follow more sheltered wâdî beds, which are also richer in shallow groundwater resources during the dry season and generally easier to cross than rocky and bare terrain (**Fig. 12**).

Thus the first step was to identify and reconstruct the entire “dissection pattern”, i.e. the entire system of landscape incisions formed by runoff water over long periods of time and nowadays dry in most of cases.

The analysis took into account an ample area extending towards the NE corner of Saudi Arabia and the Euphrates valley and reached the smallest tributaries of the 1st order (according to Horton-Strahler’s geomorphic classification).³

A general sketch and the specific framework of the possible routes inferred are shown below (**Figs. 13-26**).

In addition to these “caravan routes” branching off at the Dûmat al-Jandal oasis and leading to the Euphrates valley, an additional possible communication and trade route with the Mediterranean sea was investigated along the wâdî al-Sirhân valley (**Fig. 27**).

This northwestern “caravan route” is described in detail through the following sketches (**Figs. 28-29**).

Obviously all these tracks, recognized in the laboratory through the interpretation of satellite images on the basis of physiographic and geomorphological assumptions should be verified on the ground.

2. This analysis began by looking at Assyrian period inscriptions from Abu Kamal, ancient Hindanu in Iraq (Cavigneaux-Ismail 1990: 351; Robin 1991: 50). One of the inscription mentions a caravan from Saba and Taymâ’ arriving at Hindanu, in the Kingdom of Suhu. If the caravans travelling to Assyria and originating from the western region of the Arabian Peninsula crossed the al-Nafûd desert, then ancient Adummatu was a surely a natural port of call in the trade network connecting Taymâ’ with ancient Iraq.

3. Horton 1945: 275–370; Strahler 1957: 913-920.

In the next season in 2013, therefore, a ground reconnaissance campaign should be carried out to scour some of these directions, gathering in the meantime information from local people about old “caravan routes”.

Finally, and more importantly, the general pattern of possible ancient trade routes proposed here can be used as a guide for further surveys of the whole region attempting to record archaeological sites and evidence.



Fig. 11. Ancient canal extending in an East-West direction

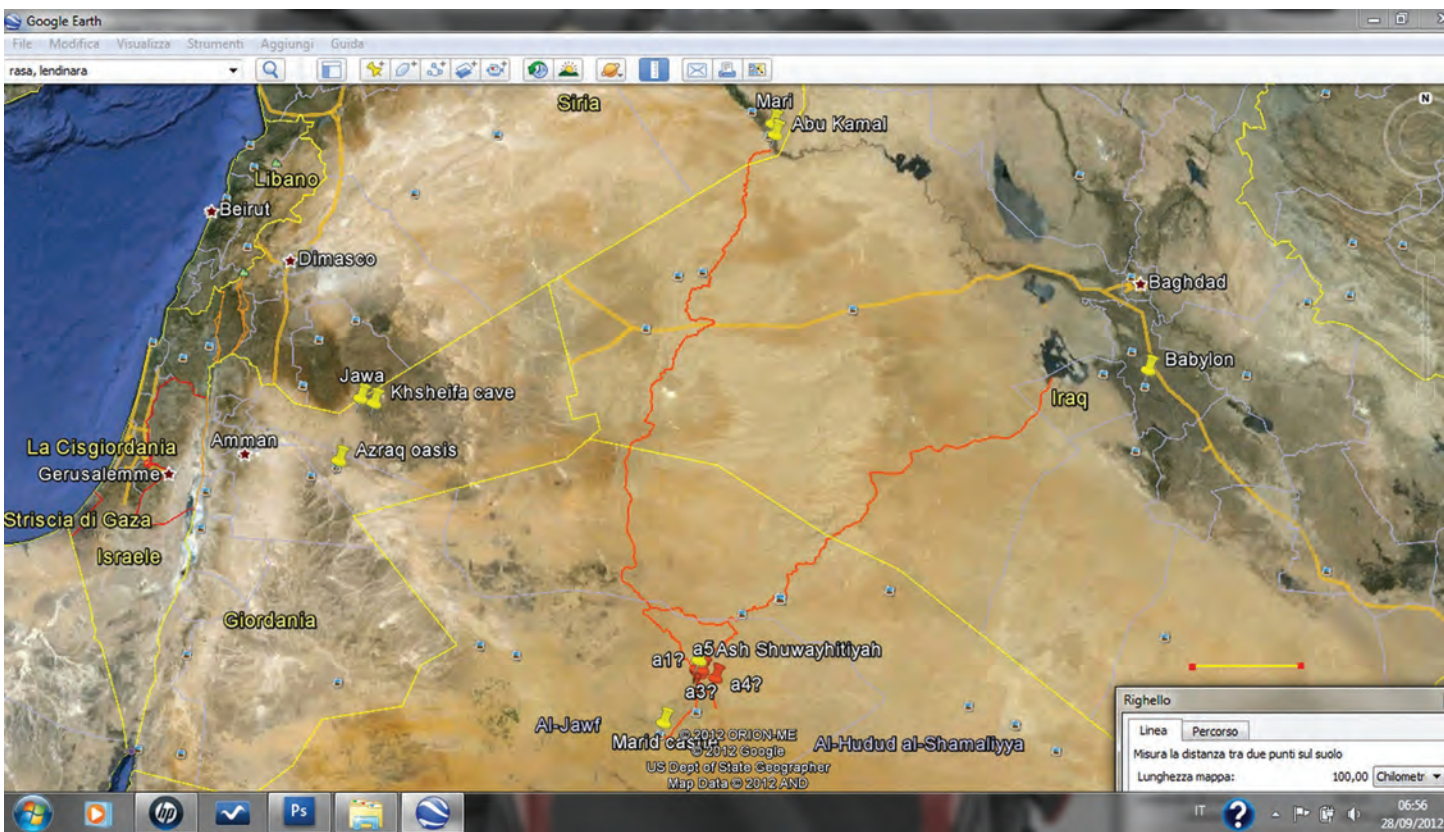


Fig. 12. Two “caravan routes” connecting Dûmat al-Jandal oasis to the main Euphrates archaeological centres of Mari-Abu Kamal to the north and Babylon to the northeast. Reconstructed from SPOT 5 detailed images, running along wâdi floors dissection pattern

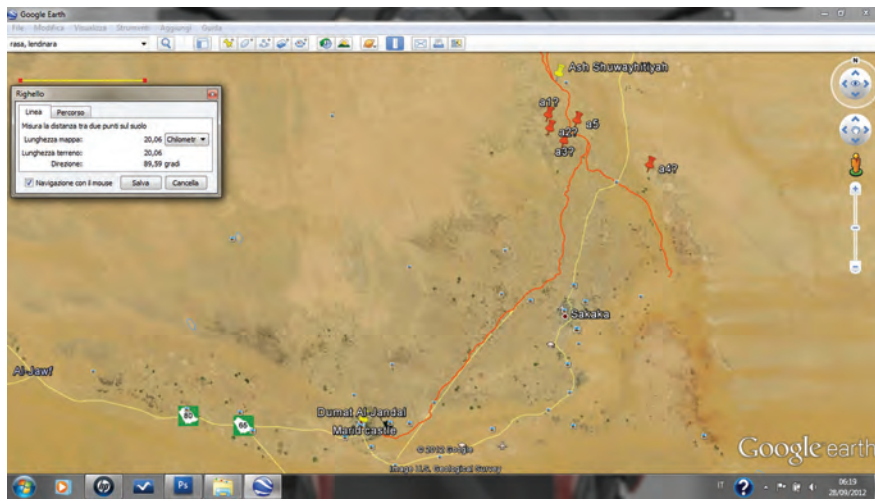


Fig. 13. 1st stretch of road between Dûmat al-Jandal and al-Shuwayhiṭiyā

Fig. 14. 2nd stretch of road north of al-Shuwayhiṭiyā with an offshoot to Mari-Abu Kamal (northeast) and Babilonia (northeast)

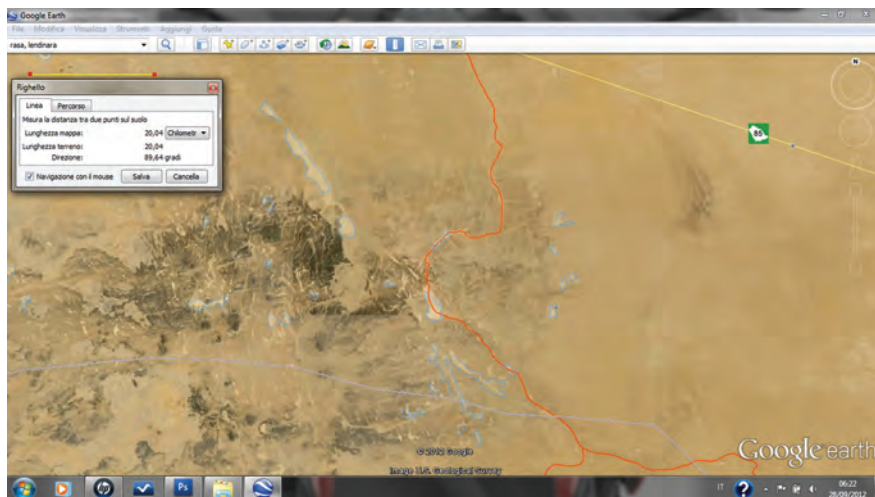
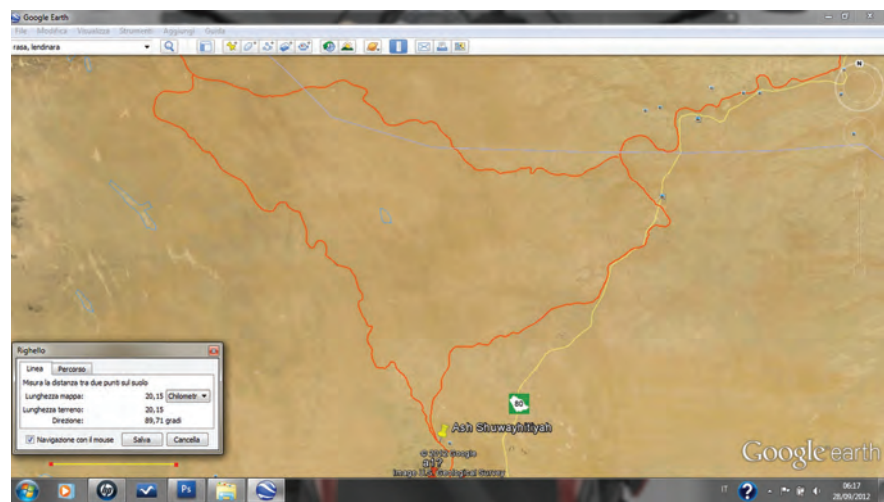


Fig.15. 3rd stretch of road leading towards Mari-Abu Kamal

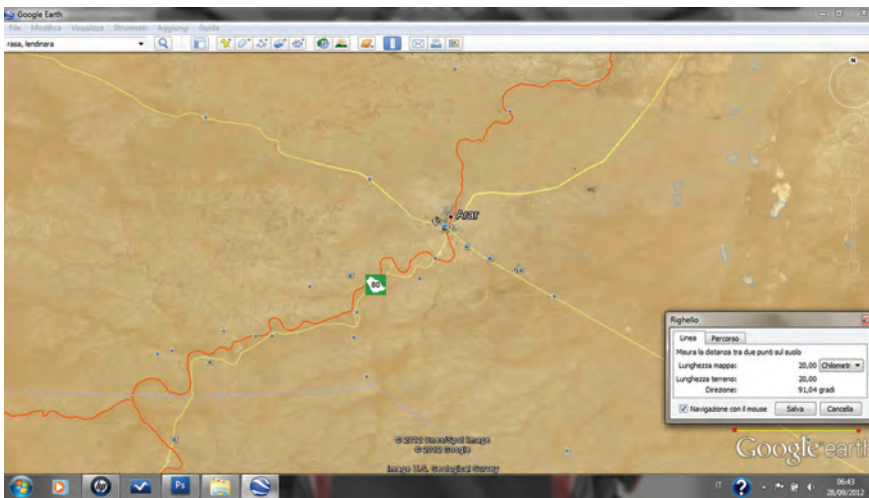


Fig. 16. 3rd stretch of road towards Babylonia

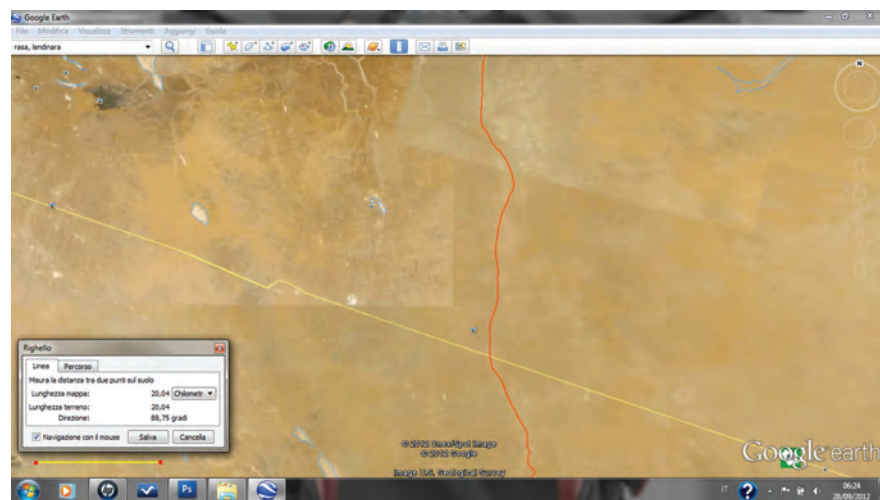


Fig. 17. 4th stretch of road towards Mari-Abu Kamal

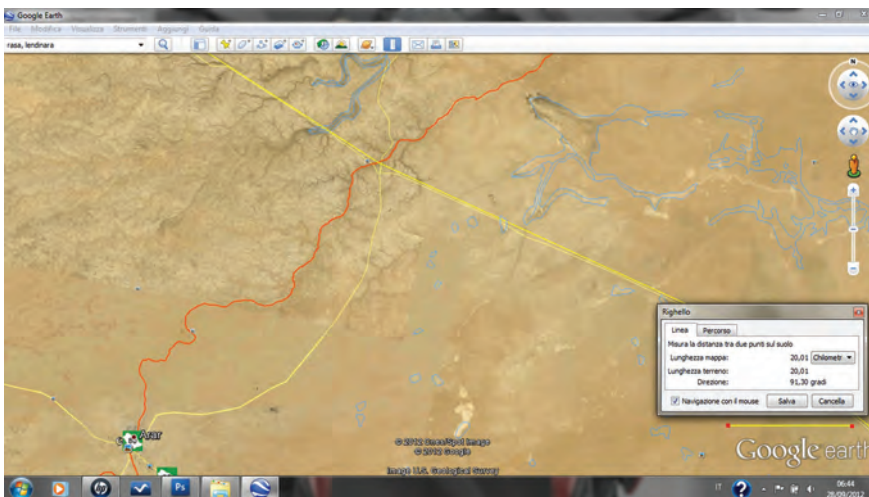


Fig. 18. 4th stretch of road towards Babylonia

Fig. 19. 5th stretch of road towards Mari-Abu Kamal

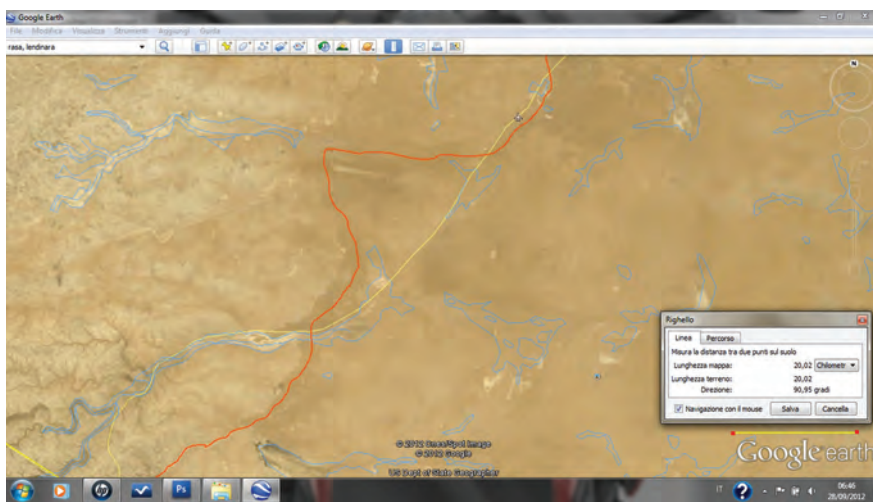
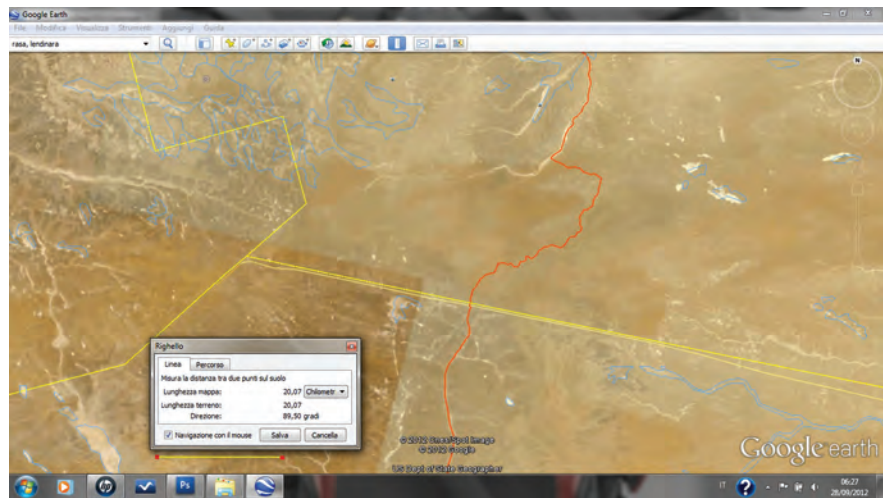
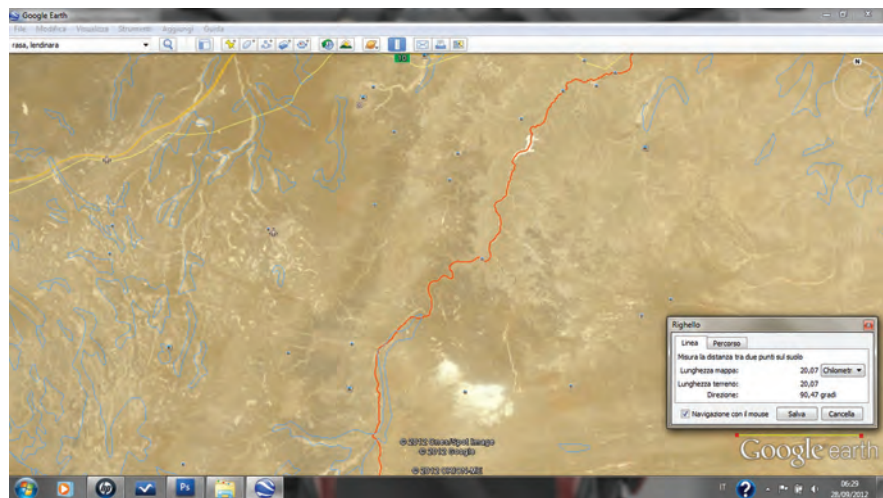


Fig. 20. 5th stretch of road towards Babylonia

Fig. 21. 6th stretch of road towards Mari-Abu Kamal



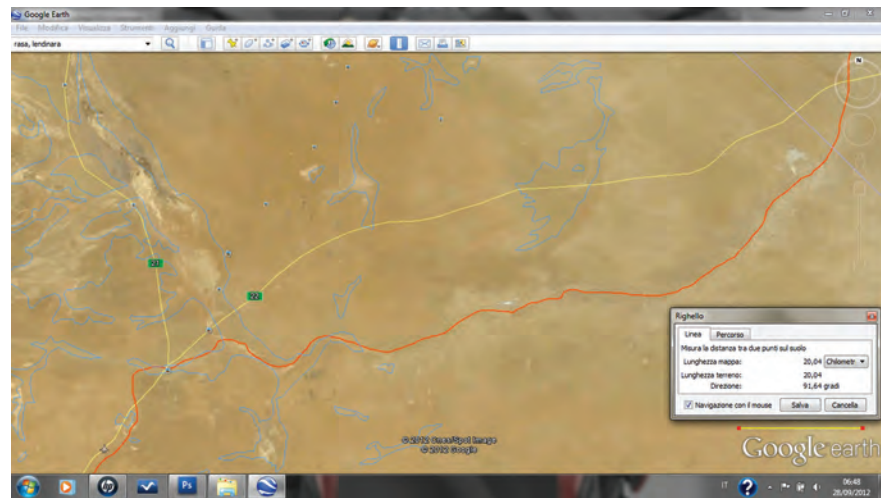


Fig. 22. 6th stretch of road towards Babylon

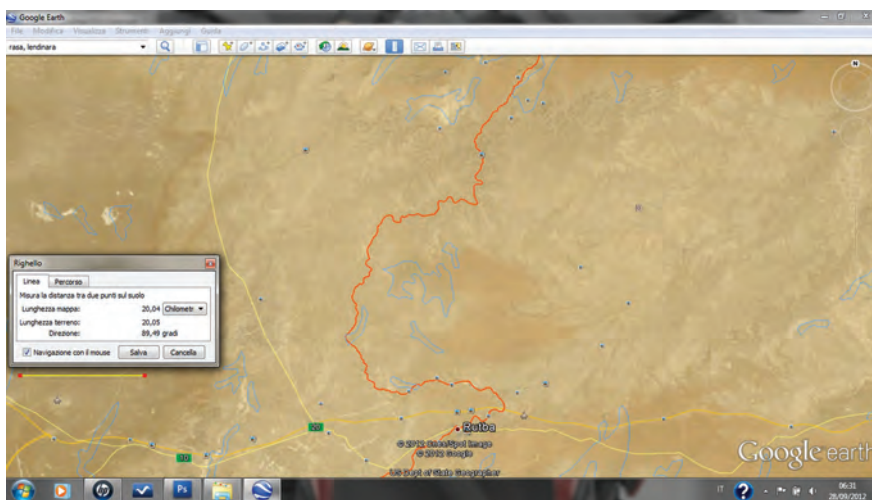


Fig. 23. 7th stretch of road towards Mari-Abu Kamal

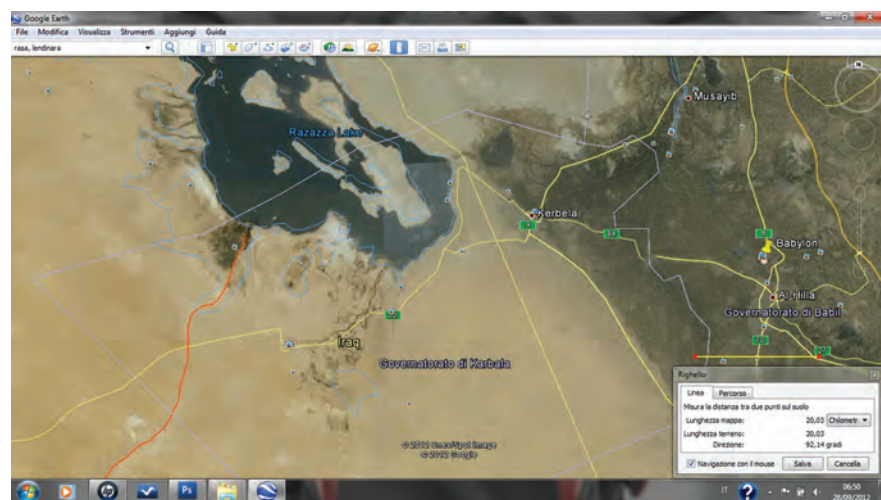


Fig. 24. 7th stretch of road reaching Babylon

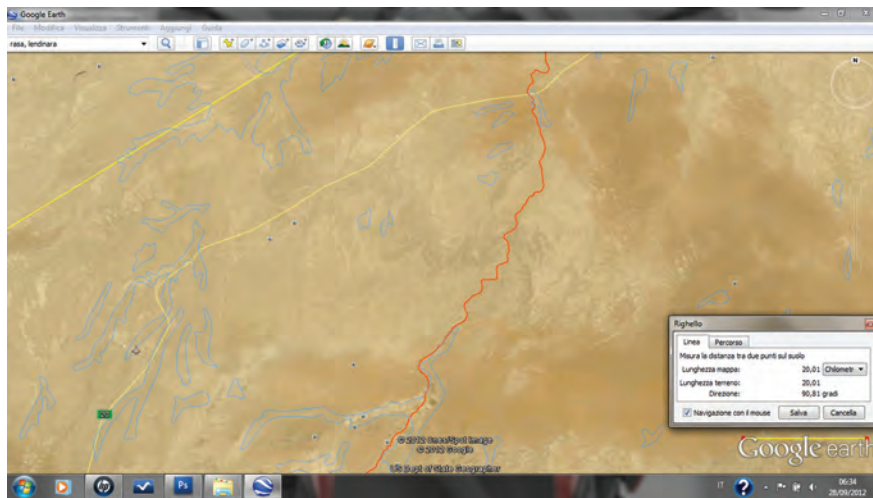


Fig. 25. 8th stretch of road towards Mari-Abu Kamal

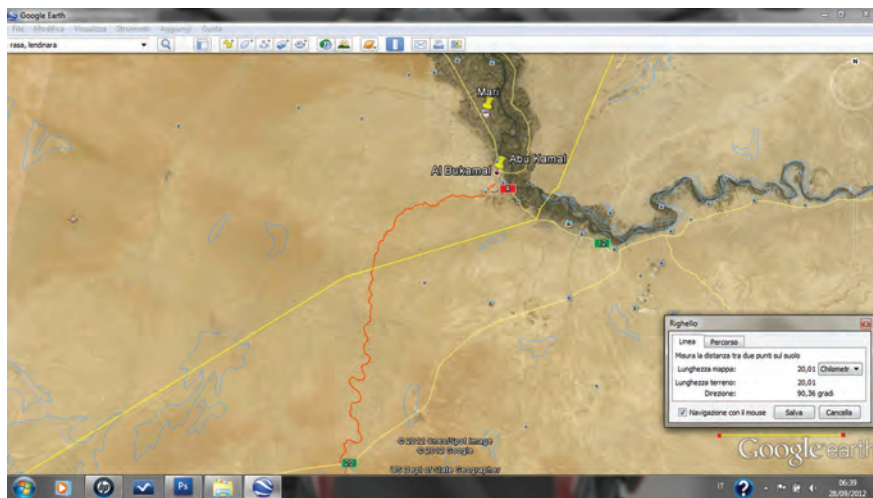


Fig. 26. 9th stretch of track reaching Mari-Abu Kamal



Fig. 27. Track connecting the Dumat al-Jandal oasis to Jawa in a NW direction towards the Mediterranean sea coastline. (The other two “caravan routes” shown with N and NE directions are those described above towards the Euphrates valley)



Fig. 28. 1st stretch of road



Fig. 29. 2nd stretch of road (in orange more humid or lacustrine areas)

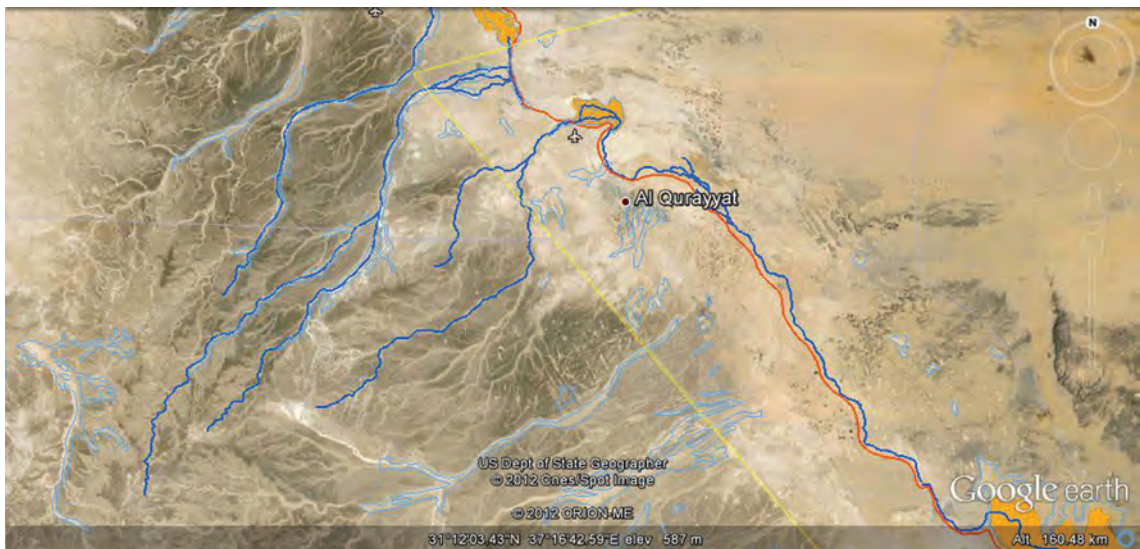


Fig. 30. 3rd stretch of road (in orange more humid or lacustrine areas)

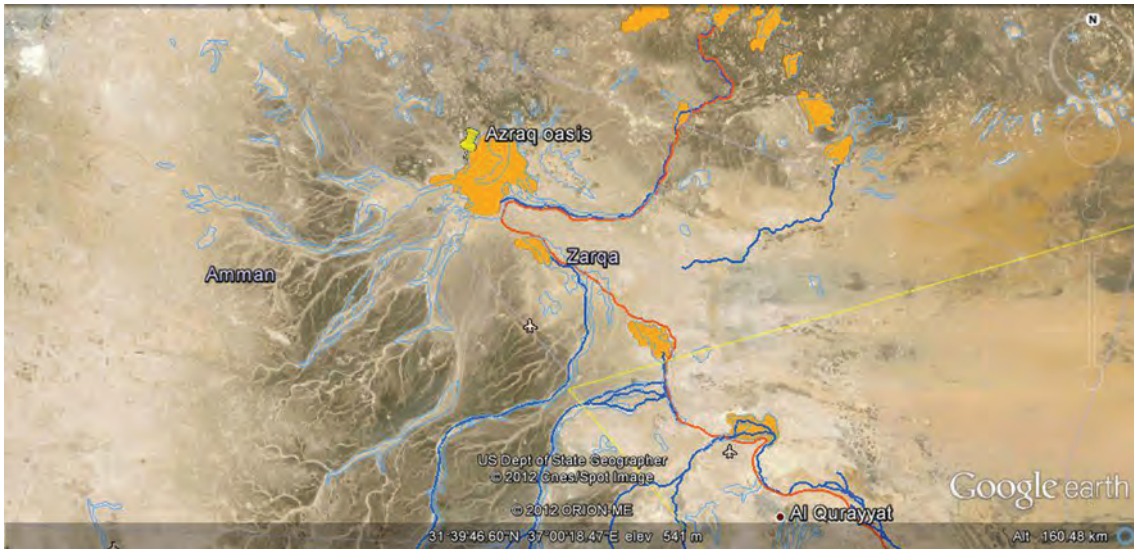


Fig. 31. 4th stretch of road (in orange more humid or lacustrine areas)

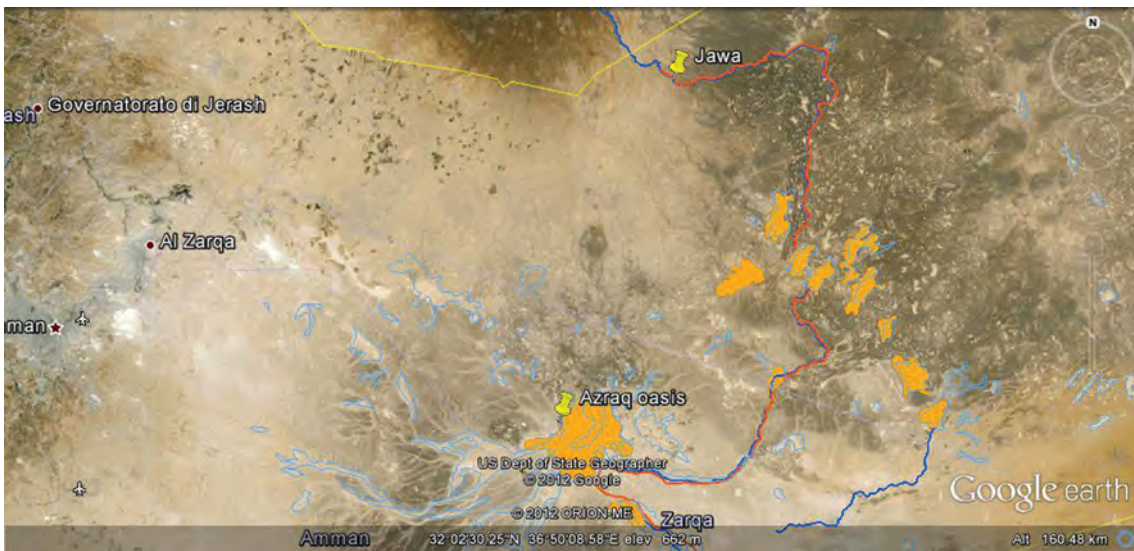


Fig. 32. 5th stretch of road (in orange more humid or lacustrine areas)

A Preliminary Study of Wells and Qanâts

Matthieu Thomas, Olivier Testa & Paul Courbon
(Fédération Française de Spéléologie)

The network of wells and underground aqueducts (qanâts) associated with ancient human occupation at Dûmat al-Jandal has regularly captured the attention of archaeologists.^{1&2} The study of this network, inaccessible to archaeologists, could not possibly be neglected. In 2012, therefore, Guillaume Charloux appealed to the *Fédération Française de Spéléologie* (French Federation of Speleology, FFS), asking it to designate three speleologists to study these wells and associated qanâts, in the framework of a scientific cooperation between the FFS and the Saudi-Italian-French expedition at Dûmat al-Jandal. Matthieu Thomas (geomorphologist), Olivier Testa (an engineer with much experience in subterranean research and data bases) and finally Paul Courbon, a now retired engineer in geographic works of the French state (IGN), who had in 2005 carried out the study of Hegra's Nabataean wells in Saudi Arabia, all participated in the 2012 season (**Fig. 1**).



Fig. 1. The team of speleologists: Matthieu Thomas, Olivier Testa and Paul Courbon

1. Nasif 1987.

2. al-Sudairi 1995.

The 2012 exploration season

In the two previous years archaeologists already had cleared the way and done preliminary work, and numerous wells or qanât shafts, all located with a pocket GPS, had been included in a data base of 178 points, together with a summary description.³ We were also in possession of aerial photographs going back to 1964, generously provided by the Al-Jawf region's Department of Tourism,⁴ where numerous characteristic sight holes dotting the ground and following the line of qanâts were visible.

The qanâts were the aim of our initial research, which we began by looking for sight holes or shafts visible on the ground. The great disturbances in the ground that had taken place since 1964, because of both urbanization and new irrigation methods, prevented us from discovering any of the shafts from the surface.

We then undertook an exploration of the first wells located in the immediate vicinity of the imposing Qasr Mârid fortress, in an enclosed zone called the *historic site* (**Fig. 2**). We then enlarged our scope as a result of the use of our data base, to which we added wells discovered during our research. Since the last well previously numbered on our base carried the number PU179,⁵ we thus reached PU212, and some other characteristic points were included in our numbering. We explored about thirty wells, 6 of which were void of any water.

The wells' vertical shafts and their depth, often in excess of 20m, required the use of ropes and of speleological techniques to descend with them. Moreover, going down into the wells, which were built of masonry for a depth of 15m, required special precautions because of the possible collapse of stones.

All of our explorations resulted in precise measurements of the many elements encountered during our descent: water intake, end and base of masonry, excavation of structures into the bedrock, possible concretions, water depth, topography of cross-checked qanâts. To these data were added measurements of the temperature, which could yield complementary analytical information and a better grasp of aquifer circulation. Samples were also taken for an analysis of rocks encountered and, if possible, to establish chronology. Finally, we determined with a differential Trimble GPS (with precision to 5cm) the elevations of all wells still containing water, as well as characteristic and important points on the ground.

In this report, we would like to set out the preliminary analyses and conclusions resulting from our exploration.

3. Charloux & Loreto *et al.* 2014.

4. We would like to thank Hussayn Khalifa, Director of the Tourism Department of Sakâkâ, for having provided us with these aerial views.

5. The number of each well is given by the corresponding GPS number (point GPS 179 = Well PU179).



Fig. 2. the Umar Ibn al-Khattab mosque and the ruins of the old village. The first wells are on the edge of the village and the palm grove

The site's morphology and geological data

The analysis and understanding of observations made and recorded during our explorations required first of all a geomorphological and geological approach to the site. The position of the site of Dûmat al-Jandal is remarkable in that it is located in the middle of a zone with few geological accidents and synclines, with a general slope descending towards the southeast and an elevation varying between 750 and 650 m a.s.l. The 1/50,000 map of Arabia shows only two wâdis: the *Sha'ib al-Hawsh*, which tapers out in a large terrace, then further downstream the *Sha'ib al-Himdi* which travels into a trough 3 km wide and more than 25 km long. Their seasonal waters flow into a deep depression covered by the *Sabkhat al-Jawf* (whose elevation was 575 m in 1981, when it still contained water), located more than 70m below neighbouring land. We should recall that a Sabkha is a highly saline depression which can at times be flooded. Evidently, the trough and depression were optimal for the aquifer. The possibility of successfully digging wells and finding water without too much difficulty was the basis for ancient human occupation at Dûmat al-Jandal.

Some geology

Existing sources

On a geological level, the 1/250,000 scale of the map of Al-Jawf does not allow getting into details. Moreover, due to the lack of space, some names are badly placed (for instance the ‘Al-Wâdî *Graben*’ on both sides of a single fault, and a badly placed ‘Sabkhat al-Jawf’). The team was also in possession of an MA thesis focusing on regional geology, defended by the Saudi Hussain Fahad al-Ajmi at Riyad’s King Sa’ûd University.⁶ Besides effectively collating works previously undertaken in the area, the author published the stratigraphic sections from the soundings, and also carried out a palynological study of samples from coring. Yet hydrogeology and the study of aquifers, important for the understanding of wells and qanâts related to human occupation in the area, were not the aim of his study. In his geo-archaeological study of the site, Bruno Marcolongo has extensively drawn on the works of this author.⁷

Until now we have not had access to the hydro-geological reports kept in the Ministry of Agriculture. Related to the drilling feeding Dûmat with water, they would be of great use to us. We have presented below a preliminary analysis from Hussein Fahad al-Ajmi’s publication and from the geological map. We would also like to thank Mr. Janjou and Mr. Gutierrez of the BRGM for the elements of information that they provided.

Geological data

Despite its reduced scale, the 1/250,000 geological map reveals that the large trough we had noticed on the topographical plan is actually a *graben* named “Al-wâdî *graben*” (Figs. 3-4). It should be remembered that a *graben* can be schematically marked by a subsidence occurring between two faults. Bordered by several faults, our *graben* encloses the entire area of the wells and qanâts and the large palm grove of Dûma (Fig. 5). Due to this subsidence, a lateral aquifer can be raised in relation to the *graben*.

The stratigraphy of the Dûmat al-Jandal region belongs to the Inferior Devonian (Secondary Era).⁸ It includes the two lower levels of the Jawf formation: first of all the *Qasr member* on which the Qasr Mârid is built, and below, the *Sha’iba member*. These two levels rest on the *Tawîl* formation (Fig. 6) and are of varying thickness according to the various studies of the region. They do not constitute a homogeneous formation like a thick sandstone and a good quality aquifer permitting the formation of an plentiful water table.⁹

6. Al-Ajmi 2005.

7. Marcolongo 2013.

8. Al-Ajmi 2005.

9. *Ibid.*

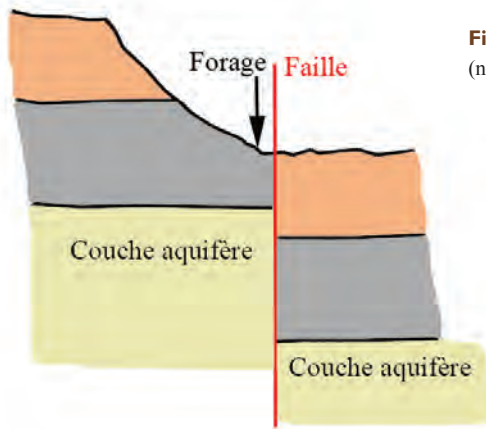


Fig. 3. The lateral fault of the *graben* and vertical displacement (net slip) bringing the aquifer closer to the surface

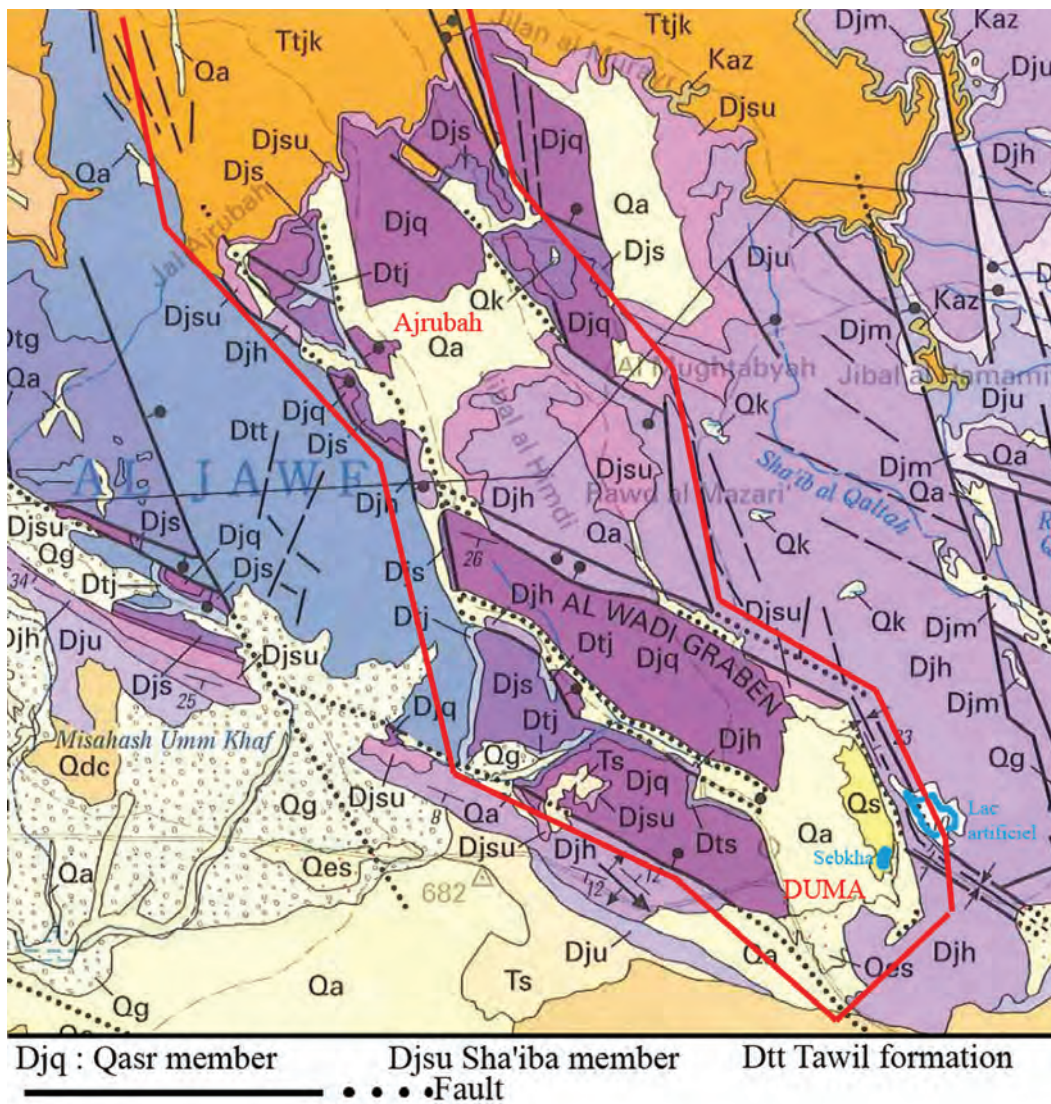


Fig. 4. The graben (trough fault) of Dûma, according to the contour lines of the 1/50 000 Dawmat-al-Jandal, (map sheet 3929-11)

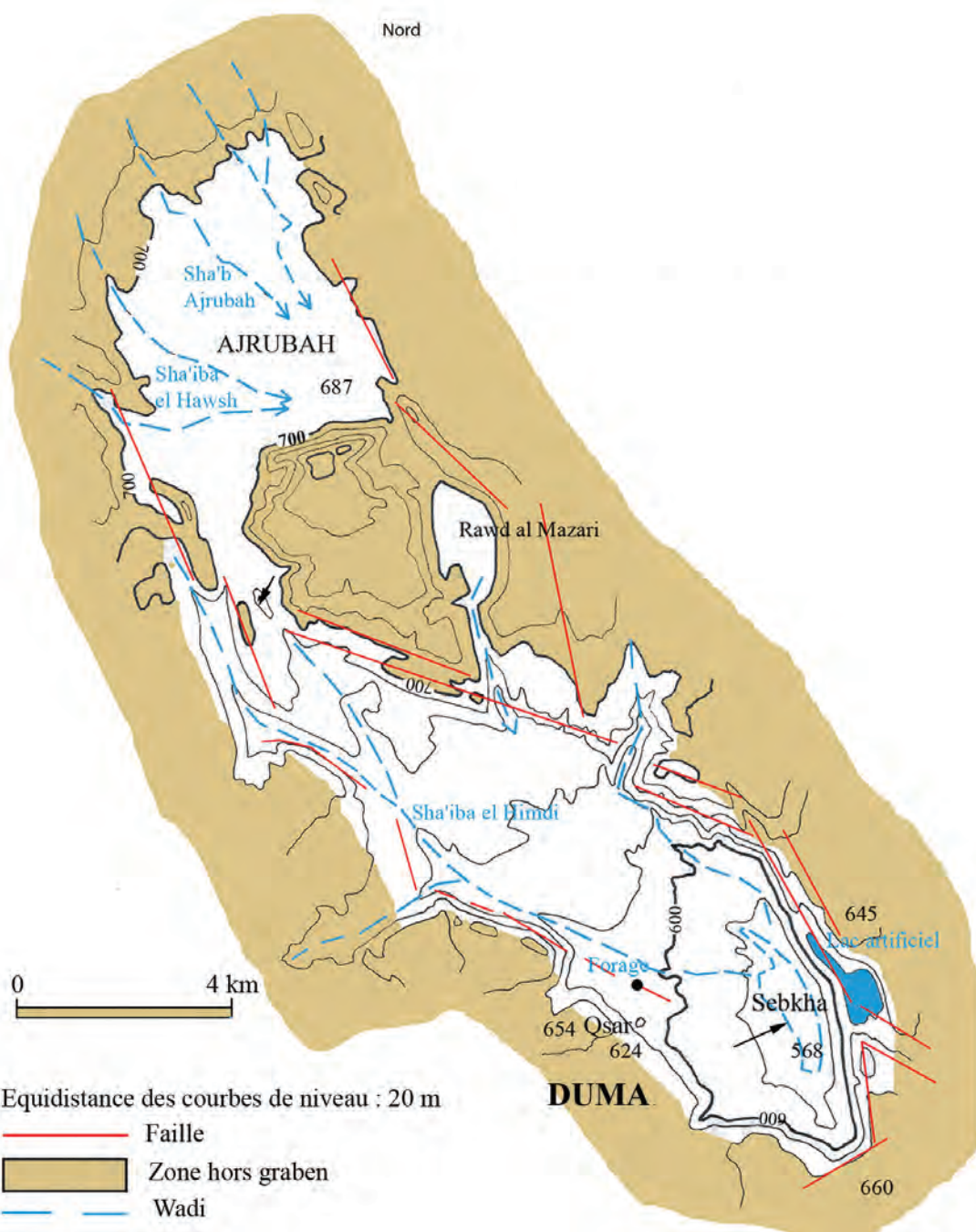


Fig. 5. The graben of Duma, as it appears on the al-Jawf geological map at a 1/250 000 scale.

The *Qasr member*, whose thickness is close to 20m, is composed of finely stratified clayey limestone, with insertions of grey-green marl and schist.¹⁰ These finely grained rocks do not have any features that could relate them to an aquifer. Siltite is a consolidated sedimentary rock produced from silt (its granulometry is between 3.9 μm and 62.5 μm on Wentworth's classification), and it can be carved into beautiful strata. Used for paving or for walls, it is also often employed without mortar for the sides of wells visited by the expedition. The first section of the wells was dug in the *Qasr member*; and because of its lack of homogeneity, this first part was lined with stones.

The *Sha'iba member* is described¹¹ as an insertion of limestone, slaty clay, clayey siltite of different colours and fine-grained sandstone, but the author bases himself on the Sakâkâ core, drilled 40km from Dûma. The captions on the geological map add finely grained sandstone to these types of rocks. According to the author, and varying with the place of drilling, the thickness of this floor/terrace ranges between 25 and 50m and even 110m at the faraway drilled core at Sakâkâ.¹² The *Sha'iba member* is equivalent to the second section of the wells, made up of beautiful strata of solid rock (limestone), between which are inserted from time to time layers of much softer rock (clay).

The *Tawîl* formation on which the two previous levels/terraces rest is constituted of medium-grained sandstone, with a layer of schisteous marl in the upper level. It is approximately 150m thick at Sakâkâ. This formation is aquiferous.

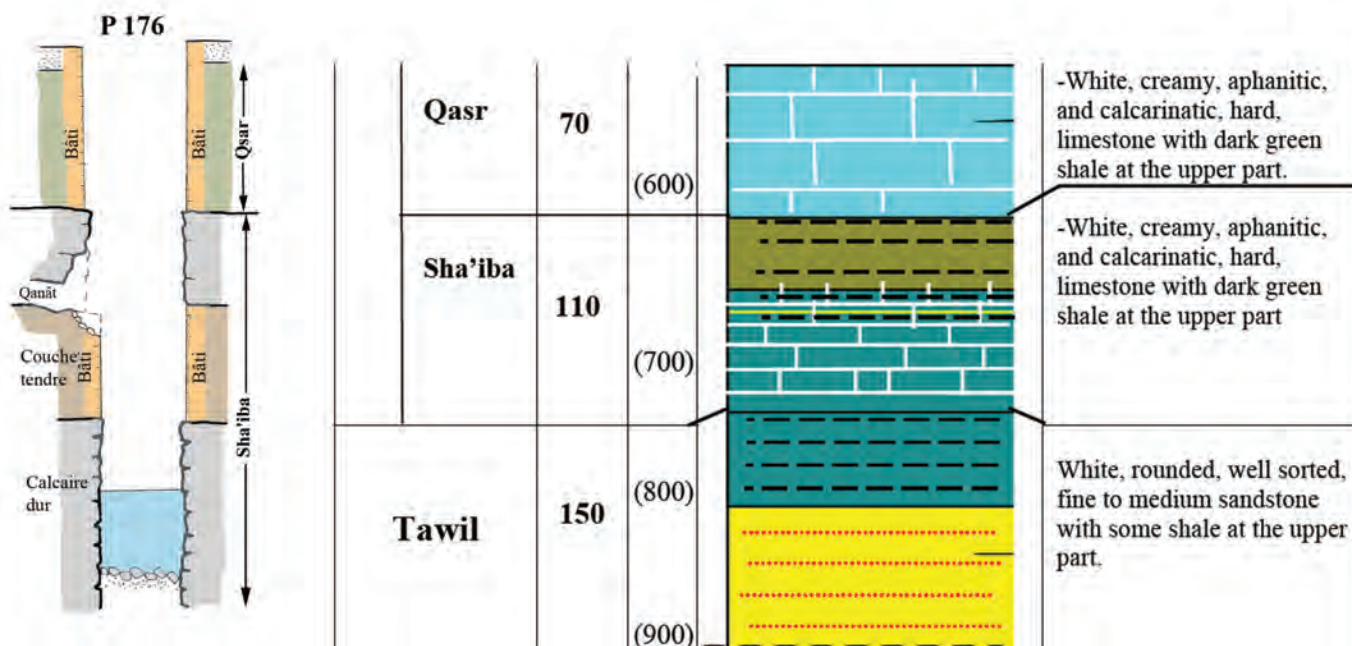
As we shall see below, the many wells explored by our expedition seem to have been dug in a substratum with few or no aquifers, corresponding to the *Qasr* and *Sha'iba members*. The qanât systems that branch off raise many questions which are not always answered in a satisfying manner. In 2012, it proved difficult to contact the now elderly inhabitants who might have seen some of these hydraulic systems work in ways similar to that in operation at the time of their conception.

We cannot but admire the scope of the works that we visited, and gaze in wonder at the knowledge and enterprising spirit of the oasis' ancient inhabitants, who knew how to conceive and build these hydraulic systems. We shall now present these works in detail.

10. *Ibid.*: 34.

11. *Ibid.*: 32.

12. *Ibid.*: 32-33.



After Al-Ajmi 2005

Fig. 6. Stratigraphy as it appears in the PU176, where a soft layer of Sha'iba member was built, and as seen in the drilling at Sakâkâ, 40 km to the east of Dûma (after al-Ajmi 2005). At Dûma, the Qasr member could be only 20 m thick and the Sha'iba between 25 and 50 m, according to the authors

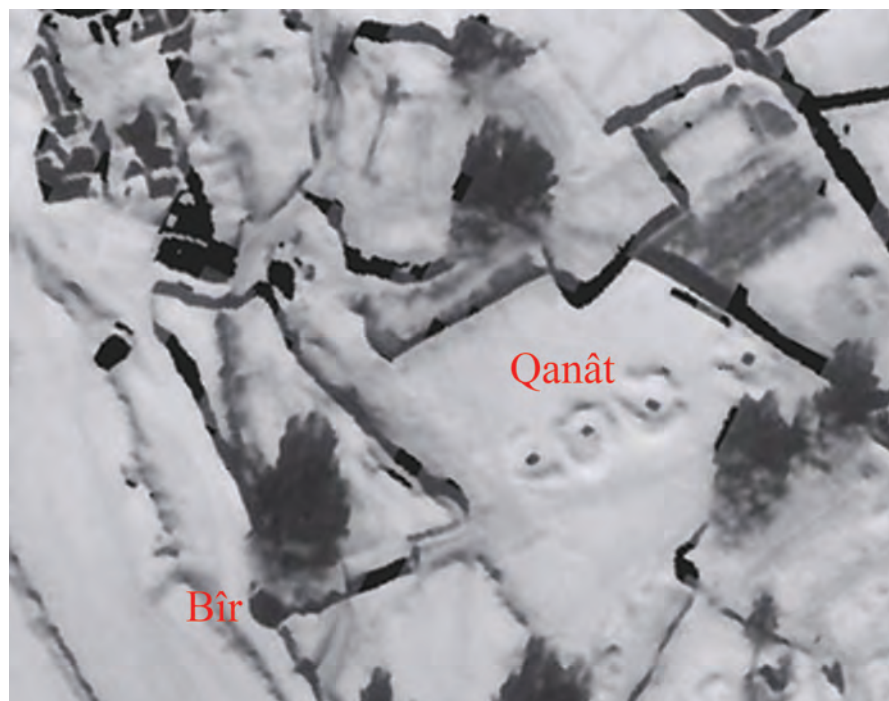


Fig. 7. Sight hole of a qanât such as it appeared fifty years ago, before the profound changes affecting the area (Aerial photograph of 1964)

Wells and qanats in modern times

A review of the situation in 1964

An aerial photograph of 1964 enables one to review the situation of the hydraulic system at that date. Many wells are visible and one can guess that at this date many collapsed or obstructed wells had been abandoned for quite some time. In the entire area below the Qasr Mârid houses in ruins testify to the abandonment of this part of the oasis. Close to the houses, we were able to visit the wells that still exist, and some still had water in 2012. In 1964, already, the entire area around some of these wells was filled with sand and uncultivated, demonstrating the state of abandonment of this sector of the site. We have not discovered any pump testifying to the re-use of these wells in modern times, yet they are not obstructed and abundant water can sometimes be found in them. Only one still has visible hoisting device (PU169).

As for the qanâts, several alignments of sight holes can be seen on the photograph (**Fig. 7**). By 2012, urbanization and new watering and irrigation methods had made them disappear.

Hoisting devices

Before the introduction of water pumps after 1964,¹³ water could be extracted using camels. Hoisting structures using one or more pulleys were installed above the wells. A rope would wind around the pulley, a goatskin would be attached to one of its ends, and a camel would pull on the other. Several hauling tracks extending from the wells and used by camels still survive. Their length is between 25 and 32 m. This would reflect a well depth between 22-23 and 30 m. Of a minimal width of 3 m, they are located lower than the well's edge and are on a descending slope in order to diminish the amount of effort required from the camel during the hoisting of water-filled goatskins (**Fig. 8**). Four kilometres to the NW, PU197 (Bir al-Jidiliyah) was surrounded by circular earthen levees, demonstrating that several camels could pull goatskins in several different directions simultaneously; the radius of the circle indicates a well depth of more than 20 m.

Nowadays, only well PU169 includes a hoisting device, of which only the masonry survives, since all beams supporting the pulleys have disappeared (**Fig. 9**). An examination of the enlarged 1964 aerial photograph shows that the well was almost entirely surrounded by a wall. Lifting and hoisting by camels could be carried out in one direction only.

¹³. Al-Sudairi 1995: 173.

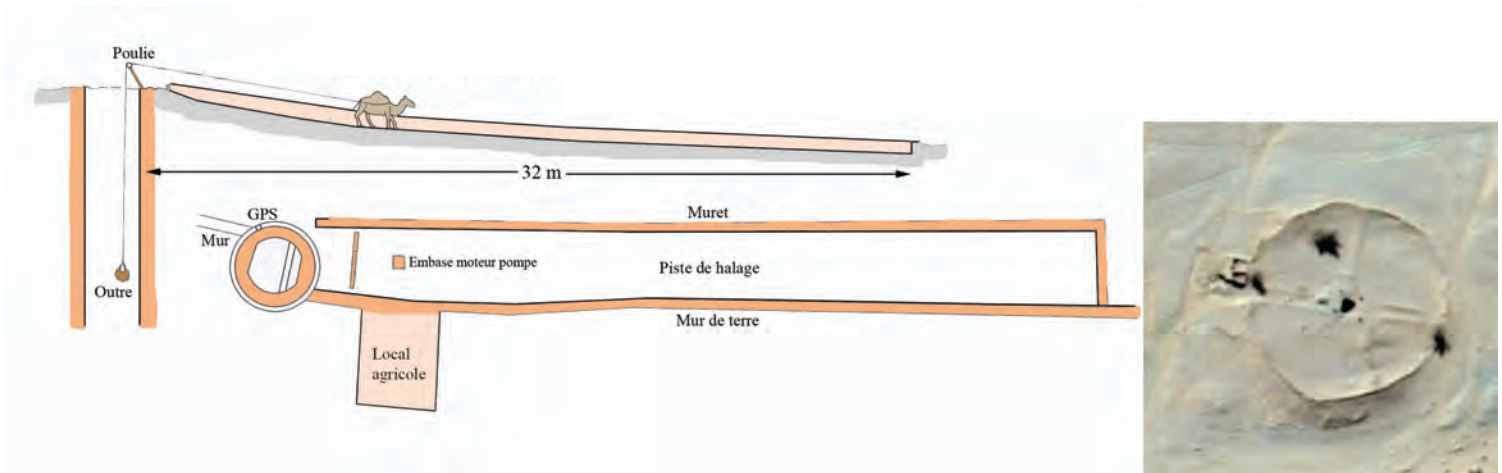


Fig. 8. The boundary wall reveals the length of this hauling trail and enables one to deduce the maximum depth of the well. This is also the case with the circular perimeter around PU197



Fig. 9. PU169 is the only one where a hoisting device remains to this day.

The advent of pumps in 1949

Pumps appeared in the Jawf as from 1949,¹⁴ more or less at the same time as at Hegra. These pumps, made in England or India, were linked by a long strap to a spark ignition engine. Nevertheless, by contrast with Hegra, what we have here are not suction pumps but axial exhaust ones. This means that in the vertical pipe descending from the pump to the water one finds a long metal rod causing the helicoidal coil to turn fast, forcing the water up. While at an elevation of 600 m a suction pump cannot efficiently pump water from a depth of 7 or 8 m, one can go beyond 20 m with these axial pumps. At well PU160, pipes reached a depth of approximately 20 m, and one of 30 m at well PU211.

At Hegra, given the depth of wells, inhabitants were obliged to place suction pumps on sealed rails at half the depth, and the rest of the engine was placed much higher with transmission done by long straps. Did these pumps cost less? Did the availability of rails from the Hijaz Railway to fix and stabilize them make their operation easier?

Many wells possess only one pump, but some have two (**Fig. 10**) or more. Remains discovered at well PU211 testify to the existence of six pumps! (**Fig. 11**)

Was this because there was an exceptional feed-channel? This well was at the edge of several land plots, and we think, rather, that each of the six local residents wanted to pump water independently of others! We should make clear that all discovered wells equipped with a pump are found at the edge of an area nowadays still under cultivation. A comparison between the 1964 photograph and current satellite imagery shows a resumption of cultivation at several locations. If at certain places urban expansion has clearly trimmed areas under cultivation, an extension of agricultural practices has been taking place elsewhere.

The new watering network

The first artesian well was in all likelihood dug in 1954.¹⁵ The others followed as from 1970 and the map at a scale of 1/50,000 mentions 8 of them in 1981. These wells, located at elevations between 585 and 595 m, are therefore 15 to 25 m higher than the lowest point of the Sabkha depression. Water currently originates from an aquifer located at great depth (250 m).¹⁶ Has it arrived at the base of the *Tawil* formation, already described. As for the huge pumping station built under the Qasr in 1985, it might be fed by drilling into a water layer at a depth of 400 to 500 m. It flows into an entire network of galvanized steel conduits

¹⁴. *Ibid.*: 173.

¹⁵. *Ibid.*: 173.

¹⁶. Nasif 1987: 64.



Fig. 10. Pumps with back screws are set up at the top of wells (here PU160)



Fig. 11. At well PU211, there are six pumps, no doubt for irrigating the fields of six different landowners. One of the pipes has disappeared

(**Fig. 12**), which in turn irrigate palm groves and gardens. This has led to the abandonment of water pumps of wells and of the engines that made them work. The old splitter tanks and stone channels have also been abandoned (**Fig. 13**).

However, the abundant water resulting from this new form of irrigation infiltrates the ground at great depths and creates numerous feed-channels in the wells. These artificial feed-channels misrepresent the water level which can be found in the wells and complicate our understanding of the ancient irrigation system. An analysis of the latter will be attempted below.

The qanâts

One can find references to the existence of qanâts when studying the plans of the old city in 1962.¹⁷ Thirteen qanâts were apparently still in use around 1980¹⁸ and twelve were abandoned.¹⁹ Unfortunately, the dates lack precision. According to Nasif, none of the qanâts extended over great lengths: 150 m at most. On which elements is this conclusion based? Had the author visited and measured the qanâts, or was he reasoning on excavated sight holes visible from the surface? Moreover, an examination of the 1964 photographs yields no continuous alignment of qanâts, and one can only distinguish 4, 5 or 6 sight holes, totalling a length of around 60 m. Only one alignment reaches 150m and comprises eight sight holes, the last one not far from ‘Ayn al-‘Amîr (**Fig. 14**). Its other extremity points in the direction of wells 160 and 171. Nasif’s writings lead to the thought that some qanâts were restored and refurbished when pumps were installed on the wells, beginning in 1949. Those ending today at the wells which lack any remains of pumps, were definitely abandoned, i.e. mainly in the area under Qasr Mârid.

The advent of a new watering system not only caused the demise of wells but, as a consequence, the abandonment of the qanâts leading to them. Substantial urban expansion in the uncultivated areas has meant the closure of previously spared underground channels. After looking at the 1964 aerial photographs, on which a number of shafts leading to the qanâts are visible, we proceeded to research in the field. The searches on the ground for qanâts have all been unsuccessful, and our only discoveries of qanâts which could be entered were made through the wells during our various expeditions.

While in the field, indications were given to us of a qanât beginning at ‘Ayn al-‘Amîr, which would have led to well PU169. Yet all sight holes punctuating its course were completely filled in, except for one located 30 m before well PU169, in filled beyond 11.6 m of depth. It would only be necessary to dig an additional 2 m to find the qanât.

¹⁷. Winett & Reed 1970

¹⁸. Nasif 1987: 63

¹⁹. *ibid.*



Fig. 12. New system fed by big pumping stations



Fig. 13. Ancient irrigation system fed by the wells and abandoned today

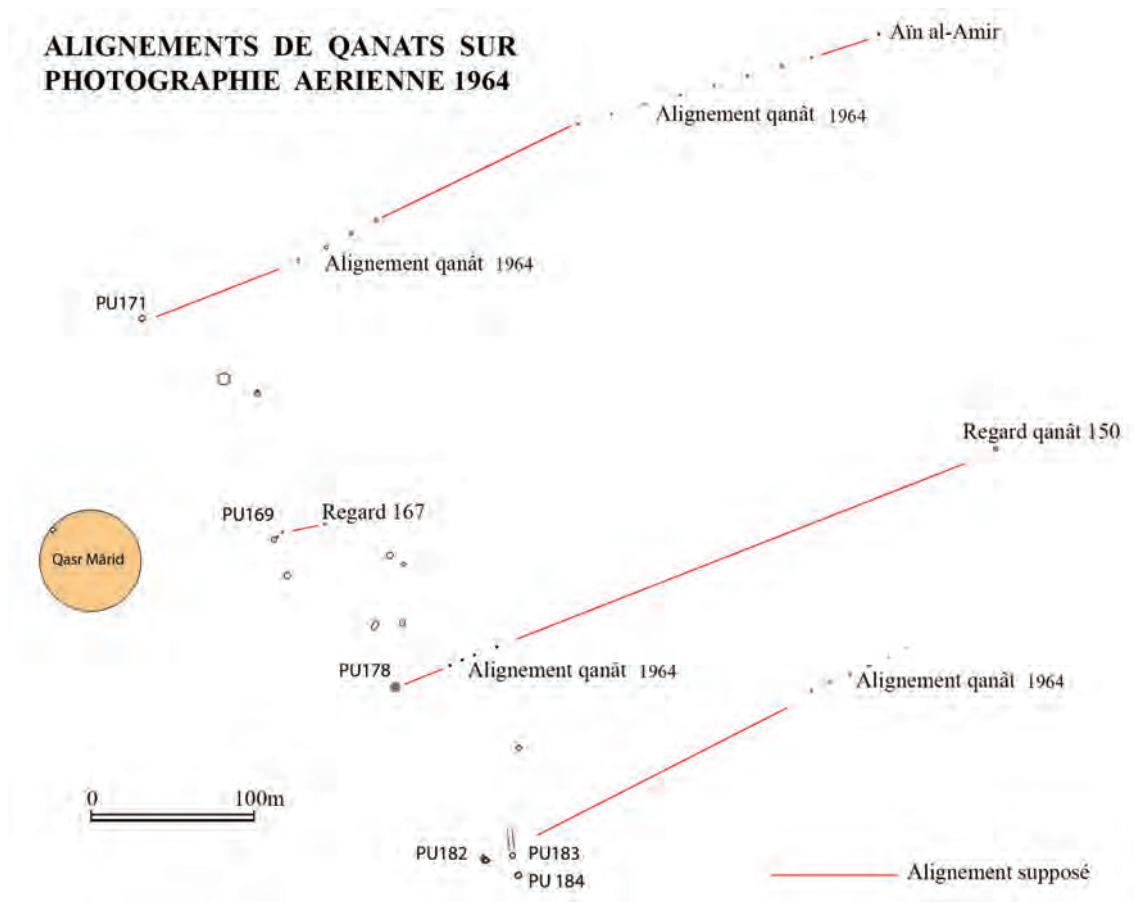


Fig. 14. Alignment of qanâts as deduced from aerial photography and from wells and sight holes recorded in the field

Lessons from the 2012 explorations

After this review, matters for thought and consideration derived from our various explorations will be discussed.

Geological analysis of the wells

As previously observed, the *Qasr* layer, which is the first section of a well, is not an aquifer. The *Sha'iba* layer located below does not appear to be an aquifer either. The thin layer of sandstone at the edge of the *Qasr* and *Sha'iba* and where the two explored qanâts were dug is not visible in the stratigraphy established from drilling at Sakâkâ. It was necessary to decide between the stratigraphy of the *Sha'iba* given in 2005 by Al-Ajmi (**Fig. 6**), which mentioned a major limestone constituent, and Helal's estimation,²⁰ which spoke of medium-grained sandstone. However, when attempting to detach a sample of hard rock forming the lower part of the wells, our hammer broke and fell to the bottom, on the last day! Nevertheless, it should be emphasized that the stratified aspect of the rock makes one think of limestone.

Given the date of estimations by both geologists and the means used for determination, we are more in agreement with the **Fig. 6** stratigraphy presented by Al-Ajmi. We would therefore have, in the wells' lower section, a hard, impermeable and waterproof hard limestone. The *Tawîl* aquifer formation, consisting of a medium-grained sandstone with a slaty marly layer in its upper part, is found below. Given the deepest measurement of wells (37 m), we do not think that they reached the *Tawîl* layer, unless the bottom of this 37 metre hydraulic structure was considerably infilled by sand or other materials fallen from the surface.

Another element should be taken into account: the *graben*, a large subsiding gutter, which thanks to series of faults brought several layers of different rocks into contact (**Fig. 3**). The *Tawîl* aquiferous formation was raised sideways in relation to the *graben*. One could then look for the main feeding channel of this collapsed compartment by starting from this *Tawîl* aquifer, through the set of faults. Water would have climbed along fractures to feed water holes and sources. Another element should be added: the large pumping station of Dûma is very close to 'Ayn al-'Amîr. When one examines as accurately as possible one of the faults visible on the geological map, one notices that it is located near these two points. Was the choice of the station's location related to this fault, and was 'Ayn al-'Amîr a favoured water

20. Cf. Ajmi (Al-) 2005: 32.

hole because it was close to this fault (**Fig. 25**)?

Another factor to be taken into account: 13 km to the north of Qasr Mârid, the *graben* includes a very flat zone named Ajrubah, which includes a small obstacle preventing the downhill flow of water (**Fig. 5**). In this very flat area of 15 sq. km, several wâdîs disappear into the ground. Are we dealing here with an absorption zone enabling a partial refill of the water table after heavy rains? During the short period following a flash storm, the humid zones or surfacing of water over a small area might have encouraged the digging of wells in the vicinity of ‘Ayn al-’Amîr.

It is important to signal that due to an annual rainfall not exceeding 50 mm, many regions of Arabia only have fossil water tables, whose waters, extracted using drills, have been dated to several thousand years (15,000 BP near Hegra). The small quantity of water which reached the water tables only permitted their stabilization in the past. The state of aquifers has evolved over the last few decades. Since the end of the 1970s or the beginning of the 1980s, the heavy extraction of water by deeply immersed pumps has considerably lowered water tables in Arabia. However, since not all water tables communicate with one another, their drop does not follow the same pattern everywhere. The Jawf water table appears to decrease by 0.2 m per annum. This would agree with a drop by 7 m observed by our team in the Sabkha. At this time, the Sabkha was still under water, at an elevation of 575 m according to the 1/50,000 map. Presently, it is mostly dry, since only in its lowest point was a ditch filled with water, the latter discovered at an elevation measured at 567.7 m by our differential GPS. As for the lake overlooking the Sabkha by some 30m, it is not fed by flooding from the wâdî, but by pumping the water table for use as a water storage reserve. After a characteristic flood, which sweeps away much mud, it is likely that the Sabkha was level with the water table. This means that after flooding, which occurs about once per decade, the level of the Sabkha can temporarily be higher, but shortly after it will descend to the level of the water table.

Data concerning current pumping at Dûma by the Ministry of Agriculture are nevertheless still lacking, together with precise data on pluviometry. It would also be interesting to know what are the limits and extent of the water table tapped at this location, and the total extent of the layers framing the artesian layer.

The digging of wells

The wells recorded or those explored by our expedition open at an elevation 30 m higher than the bottom of the Sabkhat al-Jawf depression and higher than the wâdîs which lead to it. Given their elevated position, the layer of sediment or alluvium is logically much thinner



Fig. 15. The friable rock in the photograph to the left shows why the top of the well was constructed. To the right, one can see the change in rock, with the constructed part in the Qasr member and that dug in the Sha'iba member

than usual: 1 to 2 m, sometimes less. Under this superficial layer, we quickly encounter a very heterogeneous stone, made up of fine benches of limestone and siltite, with intercalations of slaty marl (Qasr member) (**Fig. 15**). Its heterogeneous aspect made the stone easy to carve and hew, but, by the same token, it is prone to rock slides. It is only at an average depth of 15 m that one finds a more massive and harder rock (Sha'iba member). This harder rock was used as a foundation course for the masonry which rose to the surface, whereas lower down, the inhabitants continued to dig the well directly into the rock, without placing any masonry, except at times where levels of softer stone would lie sandwiched in the harder rock (**Fig. 6**). In this part of the well, a reduced diameter (2.5 to 3 m instead of 4 m) was observed.

The most significant openings for qanâts were found when the nature of the rock changed. The digging depths that we measured below the feeding channels from qanâts were variable; one finds 8m at PU212, 16 m at PU211 and perhaps 22 m at PU189. Like in other wells, the fall of various materials, or the rock slides accumulated at the bottom of well, did not allow us to measure the real depths of the wells.

Studying the excavation of layers of harder rock located below the built area is of much interest. We recall that the earliest semi-steeled iron, a great improvement for digging rock,

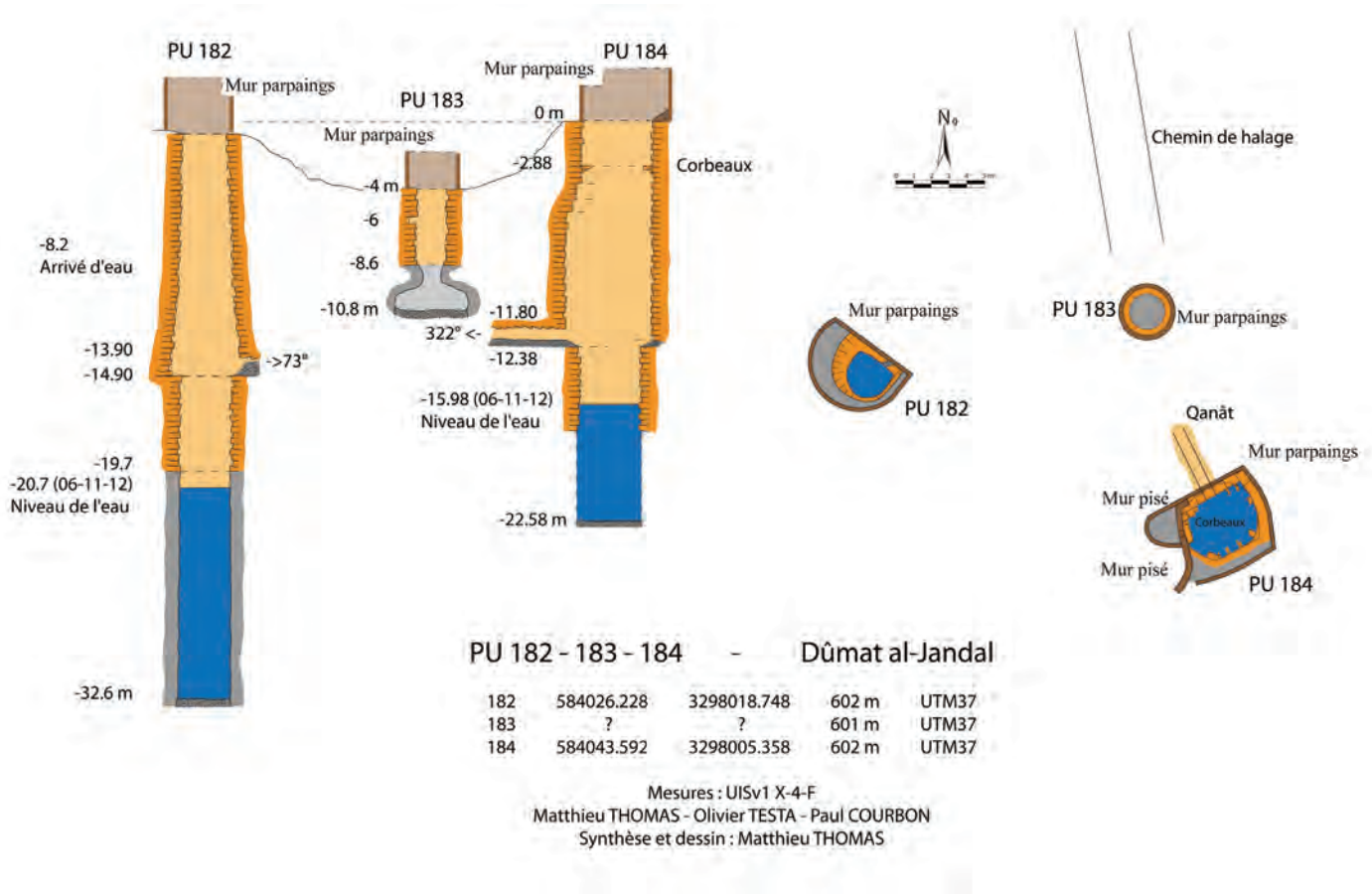


Fig. 16 . The water level of wells PU182 and PU184 is different, even though the wells are close to each other. During the same lapse of time, PU184 was in all likelihood filled with more material than PU182, this due to the collapse of a larger surface structure indicated by the corbels still in place

appeared in the Middle East in the eighth century BCE. While studying the wells of Hegra,²¹ we rediscovered abandoned shafts enabling us to understand digging methods used by Nabataeans. A pick vertically carved two small vertical trenches 20 or 30 cm in depth, spaced out at intervals of 50 cm. When the digging of these trenches was finished, the parallelepiped of rock they bordered was removed (**Fig. 17**).²² The team did not have the time to observe ancient quarries of the Dûma region, but one can imagine that this same technique was employed here as well.

However certain measured depths of wells below the qanât channels (15 or 22m for the deepest) warrant an explanation. Digging such deep wells could be done because there was no water. In Mauritania, in the 1960-1970s, wells reaching up to 3 or 4m under the water table could be dug by pumping water quickly while the well digger would continue excavating.

21. Courbon 2008.

22. Bessac 1986 and Abdul Massih 2009.



Fig. 17. Above: digging method of the rock as can be seen at Hegra; was it used for wells at Dûma? Below: striations on the surfaces of PU160 resulting from hewing and digging the rock with a taper wedge (pointerolle)

This was possible, since water was not flowing freely but would slowly seep from the surrounding rock, with very low pressure at the summit of the water table. This over-deepening permitted the accumulation of a greater supply of water before pumping. In the Nabataean wells of Hegra, we noticed the same configuration. Yet a depth of 10 to 20 m could never have been reached if excavating in an inundated zone.

Infiltrations due to over-abundant irrigation certainly had an influence on current water levels (**Fig. 18**). Yet they do not explain everything: in wells PU174 and PU175, which are 7 m apart, how can a difference of water level of 4 m be explained (**Fig. 19**)? In wells PU211 and PU212, which are 30 m apart from each other and connected through a qanât, this difference exceeds 11 m. Can one deduce that the rock separating these wells was not porous and therefore not an aquifer? Can one suggest that the wells were not linked to a water table? A more detailed study will have to be carried out by measuring the fluctuations in the water level over several months, taking into account the influence of fracturing.

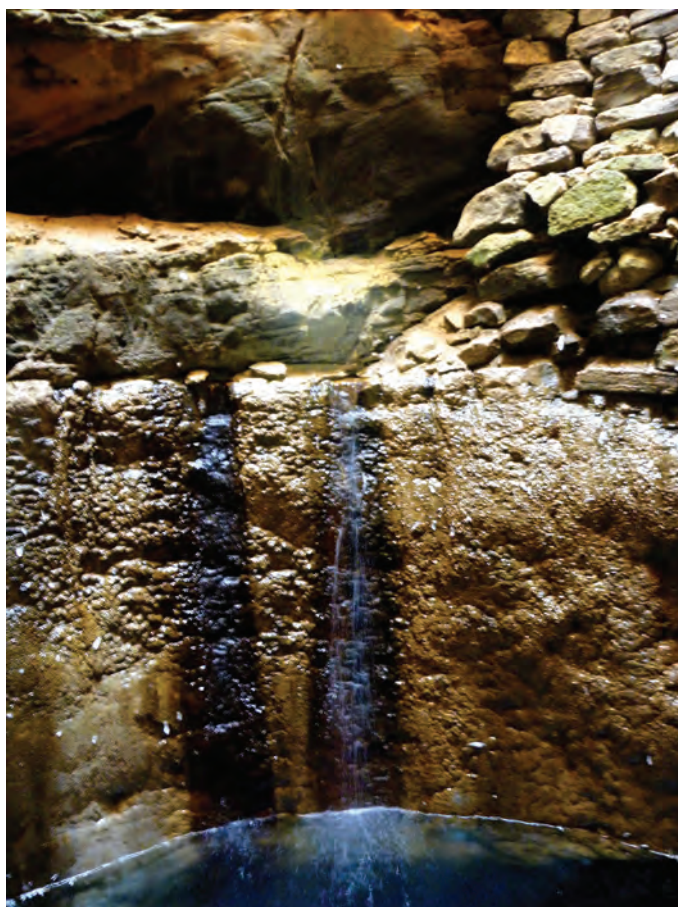


Fig. 18. Important infiltrations, visible in several wells, mainly at the joints rocky strata

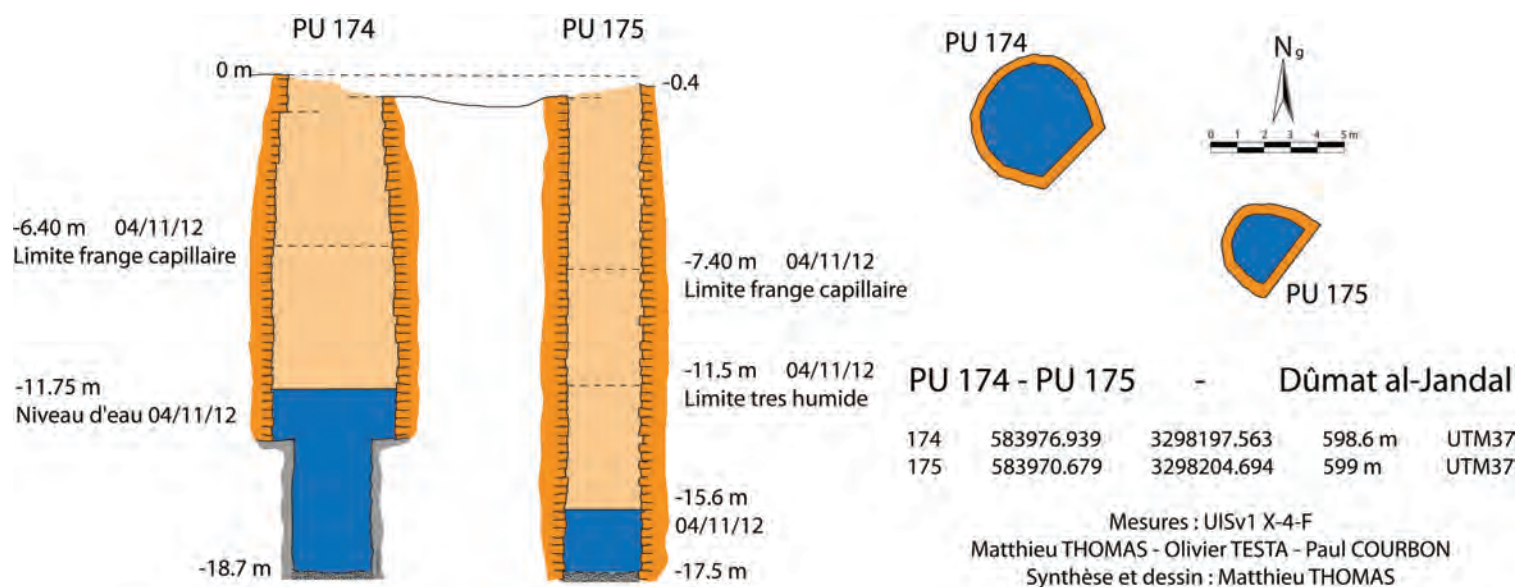


Fig. 19. Wells PU174 and PU175, even though separated by the short distance of 7 m, have a water level which during 10 days of measurements had shown a constant difference of 3.8 m. A more refined study should lead to a better explanation of this phenomenon



Fig. 20. This photograph taken in well PU178, shows the extent of the built part of wells and the technique of use of stones with no bonding, without any mortared joints. Curiously, the course of the built section leaning on the Sha'iba rock, seems made of small stones. Siltite stones in pink tones, forming beautiful limestone slabs, can be distinguished

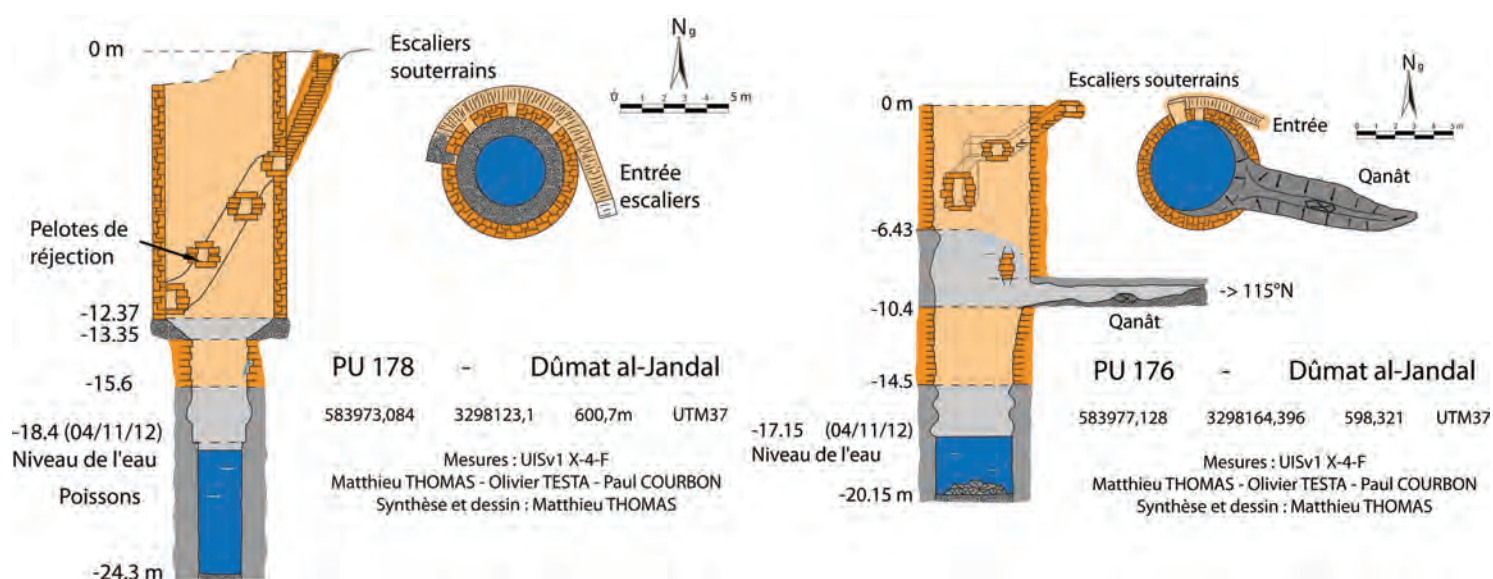


Fig. 21. Two of the wells where we have discovered an underground side staircase enabling reaching the base of the masonry

Another observation: in well PU211, many infiltrations were seeping from the rock face, and yet in one well, water was found to be only 3 m deep at the bottom. In neighbouring well PU212, though, there is more than 5 m of water and the level of the water surface is 11.6 m higher than in well PU211 (**Fig. 23**). Is there a leak at the bottom of PU211? If this is the case, where does it lead to?

The same question arises for the Qasr's lower well, where there are abundant water channels which are drained through the rubble collapse burdening the structure's bottom. As opposed to other wells, this water did not fill the well and stabilized at 15 or 20m of depth. As for PU211, is there a place lower down from where water can escape?

These observations on the difference in the water levels, on the waterproof character of some wells, or on possible leaks, render the creation of an all-encompassing model or of a reliable piezometrical map quite an awkward endeavour.

The wells' built section

One is astonished at the scale of the wells' built section, of an average height of about 15 m, with a diameter of approximately 4 m. Given the thickness of around 50 cm we have been able to measure at places, this represents a volume of masonry of about 100 cubic metres per well. It is also very likely that good stones from the digging process were used. An analysis of the stones of the built section would provide clues to an answer on this issue. The mounting of the stones resulted in a circular dry stone wall, with no mortar whatsoever (**Fig. 20**). The assembled courses are regular, with stones of the same thickness and which were well hewn. This regularity comes from the very nature of the stone used; these are the boulders originating from the *Qasr member* of the cliffs surrounding the Qasr Mârid. Hence the ancient inhabitants employed beautiful limestone slabs and very handsome ones of stiltite which, although solid, easily break off the rocky mass because of their leaf-type lamination.

Access to the bottom of the well

In the well's first section, dug into a not very homogeneous rock, one could imagine ladders and ropes being used during digging. When the first part had been dug down as far as the harder layer, the dressing of stones could be done by mining this more solid lower course. We cannot ascertain whether the well-diggers continued to dig in the hard rock layer underneath while masons were at work above them, or whether they waited for the well's complete excavation to begin dressing the upper part.

In some wells (PU176, PU178, PU197, PU198), the dressing encased an underground staircase allowing easy access to the base of the masonry (**Fig. 21**). However, in most of explored wells, these staircases did not exist.

This introduces another question: how did well-diggers descend into and exit the wells? In wells 25 to 40 m deep, this cannot be done by using a rope and the force of one's arms. It would be logical to think that, just as for the descent of building stones or for the extraction of boulders through digging, well-diggers could go down or be raised by ropes drawn by camels that wind around the pulleys of a hoisting system.

At Madâ'in Sâlih,²³ there are notches in the limestone or the masonry. These enabled well-diggers to descend or exit the wells by their own means, by climbing. In certain cases, this was quite impressive. We have not seen anything like that here in Dûma.

The function of qanâts

At Dûma, the only points of departure for qanâts were reached from wells, at a depth of approximately 15m, at a level close to the base of the well's masonry (**Figs. 23-24**). The team managed to explore a significant length of only two qanâts. These were dug into rock, both in a beautiful soft sandstone layer. This thin layer of porous sandstone does not feature in the stratigraphy established from drilling at Sakâkâ.

Henri Goblot, who carried out a comprehensive study of qanâts around the world, defines these hydraulic structures in the following way: “a technique akin to mining which consists in exploiting underground water-tables thanks to a draining gallery” (*une technique de caractère minier qui consiste à exploiter des nappes d'eau souterraines au moyen d'une galerie drainante*).²⁴ This means that people excavated under a plateau or mountain to create a gallery or tunnel with a slight slope, so as to capture an aquifer and enable its runoff to flow towards the surface. At surface level, the line of qanâts is punctuated by sight holes dug at regular intervals, whose function was to re-orient the tunnel's excavation, to evacuate cleared rubble from the gallery and for ventilation (**Fig. 22**). Field knowledge accumulated by “water searchers” of the time, or their gift for finding water resources, allowed them to figure out the right places to dig a gallery to reach this vein. Henri Goblot mentions qanâts in Arabia, in Riyâd, Tâ'if and Medina, but bypasses those of Dûma.²⁵

23. Courbon 2008.

24. Goblot 1979: 27.

25. *Ibid.*: 110.

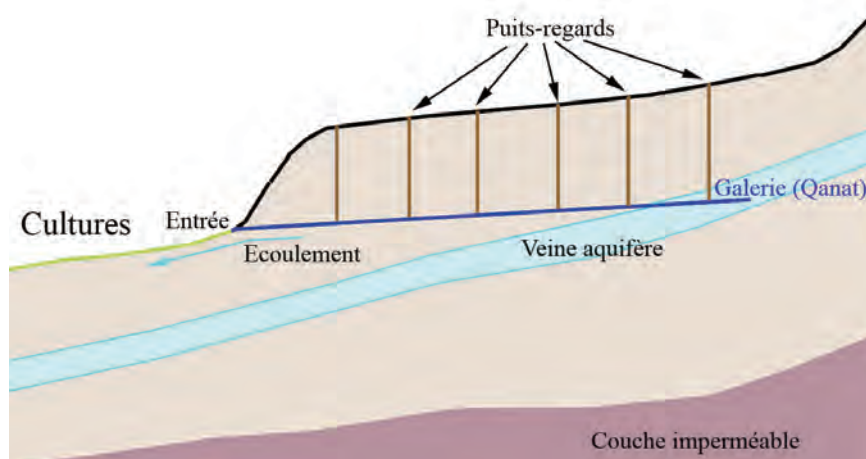


Fig. 22. General principle at work in a qanât, showing how a water vein under an escarpment is captured and exploited

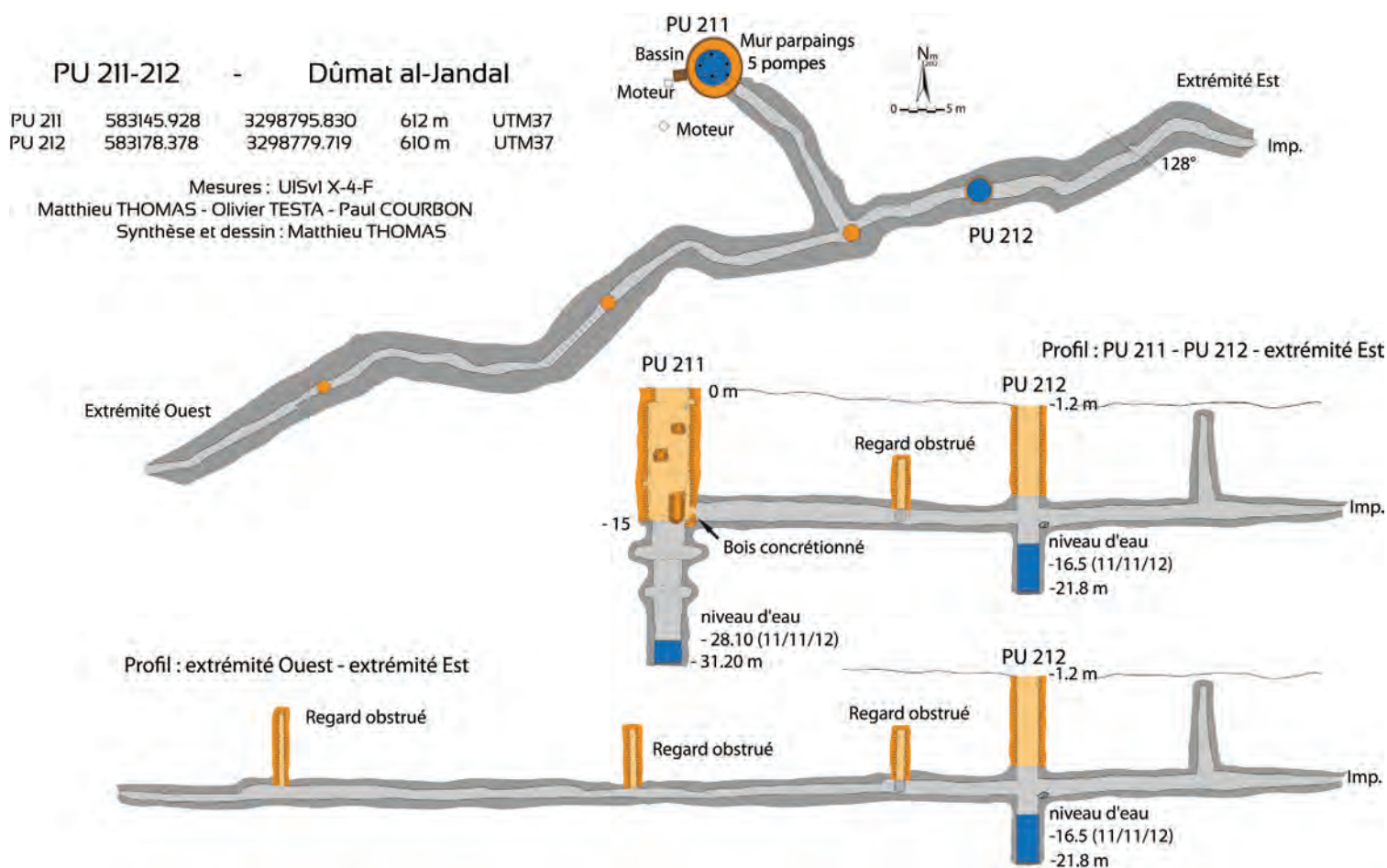


Fig. 23. The largest qanât discovered starting from the wells. Its rising part (eastern branch) leads to the wâdî, its descending part (western branch) towards the very steep slope of the graben. See figure 25.

Yet at Dûma, the various topographies we were able to draw for both qanâts show they follow a rising slope from the well. They could not therefore evacuate water from the wells, but only carry it into them! From the wells, these qanâts do extend in a direction leading under the mountain or the overlooking plateau, but towards the base of the *graben* (Fig. 23).

It would appear that we have a configuration opposite to that of typical qanâts. At Dûma, the qanâts do not follow the pattern described by different authors in Iran, Algeria (*Foggara*) or in Morocco (*Khettara*); they seem to be unique. Moreover, to study the rationale behind qanâts connecting several wells would be most relevant (Fig. 25).

At a period difficult to determine, from a water channel at the surface, a slightly descending gallery was dug to feed dried up wells dug higher up on the slope! The gallery led into the wells, reaching a depth of about 15m, which once full would have been used as a tank or supply for domestic use or for irrigating gardens located above the point where water was channelled; some of these may have been located within an enclosure protected by the Qasr. The wells were thus, in fact, cisterns.

Yet the disappearance of the qanâts' sight holes at ground level hinders the full confirmation of our hypothesis: where did the qanâts originate and how were they fed? The 1964 aerial photograph reveals a long alignment of qanât sight holes leading to 'Ayn al-'Amîr. Measurement of elevations has given the following figures: 591.7m at 'Ayn al-'Amîr and 587.8 for the point of arrival of the qanât at well PU169, 586.0m at the base of the masonry of well PU160, and 587.6m at the level of the qanât of well PU176. These elevations revealed a downward slope, with a gradient of around 1%, from 'Ayn al-'Amîr to the wells, a figure which appears quite plausible.

A major question nevertheless remains unanswered following this analysis. The first artesian well was only opened in 1954,²⁶ and one could imagine it fed qanâts which were still usable. But before this date, from where did the water feeding the qanâts, in order to discharge in the studied wells, come from? Can we definitely say that 'Ayn al-'Amîr was a shallow source or water-hole, which could irrigate qanâts? In the current state of our research, elements of an answer can only follow from research on historical sources relating to Dûma's qanâts.

26. Al-Sudairi 1995: 173.

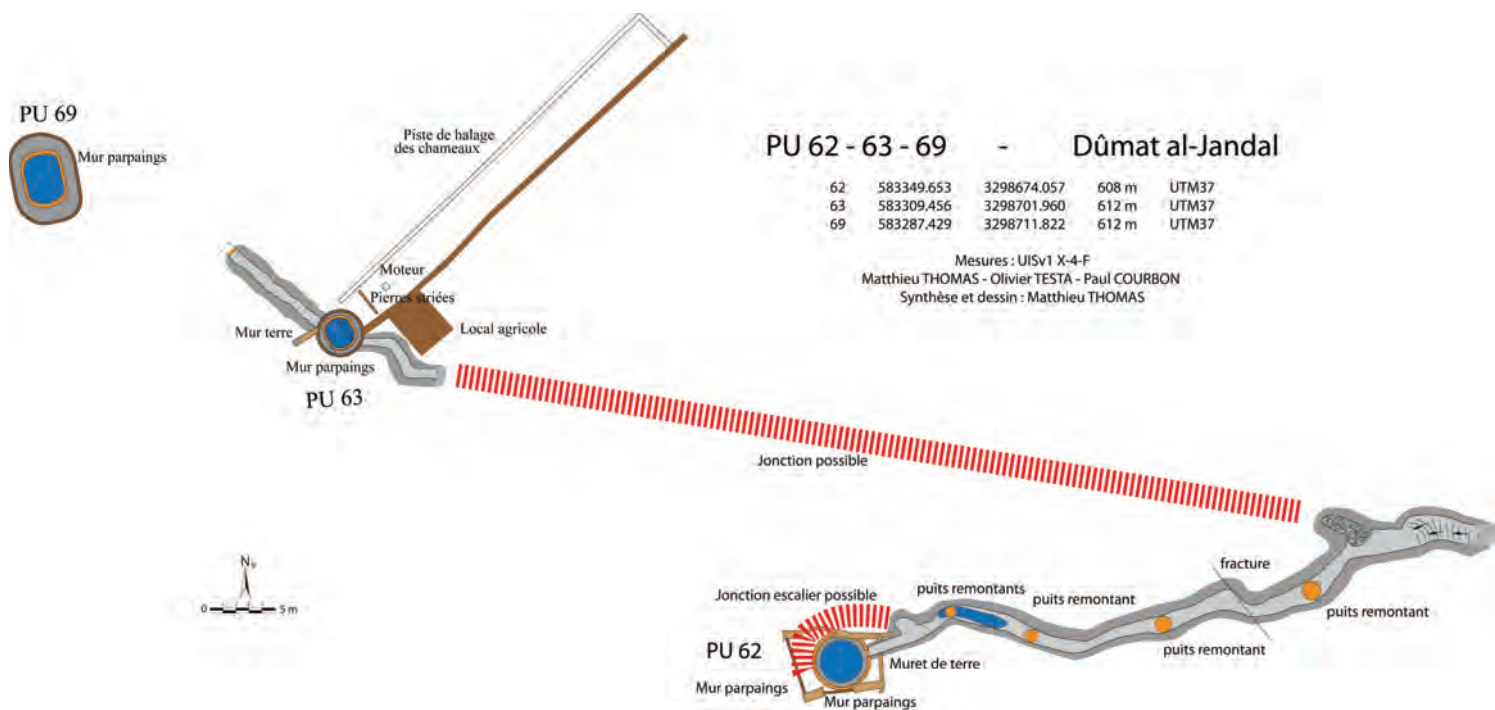


Fig. 24. Hypothesis showing junction between the qanâts of wells PU62 and PU63

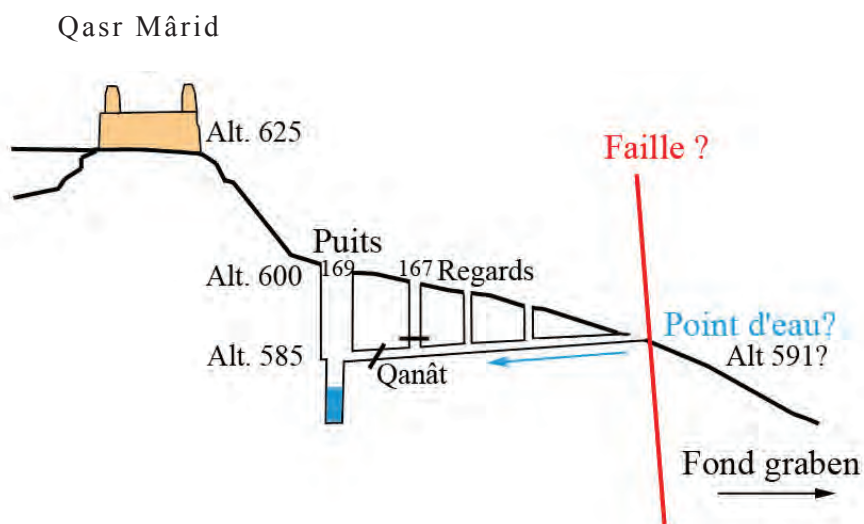


Fig. 25. The hypothesis put forward thanks to our measurements has enabled the drawing of this diagram

Historical research on Dûma's qanâts

In the treaty signed in year 9 of the *Hijra* (AD 630) by the Prophet Muhammad (PPBH) and Ukaydir, the leading authority at Dûma, there is a reference to flowing water.²⁷ Is this a mention of water flowing inside the qanâts or that originating from sources?

In 1845, the Finn G.A. Wallin, after highlighting the wealth and variety of orchards and palm groves, wrote: “Narrow alleys between walls bordering the orchards, which were used as thoroughfares and channels feeding both day and night planted gardens with water from sources.... However, as water is not enough for all gardens, each orchard includes one or several wells which make up for insufficient water sources... Water is easily reached in this valley, the depth of wells does not exceed ten fathoms (18 m).”²⁸ Moreover: “The settlement of Dûmat al-Jandal contains three abundant sources; Alkûbra, Bard Zubeida and Ayn al-Jan-dal.”²⁹ Furthermore: “From time to time, one finds subterranean aqueducts, built of solid hewn stones of fine workmanship, which once were perhaps used to direct rainwater towards wells or for runoff from now gone sources or wells... As they are full of sand, only a fraction are accessible and neither their point of departure, nor that of arrival can be ascertained.”³⁰

Another author should be quoted: “Many source-wells which supply meagre runoff for irrigation of the oasis.”^{31 32}

These descriptions are very approximate and contradictory, and do not yield more precise information about the location of the qanâts, or even the scale of their use.³³

An element of toponymy must be taken into account: the term ‘ayn (source) (as well as *shari’ah*, which means a water hole emerging at the surface),³⁴ which is found in the toponymy of several wells instead of bir, leads to the hypothesis that at a given period water was flowing to the surface.

Obviously, none of these elements provides absolute proof for the feeding of qanâts; they only provide educated guesses which will need to be confirmed by future research.

27. Nasif 1987: 63 referring to Ibn Sa’d 1957 *At-Tabarqât al-Kubrâ*.

28. Wallin 1845: 140.

29. *Ibid.*: 142.

30. *Ibid.*: 145.

31. Philby 1923: 252.

32. The contradiction between *abundant* and *meagre* can be noted.

33. We would like to thank G. Charloux, who provided us with the bibliographical references mentioned in this article; on the matter, see also Charloux 2012: 51-52 and fig. 10.

34. Nasif 1987: 64.

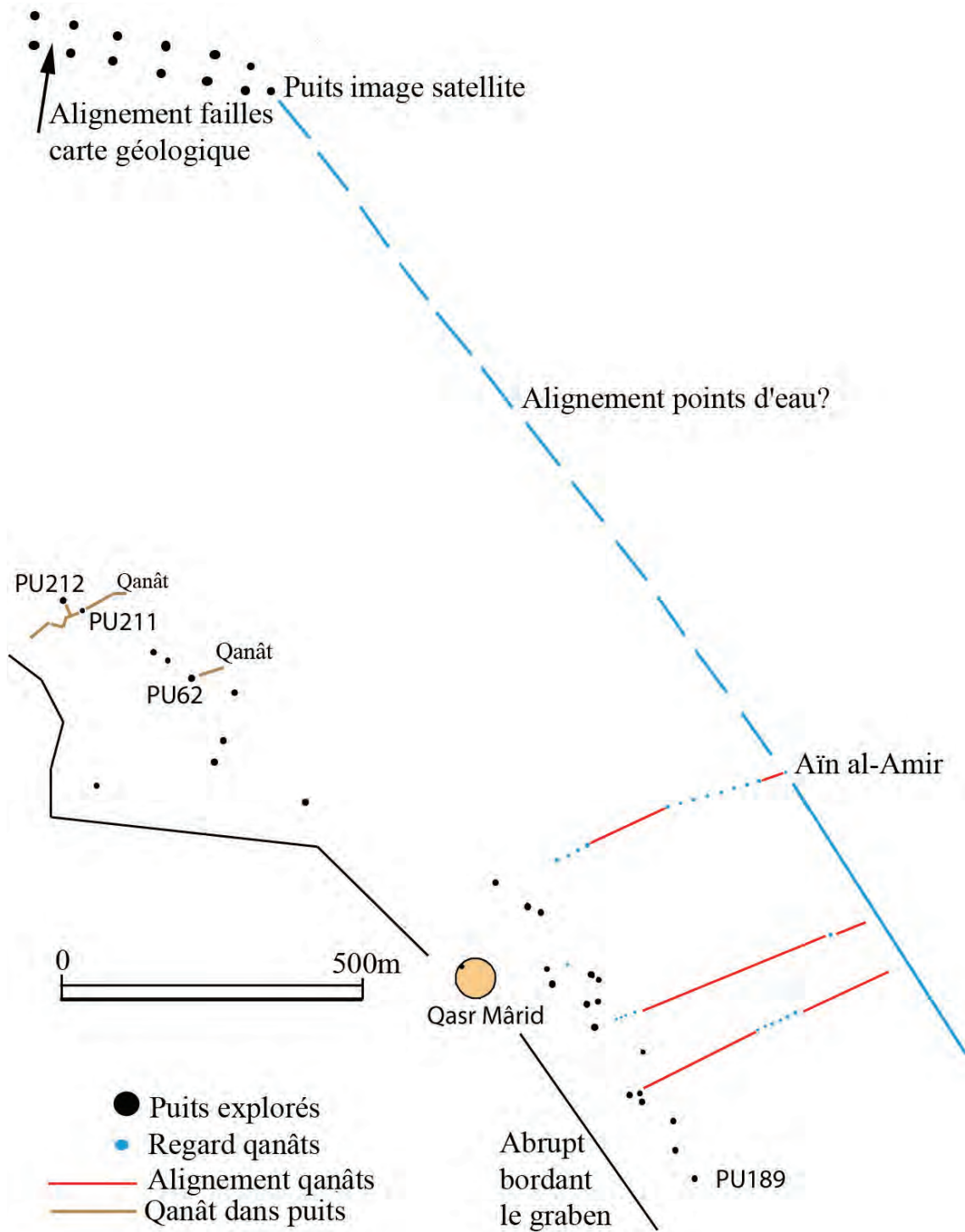


Fig. 26. Map with qanât alignments seen in red on aerial photographs and, in yellowish brown, qanâts reached at the bottom of wells PU62 and PU211. They follow the same direction

Complementary measurements

Temperatures: values measured in water from the wells vary between 20° and 25° C. Many questions could be asked on the matter, but these are difficult to answer without additional measurements, to be carried out in future seasons.

Conductivity: what lessons can be drawn from measured conductivity? With conductivities reaching 13mS, we can only conclude on the water's degree of pollution and can use this method to define runoff between wells.

Measurements of the rock's porosity:

The sandstone sample taken inside the qanât of well PU62 was weighed when dry: its mass was 240 g, compared to 270 g after 5 minutes in water. This increase of 30 g for a total volume of 120 cc, indicates a porosity of 25 %. When of large thickness, this sandstone would have made an excellent aquifer. Its reaction to hydrochloric acid was non-existent. Its porosity was therefore insignificant or under our measurement threshold.

The limestone from the lining stones of the wells had a stronger reaction to acid: a piece weighed 365 g when dry and 365 g after immersing it 5 minutes into water; it was therefore not aquifer.

The limestone from the *Qasr Member* on the museum hill had a quite strong reaction to hydrochloric acid, and a piece weighed 480 g when dry and 492 g after 5 minutes of immersion in water; for a volume of 240 cc, its porosity was therefore of 5 %.

The limestone of the *Sha'iba member*, at the bottom of the wells, was not measured.

The expedition acquired a soil auger to sound the bottom of wells. This tool can extract soil over a depth of 3 m. This operation had been successfully carried out in Nabataean wells at Meda'in Salih.³⁵ Unfortunately here, all deep wells where this operation would have been relevant were under water.

Distribution of wells

We have put forward hypotheses on the digging of wells and their relationship with local geology. It is also interesting to observe the spatial distribution of these wells and understand the reasons for this distribution (**Fig. 27**).

An earlier hypothesis should be recalled: fifteen wells are located just under the Qasr Mârid, which protects them, at the edge of or inside the ancient village, in the historical ar-

³⁵. Courbon 2008.



Fig. 27. The beautiful masonry of Bir Hasya and openings lighting up the staircase that descends to the base of the masonry

ea's protected perimeter. One should add that these are the only wells towards which qanât alignments, visible on the 1964 photograph, are oriented; that photograph, however, does not cover the entire area studied. A question is of great importance: were these wells the first to be dug? Is it only later that the area of the wells extended towards the SW and the NE, in order to irrigate the plot under the *graben*'s cut-off, this plot being higher than the alignment where water was easily accessible?

During the short time allotted to the expedition, many wells were visited, particularly those lying beyond the NW and SE directions. This direction is parallel to the wâdî Sha'ib al-Himdi and to the escarpment marking the *graben*'s edge. Yet the relative elevation with respect to the bottom of the gutter has seriously diminished. If PU189 is 35 m higher than the Sabkha, PU211 is only about ten metres above the bed of the wâdî Sha'ib al-Himdi. Does referring to elevations put into question the pattern we had previously conceived? This is not obligatorily the case, since the wâdî's elevation is still 6 to 7 m higher than the qanât's inlet in well PU211.

Another issue requires an answer in the form of a detailed study of the ground's geology and faults: do all wells follow the same pattern, their water supply reaching them through qanâts beginning at water holes?

The north-western wells

The large enclosure studied by the archaeological expedition and named sector C is located to the NW of the castle;³⁶ it is quite apparent on satellite photographs. It is bisected over a length of 800 m by the wâdî bed. Since this area has undergone massive urban disturbance, no open wells remain visible. It is certain, however, that the framing of the wâdî bed by the ramparts was related to the water supply.

Further to the NW two wells were a source of astonishment. They open not far away from Sha'ib al-Himdi, at 4 or 5 km to the NW of the Qasr, and are marked on the 1/50,000 map as Bir Hasya and Bir al-Jilidiyah.

The furthest well, Bir al-Jilidiyah (or PU197), opens near the confluence of the Sha'ib el Qisân and the Sha'b al-Himdi. It is large, with a diameter exceeding 5m, and it is surrounded by an imposing circular earth levee indicating that many camels must have drawn water by pulling goatskins in radial fashion. It was carefully constructed and on the side a small, quickly infilled hole shows that a staircase made it possible to reach the foot of the masonry. Unfortunately, it was obstructed at a depth of 7 m by substantial sand infilling. Since it is located at an elevation very close to that of the wâdî's bottom, one wonders if it reached the water table directly. Its infilling seems to consist of a huge volume of material, so archaeological excavation would pose too many problems. The circular earth levee surrounding the well and marking the limit of camels at work (pulling goatskins) is situated at a distance of 25 m from the edge of the well. It can be deduced that water was at a maximum depth of 22-23 m (**Fig. 8**).

Bir Hasya (or PU198) generates other questions. It is also huge, its diameter at the top reaches 6m. Its masonry is in perfect condition (**Fig. 27**) and an underground stairway accesses the base of the constructed part at a depth of 20 m (**Fig. 28**). Here again we observed substantial sand infill. Would an excavation 1 or 2 m deep yield interesting indications, in particular on the almost completely obstructed openings that one can find (**Fig. 27-32**)? A hauling trail for camels, 32 m long, leaves towards the W/NW. Can one induce that the well's depth was slightly under 30 m?

The well's location is surprising and generates a series of questions: it opens in the middle of the slope climbing from the wâdî's flat area, and reaches the cliff overlooking the *graben*. Digging the well 20 to 25 m away from there would have reduced its depth by close to 10 m. Why was this not done? All the more so since at 100 m to the east, at the foot of the hill, we discovered another beautifully stone-faced well, infilled at a depth of 2 m (PU199). Why such a well mid-slope and another at the foot of the slope? Did the close distance from the

36. Charloux, al-Tirâd *et al.* 2014: 147-258.



Fig. 28. The interior staircase doubling the wall face

wâdî allow the well to reach the water table at this location? Was there a qanât at the bottom of these wells?

In fact, an examination of the geological map shows that these two wells are very close to a fault bordering the *graben* (Fig. 29). In modern times this disposition seems obvious, but in ancient times indications other than those related to good knowledge of hydrogeology, faults and geological phases was necessary! The way the first well diggers sank deeply into a plateau or a mountain to reach an aquifer vein, or who discovered on the surface the best place to dig a well, is truly a source of astonishment.

Dating hypotheses

We have not yet solved the issue of these wells' chronology. The historical sources we have listed are not precise enough. Finding mortar would have been useful for dating, but the wells' coating is of well-hewn stones without any bonding, and we are dealing with dry stone walls. Are the discoveries inside a well of a wooden lintel and of concretions covering it significant? These might be quite recent, and could be mere indications of restoration or maintenance. This should not prevent tentative chronological attribution.

During our expeditions, we found no written evidence carved on the stones. The bottom of some quite deep and dry wells should be excavated so as to find pottery type-fossils and sherds.

This emphasizes the relevance of excavation work carried out by Romolo Loreto in the protected area of Sector A.³⁷ These excavations revealed Nabataean, then Roman and Byzantine remains, which were occupied and re-used once more during the Islamic period. Can one deduce that the first wells were dug as early as the Nabataean period? The good state of preservation of the wells' built section makes us doubt this assertion, even though the wells could have been maintained throughout the ages. It would be more tempting to consider that the digging of these wells was linked to Qasr Mârid's protection.

The lower well inside Qasr Mârid is made using the same techniques as other explored ones (Fig. 30). However, the stones from its lining appear more corroded, more ancient than those of other wells we entered.

Regarding the age of the qanâts, the historical sources mentioned above likewise do not allow precise conclusions. Further qanâts, which can be explored over an interesting length and which perhaps contain elements of chronology, await discovery.

³⁷. *Ibid.*: 93-144.

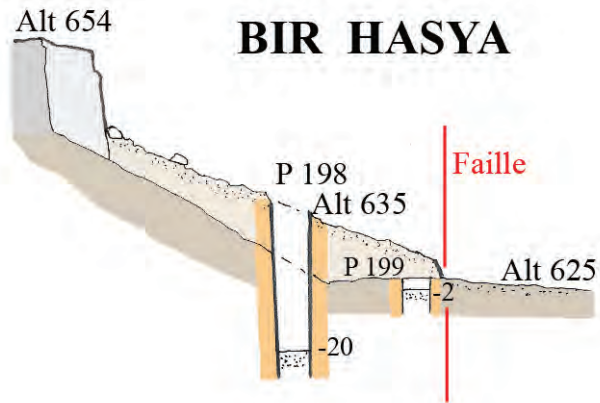


Fig. 29. The choice of wells PU198 and PU199 was linked to the presence of a fault, but what are the elements which led to the choice of the location by the well digger

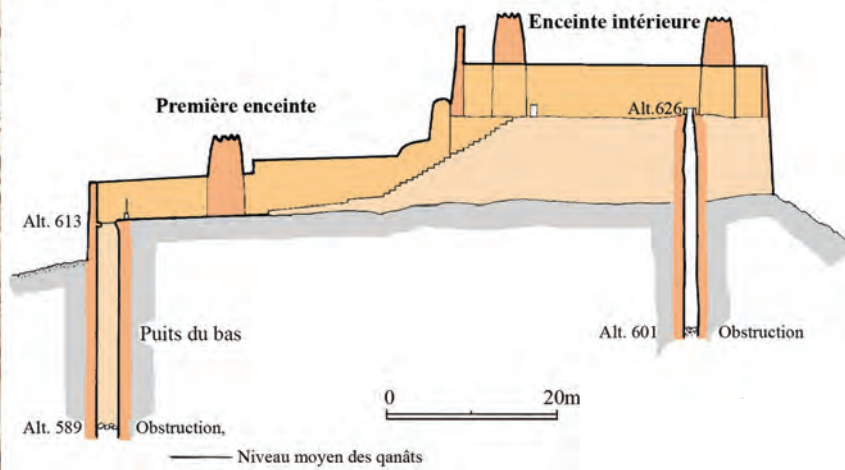


Fig. 30. The two wells of Qasr Mârid, unfortunately obstructed, are related to the fortress' date of construction. Is the lower well of Qasr Mârid the most ancient of the wells at Dûma?

Studies to be completed

As seen above, many questions remain unanswered, and there are currently no entirely satisfactory explanations. If the intervention of speleologists is repeated in 2013, it would be interesting to focus on these issues. For the present, it suffices to add the following points:

Qanâts: There is no doubt that with an ascending slope beginning from the wells, qanâts could not evacuate the water from the wells themselves, they could only bring water to fill them! In this case, why were wells dug so deeply below the qanâts? Would a depth between 5 and 10 m not be enough to create an adequate supply of water? Our geological study will have to make further progress.

It is certain that what we have seen of the qanâts is very limited. A thorough confirmation of preliminary hypotheses is needed. In our search for qanât sight holes, we found two whose excavation and clearing would be useful, to see if they conform to what we saw in the wells. First of all, sight hole 167, located 32m away from PU169, is 11.6 m deep and warrants a sounding at least 2 m deep. There is also sight hole 150, which corresponds to the alignment of qanâts running towards PU178, at a distance of 400 m. It is found near the edge of the road to the SE of ‘Ayn al-Âmir and was infilled to a depth of 1m. Measuring its depth would be essential, since it would yield an elevation undoubtedly confirming our theory (**Fig. 31**).

Another question should be debated: the usefulness of the qanât connecting wells PU211 and PU212. Is it consistent with a system of qanâts feeding several wells?

Wells: Finishing the inventory of wells would be useful, in particular towards the NW and the SE, so as to find one or two other qanâts allowing the completion of our study.

Despite the substantial runoff we observed there, why is PU211 not filled with water like other wells, for instance the neighbouring PU212? One only finds 3 m of water there. Is there a leak through the joints of strata, or did this very deep well not reach the nowadays much lower water table? Why would this not be the case of PU189, whose depth was measured at 37 m, filled with 22 m of water?

An authorization to descend into the well of the *‘Umar Ibn al-Khattab mosque* might launch interesting research. Other than the possibility of feeding water via a qanât, would the bottom of this well not reveal pottery essential for chronology?

Well PU198 also presents us with an interesting case that we have already seen. Did it directly reach an aquifer located less than 30 m deep beneath its orifice, or was it linked to a qanât? Given the elevation at the exit of the access stairway, it would be useful to excavate



Fig. 31. Sight hole 150, located near ‘Ayn al-Âmir. It would be interesting to empty it of collapse and infilling to know the qanât’s elevation



Fig. 32. One of the sight holes opening at the base of Bîr Hasya and which would be interesting to empty of sand



Fig. 33. Well PU184 is the only one where we found corbels which supported a balcony

a trench less than 2 m deep along the masonry, in its NE half. This would allow the *Sha'iba member* limestone to be traced and to check if one of the visible points of departure is that of a qanât to be cleared of infill (**Fig. 32**).

PUI84 is a unique structure. A little below its orifice, corbels and slabs, still in place, indicate one could go around it by walking on a circular balcony suspended above a void (**Fig. 33**). On the northern side, a masonry wall cuts this balcony, and no doubt it was on this side that the hauling and lifting of water skins was performed. An earthen wall surrounds part of the well. Would a drawing of the well's structure be of interest from an archaeological viewpoint?

Contacts with the relevant authorities would be useful in order to consult geological reports which led to the irrigation drillings of Dûma and the creation of the artificial lake. Speaking to airport services to obtain exact data on the region's pluviometry would be of much interest as well. It is certain that rainfall inferior or equal to 50 mm p.a. would indicate the presence of an entirely fossil aquifer / water table.

Chronology: Funds should be put aside for an eventual dating of some samples worthy of interest and which remain to be found.

Acknowledgments

Dominique Janjou, commercial director of BRGM who provided us with the geological map of the Jawf, and Alexis Gutierrez, also of the BRGM, who kindly answered our questions.

Addenda

Cartography and imagery

During this last season, we worked on three sources of imagery: aerial photographs from 1964 and satellite images from two different sources.³⁸ These images were geo-referenced and superimposed so as to carry out photo-interpretation prior to fieldwork.

The 1964 images were easier to make use of, due to the reduced urban extension at this time. We searched in the field for all alignments and presumed wells seen on the satellite pictures. A substantial number had disappeared, were infilled or replaced by recent constructions. Inhabitants also took us to wells we would have been unable to localize because of the plant cover.

All these data (real, presumed and infilled wells, qanâts) were plotted on a map, and will be of use to globally understand Dûma's qanât system.

Fauna encountered

The fauna encountered has nothing to do with archaeology, but it seemed relevant to briefly mention the species observed.

We encountered pigeons in several wells. They choose wells where certain side hollows allow them to nest, such as the gaps created by softer strata. This is the case of well PU176, where these birds were most numerous.

We have also found bats in the two wells (PU62 and PU211) with the longest qanâts, which allow them to nest far from daylight. These bats are of small size (*Asellia tridens*, 20 to 25 cm in wingspan), and are known to nest in oases.

One should add pellets belonging to a nocturnal raptor, as well as bones of felines and of rodents, a snake (*Platyces rogersi*) and microfauna. Yet the most surprising discovery was that of fish approximately 20 cm long, glimpsed in two wells and whose presence was hardly explained without the possibility of runoff in open channels.

³⁸. Source 1: Google earth: Digitalglobe (which satellite? date?) ; Source 2: picture given by GC (which satellite, date)



Fig. 34. A young *Asellia tridens*, a bat found only in desert cavities

Archaeological and Epigraphic Surveys

Mounir Arbach, Guillaume Charloux, Marianne Cotty, Majeed I. al-Faqir, Frédéric Imbert, Emmanuel Lanoë, Martin Makinson, Thamer A. al-Malki, Abdul M.N. al-Marshd, Mousa al-Garni, Dara'an al-Qahtani, Hammoud M. al-'Arjan, Christian Robin, Pierre Siméon & Ariane Thomas

During the field season of 2012, the expedition members had the opportunity to visit and explore several sites with rock carvings and inscriptions in the Sakâkâ basin (**Fig. 1**). These were located to the north and west of Dûmat al-Jandal. Approximately ten additional numbers were added this year to the list established in 2010 and continued in 2011. Each site is synoptically described below; those with Islamic inscriptions (sites 8, 9, 11, 37, 38 and 39) are discussed by Frédéric Imbert in the next chapter.

Due to lack of time and staff, the systematic archaeological survey of Dûmat al-Jandal was discontinued this year, but will be resumed in 2013, since this work is an essential complement in gaining a better knowledge of the oasis and for the completion of the inventory of ancient and Islamic remains. It was carried out with the aim of protecting and safeguarding Saudi heritage.

Site 26

Site 26 comprises a large rock outcrop 165m in length and 77m in width (**Fig. 2**), oriented in a northwest/southeast direction. It is located 15km to the northwest of Dûmat al-Jandal, not far from sites 6 and 7 of the same type.

The rock outcrop is surrounded by a few circular or rectangular structures made of field stones, in whose vicinity many knapped flints were retrieved (**Fig. 3**). Some isolated rock surfaces are carved.

The site with rock carvings is particularly noteworthy for its rich array of animal carvings, especially lines of ibexes or mountain goats of impressive dimensions (**Fig. 4**), on the north and south flanks, as well as several bulls in an ever identical style, with horns displayed

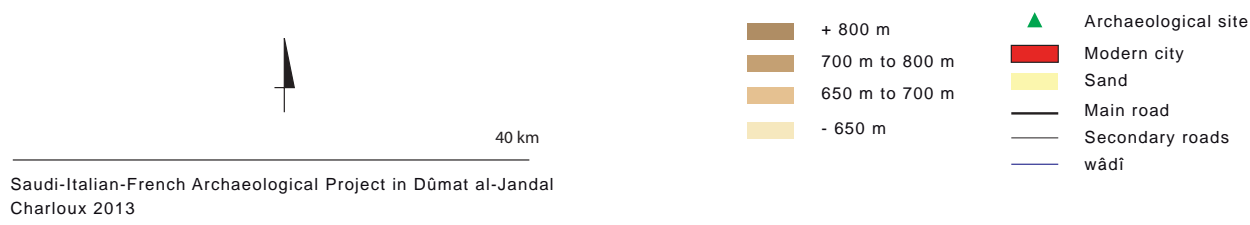
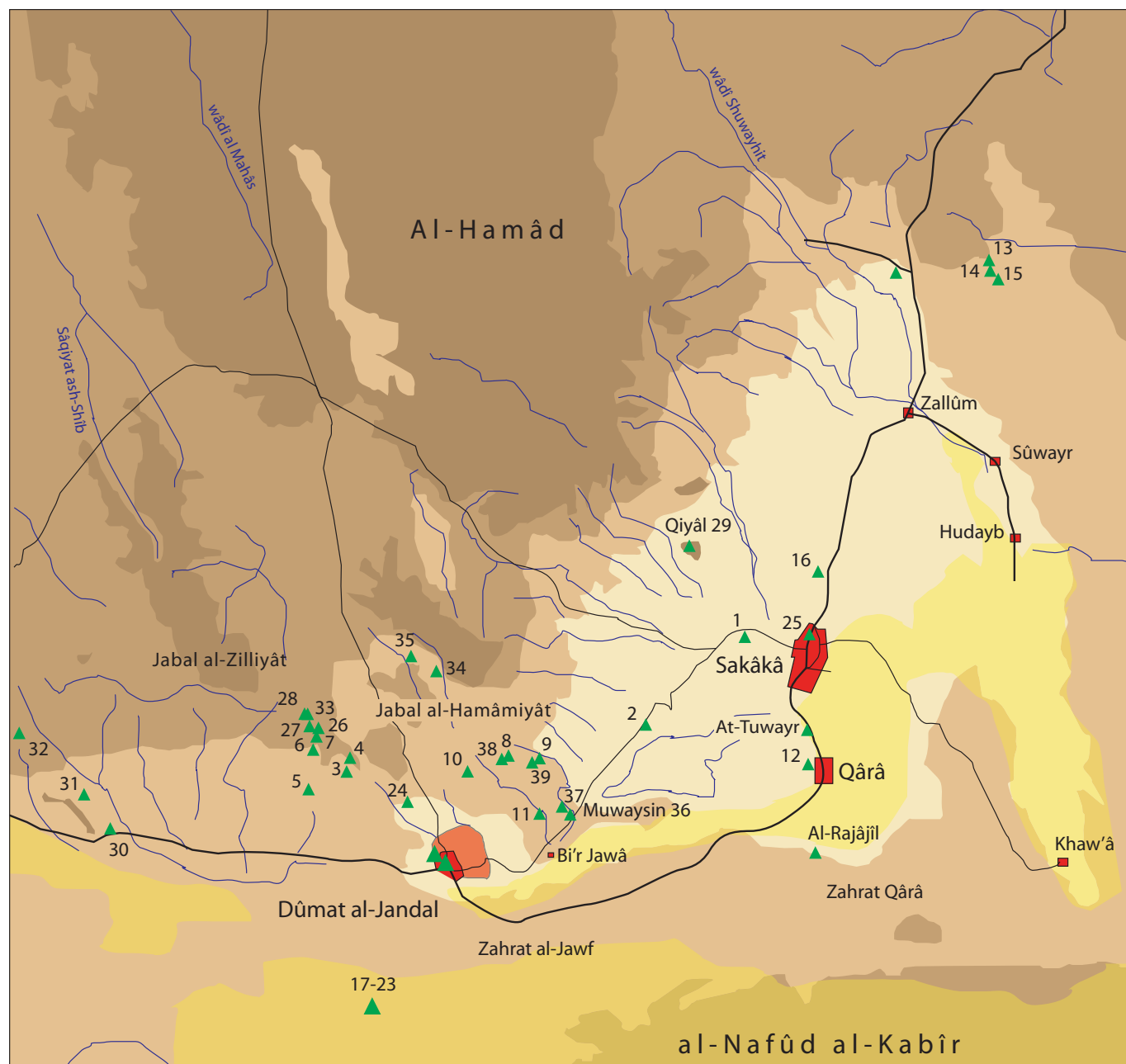


Fig. 1. Map of the Jawf region with the location of archaeological and epigraphic sites visited since 2010 by the archaeological Project (green triangle)



Fig. 2. View of site 26 towards the east



Fig. 3. A rectangular stone structure at site 26, south of the main rock



Fig. 4. Panel with a life-size representation of an ibex (site 26)



Fig. 5. Panel with rock carvings (site 26). Note the lizard on the right

frontally. Among the peculiar animals are one that resembles a warthog and a lizard (**Fig. 5**). Some rare North Arabian inscriptions are also located scattered across the outcrop.

Finally, a semi-circular structure of field stones, located half-way under a rock overhang, was observed from above, the western side of the main rock; the feature therefore formed an excellent shelter.

Vandalism and graffiti with red or white paint have damaged a number of carvings, in particular those on the rock's north face.

Site 27

Site 27 is only of limited interest. Located 580m to the west of the previous site, it comprises a rock outcrop 30m wide and a small circular mound (**Fig. 6**). Some dispersed carvings are located there.



Fig. 6. Small mound seen from site 27, towards the southwest

Site 28

Site 28 is a small wâdî, 530 m to the southwest of site 33. It is of no great interest, since it revealed only very few rock carvings (**Fig. 7**).



Fig. 7. Carving – monogram? (site 28)

Site 29: Qiyâl

Qiyâl (site 29) is a well-known site which was the focus of detailed descriptions in an article and a monograph written by Khaleel al-Muaikel and in numerous publications of the inscriptions, notably edited in collaboration with Sulayman al-Dhuyayb.¹

Located 14 km to the northwest of Sakâkâ, the site's occupation would span from the first century BCE to the second century AD. Al-Muaikel interprets the site as a military outpost.

The visit carried out in 2012 showed dense occupation consisting of domestic contexts made of field stones, with structures mostly circular or rectilinear in shape built on a low plateau-like rise (approx. 250 x 140 m) and an adjacent natural terrace (100 x 400 m), at the outlet of a depression in the rocky promontory protecting and overlooking the site (**Fig. 8**). Two large structures were located at a high elevation on the promontory (**Fig. 9**). More than forty Thamudic and Nabataean inscriptions (**Fig. 10**) were recorded, to which one should

¹. al-Muaikel 1993; Muaikel (al-) & Dhuyayb (al-) 1996: 51-59, inscriptions 46 to 62.



Fig. 8. The site of Qiyâl (site 29) towards the south



Fig. 9. Rectilinear structure located on an intermediary berm of the promontory overlooking Qiyâl (site 29)

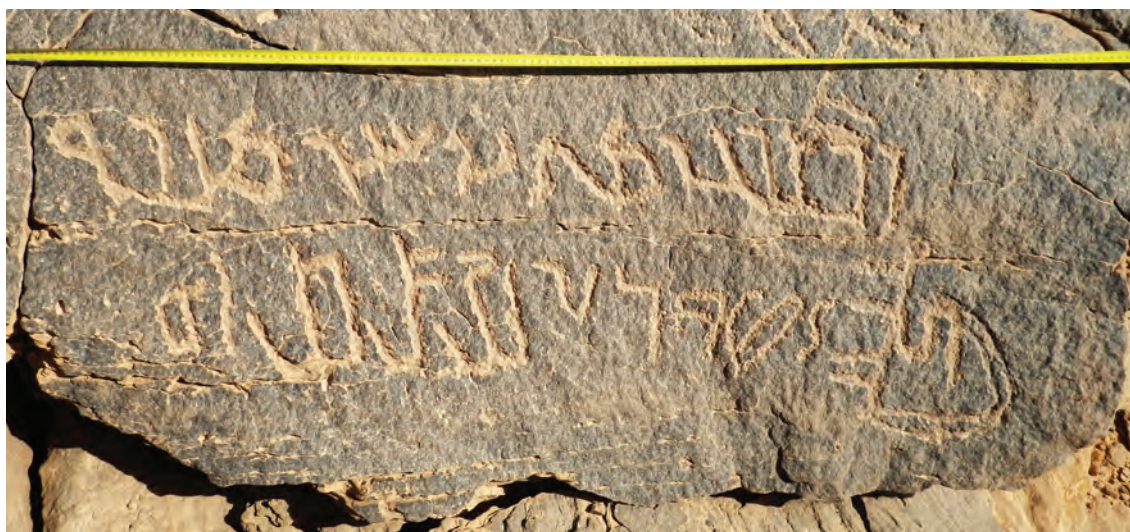


Fig. 10. Nabataean inscription at Qiyâl (site 29)



Fig. 11. Cubic block inscribed on its four faces at Qiyâl (site 29)

add unindividuated inscriptions carved on the four faces of a cubic block of stone one metre in width (**Fig. 11**). Animal depictions (dromedary, feline and ostrich), of small dimensions, were scarce.

One should note that many flint tools were collected on the other side of the promontory, near the entrance to the site.

Site 30

Site 30 (**Fig. 12**) is located 32 km to the west of Dûmat al-Jandal on the road leading to the central part of the wâdî Sirḥan. A rock formation comprising scattered low stone blocks extended over 12 km in a northwestern direction. Site 30, located at its southeastern limit, is made up of several stone circles and rare rock carvings, in particular a few mountain goats, ibexes and bulls (**Fig. 13**).



Fig. 12. Site 30, at the extremity of a rock formation



Fig. 13. Two bulls and one wild goat/ibex carved on a panel (site 30)



Fig. 14. Site 31, view towards north.

Site 31

Site 31 (**Fig. 14**), located 4 km to the north of the previous site, on the same geological rock formation, shows some Thamudic monograms and graffiti (and one Nabataean?), as well as Arabian ones. To that one can add depictions of dromedaries and of wild goats (and a feline?) (**Fig. 15**).



Fig. 15. Small panel of rock carvings with wild goats/ibexes and maybe a feline, as well as a Thamudic graffiti (site 31).

Site 32

Site 32 was discovered 8 km to the northwest of the previous one. A small isolated rock just a few metres in height (**Fig. 16**) is covered with numerous Thamudic graffiti, with monograms and depictions of dromedaries (**Fig. 17**).



Fig. 16. The small rock of site 32



Fig. 17. Block covered with superimposed depictions of animals (site 32)



Fig. 18. Standing warrior (site 33)



Fig. 19. Stone semi-circular installation (site 33): animal pen?

Site 33

Close to site 28, site 33 is an extended rocky promontory oriented northwest/southeast, whose exploration at its northern extremity revealed some interesting human and animal figures, notably a warrior appearing to be about to attack (**Fig. 18**); these carvings were located not far from a semi-circular installation of field stones (**Fig. 19**).

Sites 34 and 35

These two sites are inserted high up on the eastern edge of a large depression more than 10 km in width, located at the northern limit of Dûma's *graben*.

Site 34 (**Fig. 20**) is the most recent. Several cairns with rear extensions are made of small mounds of very hard and dark grey boulders, probably fine limestone. Some Thamudic and Nabataean graffiti were carved on scattered rocks.

As for site 35, it goes back to the Palaeolithic age: bifaces were observed by Pierre Siméon (**Fig. 21**).

Site 36 (Muwaysin castle)

The small fort belonging to the Islamic period (site 36), which encloses and protects a well, stands not far from the motorway leading from Dûmat al-Jandal to Sakâkâ. The site was visited in 2010, 2011 and 2012, but was above all studied in detail by K.I. al-Muaikel who carried out a sounding in the structure in the mid-1980s.²

Site 37 (Muwaysin, rock carving site)

We refer the reader to the description made by Frédéric Imbert (in this volume).

Sites 38 and 39 (Jabal Hamamiyat)

We refer the reader to the description made by Frédéric Imbert (in this volume).

2. Muaikel (al-) 1994: 126-129.



Fig. 20. Cairn of site 34



Fig. 21. Site 35

Epigraphic survey for Islamic inscriptions and graffiti

Frédéric Imbert (Aix-Marseille University)

The epigraphic survey around the area of Dûmat al-Jandal took place during between November 14th and 19th 2012. The members of the epigraphic team were Mounir Arbach (CNRS), Frédéric Imbert (Aix-Marseille University) and Christian Robin (*Académie des Inscriptions et Belles Lettres*, Paris). Representatives of the Saudi Commission for Tourism and Antiquities, Majeed Ibrahim al-Faqir, Dara'an M. al-Qahtani, Hammoud Mohammed al-Arjan, accompanied us during the survey. The only area that could be surveyed in about five days was the northeast part of Dûmat al-Jandal, at a distance of only a few kilometres from the city (Arbach *et al.* this volume: Fig. 1). This area mostly consists of landscapes of arid steppe. Northwest of Muwaysin lie the hills of Jibâl Hamâmiyât (**Fig. 1**), which were partly surveyed.



Fig. 1. Jibâl al-Hamâmiyât seen from Muwaysin (site 37)

Prior studies of the inscriptions

During the 2011 survey at Dûmat al-Jandal, a number of Arabic inscriptions were photographed in various places of the Jawf region. At the beginning of 2012, G. Charloux forwarded me all the pictures relating to Arabic and Islamic inscriptions gathered by the team.¹ After studying these Arabic texts, we decided that a specific survey should be carried out in order to obtain a clear picture of the epigraphic wealth and density in the places nearest and around Dûmat al-Jandal.

Of course, we did know that a prior study has been written in 1988 by Khalîl Ibrâhîm al-Muaikel, who submitted a Ph.D. thesis at Durham University (United Kingdom); the latter was then published in Riyadh in 1994.² His fieldwork was undertaken in early 1986. This dissertation concentrates on the archaeology of the Jawf region, including excavations at various locations, and also comprises a comprehensive survey of sites and monuments throughout the region. The second chapter focuses on the history of the area during the early Islamic period and on the conquest of Dûmat al-Jandal by Khâlîd b. al-Walîd during the caliphate of Abû Bakr. However, chapter VIII is the most interesting for our study because it deals with the early Arabic inscriptions found in some places of the region, for example at Muwaysin. Kh. al-Muaikel discusses their palaeography, historical importance and the parallels with some of the published materials from various parts of the Islamic world.

As we compared inscriptions published in both the thesis and the study and the Arabic texts gathered during the 2012 survey, it clearly appeared that al-Muaikel's epigraphic study, while a very serious academic report, is nevertheless incomplete. In addition, he seems to give a single name to what are several archaeological sites (he often mentions Muwaysin for both Muwaysin and the Qârat Nîsa hills). Finally, he gathered and published about 50 Arabic texts at locations where we have discovered at least 200.

¹. See Arbach *et al.* Forthcoming (*Dûma 2*).

². al-Muaikel 1988, 1994.

The 2012 epigraphic survey

Following these conclusions, it became clear that the French epigraphic team should carry out a systematic survey of the entire area. We decided to concentrate our fieldwork around Muwaysin and Qârat Nîsa and then in the vicinity of the hills of Jibâl Hamâmiyyât (**Fig. 2**).

In these places, it seems that the locals or some travellers and pilgrims in the early Islamic period left in their wake a large number of inscriptions. Most of them are written in archaic Kufic script. The following table lists the number of inscriptions which were reported for the surveyed sites (**Tables 1-2, Fig. 3**):

Reference site	Number of inscriptions
Muwaysin (site 37)	47 texts
Qârat Nîsa (site 11)	113 texts
Hamamiyyât (site 39)	8 texts
Hamamiyyât (site 8)	8 texts
Hamamiyyât (site 38)	16 texts
Hamamiyyât (site 9) shi'b	7 texts
Total	199 texts

Table 1. Table of inscriptions per site

Jibâl al-Hamâmiyyât = jabol Hamamiyyât = tell Hamâmiyyat
Muwaysin = Muwaysim
Qârat Nîsa = jabol Niyâsa / Nayâsa (“land of the porcupines”)
Hamamiyyât Est (site 9) = Shi'b al-Juraydh

Table 2. Table of toponymic correspondences



Fig. 2. Wall of Arabic graffiti at the top of Qârat Nîsa hill (site 11)



Fig. 3. Map of the surveyed sites around Muwaysin

Typology of the script

All inscriptions found during the survey around Muwaysin, Qârat Nîsa and Hamâmiyât hills are graffiti: no tombstones for instance have been discovered. This means that they are private texts not submitted to any kind of political, religious or linguistic censorship. Most of those who wrote the texts are anonymous, but some of them mention caliphs or princes in their prayers. Generally, the texts are written in simple archaic unadorned Kufic and lack any diacritical points and ornament of any sort. The graffiti are sometime engraved in clumsy style, but we also have beautiful examples of old straight Kufic, including long extensions of the baseline (**Fig. 4**).

Only three graffiti can be attributed chronologically because dating was a rare and exceptional phenomenon at this time. The palaeography of the texts indicates that most of them go back to the end of the 1st century h. (8th century A.D.) and mostly to the 2nd century (9th A.D.), with perhaps some instances from the beginning of the 3rd h. / 10th A.D.



Fig. 4. Kufic writing from the 2nd h. / 8th century AD (Muwaysin, site 37)

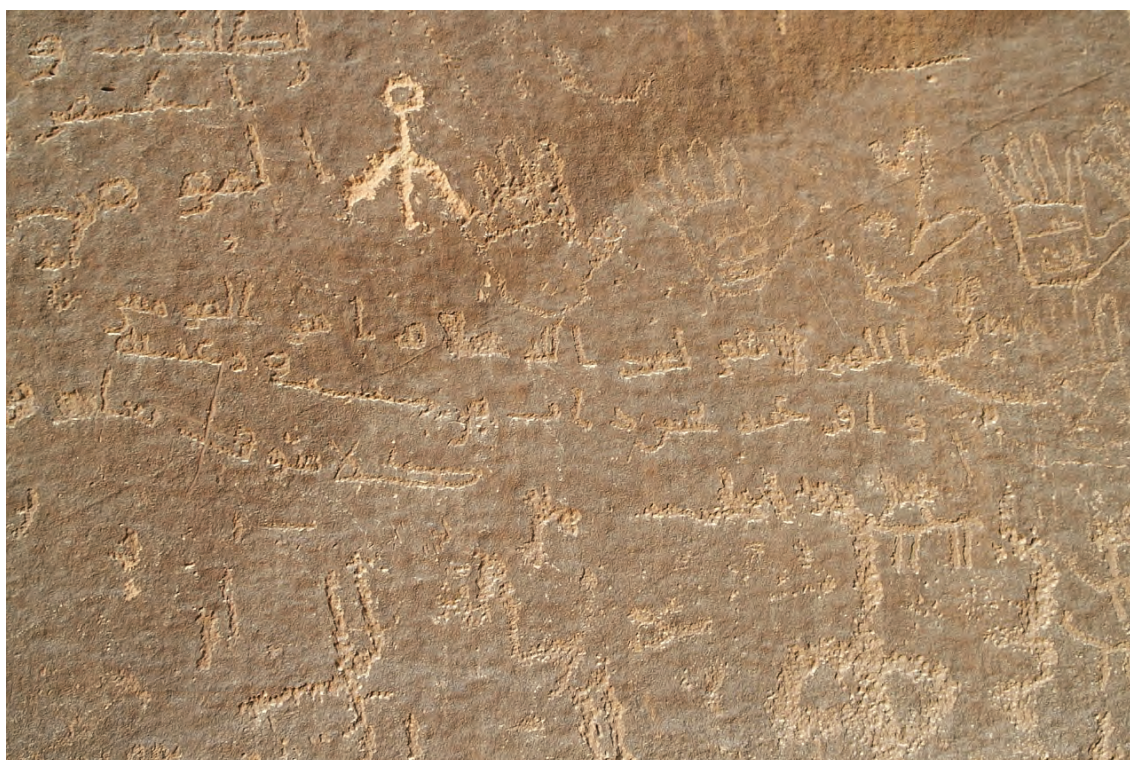


Fig. 5. Prayer to Umayyad Caliph Hishâm (Muwaysin, site 37)

Muwaysin (site 37)

The site of Muwasin (site 37) is located 1300 m northwest of Muwaysin castle³. It is presently completely surrounded by a fence. This has not prevented people from vandalizing the location with modern painted / engraved graffiti. During our survey, we gathered 47 Arabic graffiti more or less dating back to the 2nd h. / 8th century A.D.

One of the most interesting inscriptions is a prayer mentioning the Umayyad Caliph Hishâm (691-743), one of the sons of ‘Abd al-Malik (**Fig. 5**). The caliph was ruling at that time, because his official titles of *‘abd Allâh* (servant of God) and *Amîr al-Mu’minîn* (Commander of the faithful) are inscribed. The text says:

“Ô God, forgive the servant of God Hishâm, Commander of the faithful, strengthen him against the envious present among his people!”

3. Muwaysin (site 36) corresponds to a small fortified building, probably of Medieval date (al-Muaikel 1994: 126-129).

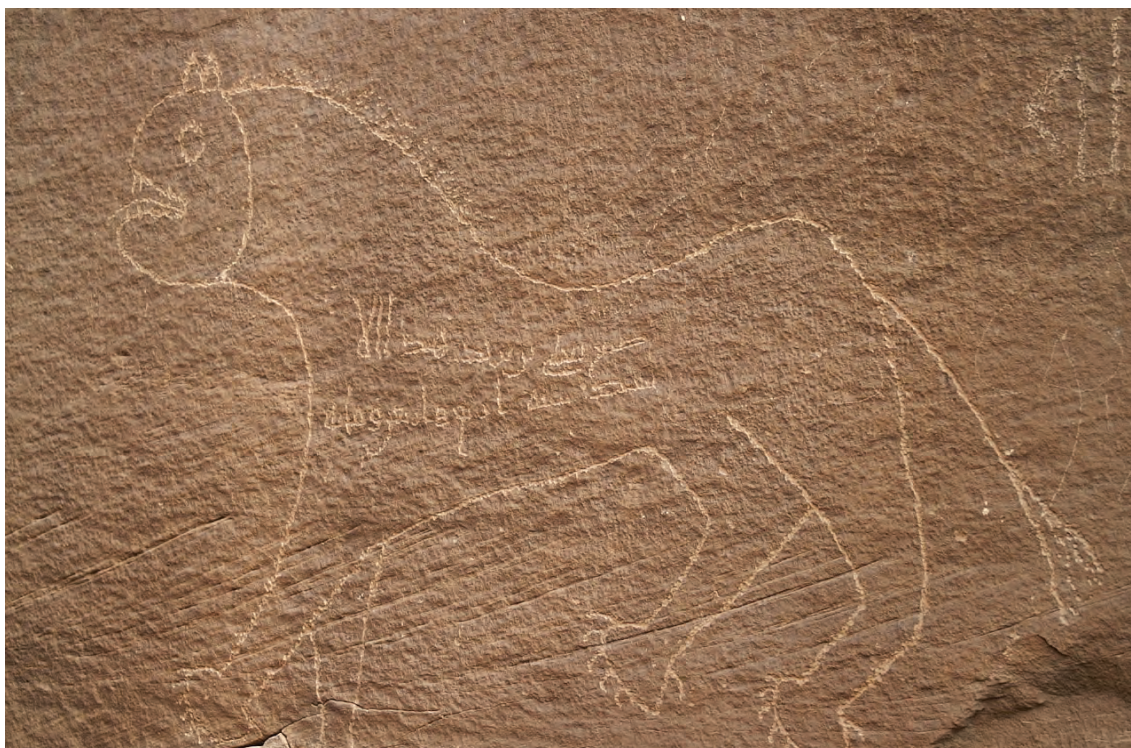


Fig. 6. Lion and dated inscription (Muwaysin, site 37, 144 h.)

The prayer for the Caliph is associated to seven left hands engraved near the inscription, perhaps there to give further protection to the Commander of the Faithful. Some of the drawings of hands have a small inscription within the palm: one of them says “palm of the Prophet” (*kaff al-nabî*). On the other side of the main inscribed rock we found an inscription associated with a big lion, an illustration going back to 144 h. / 761, i.e. the first decades of the Abbasid dynasty (**Fig. 6**).⁴

Qârat Nîsa (site 11)

The hill of Qârat Nîsa, also called Qârat al-Niyâşa (“Land of the porcupines”), is situated some few kilometers to the west of Muwasin castle. According to Kh. al-Muaiikel, the site was on the pilgrimage road from lower Mesopotamia to the holy cities of Medina and Makka.⁵ This remains to be proven: the large number of graffiti found on the top of the hill indeed has a religious content. Yet it would be more suitable to speak of personal and religious contents: prayers

⁴. The inscription was first discovered by Kh. al-Muaiikel in 1986 and was published in his PhD dissertation, al-Muaiikel 1988: pl. 66, n°4.

⁵. al-Muaiikel 1988: 143.

for mercy and forgiveness, professions of faith and confessions. We have gathered 113 readable graffiti (there are even more). We think it appropriate here to share some statistics relating to these graffiti:⁶

- Only one inscription is dated (121 h / 738); it is the earliest text in the area (**Fig. 7**).
- 50% begin with the expression *Allâhumma* (ô God!), which indicates an invocation to God.
- 62% are prayers for forgiveness: *Allâhumma -ghfir* (ô God, forgive...)
- 19% are prayers for mercy: *Allâhumma -rḥam* (ô God, have mercy...)
- 29 % of the texts end with *Amen!*
- We have no mention of any verse of the Qur'an.
- Prophet Muhammad is only mentioned four times (fewer than 4% of the texts)
- 134 different people are mentioned in the graffiti. They are all of Arab origin and may be locals and not pilgrims or travellers: we have no mention of any *nisba* (ethnonym giving the geographic or ethnic origin of the person in Arabic names), which could mean that these people were not coming from afar. In other places in Arabia on the Pilgrimage route, where travellers surely wrote graffiti, many *nisba* are to be found at the end of names. At Qârat Nîsa, all names are also limited to two elements (name and patronym). It should be said that 25% of names are of Judaeo-Christian origin (Ya'qûb, Ismâ'îl, Ishâq, Hârûn, Mûsâ, 'Îsâ, etc.).

Worthy of mention is the fact that several gigantic stone blocks fell from the cliff and are now lying upside down in the sand (hence with all inscriptions also upside down). One of these rocks is entirely covered with graffiti (**Fig. 8**).

On the other side of the hill, there are only a few inscriptions. Two of them are short poems (two or three verses long) written in classical literary Arabic and they are following the classical pattern of Arabic poetry, which ends in a rhyme. These two poems describe the experience of being in this place and the desire to be buried on the day of death. One of them begins with *qifâ fa-salâ yâ sâhibayya...* “Ô my good friends, stop here and ask my love...” which is one of the classical ways to begin a poem (**Fig. 9**).

⁶. See Imbert 2011: 57-77.



Fig. 7. Kufic text dating back to 121 h. (Qârat Nîsa, site 11)

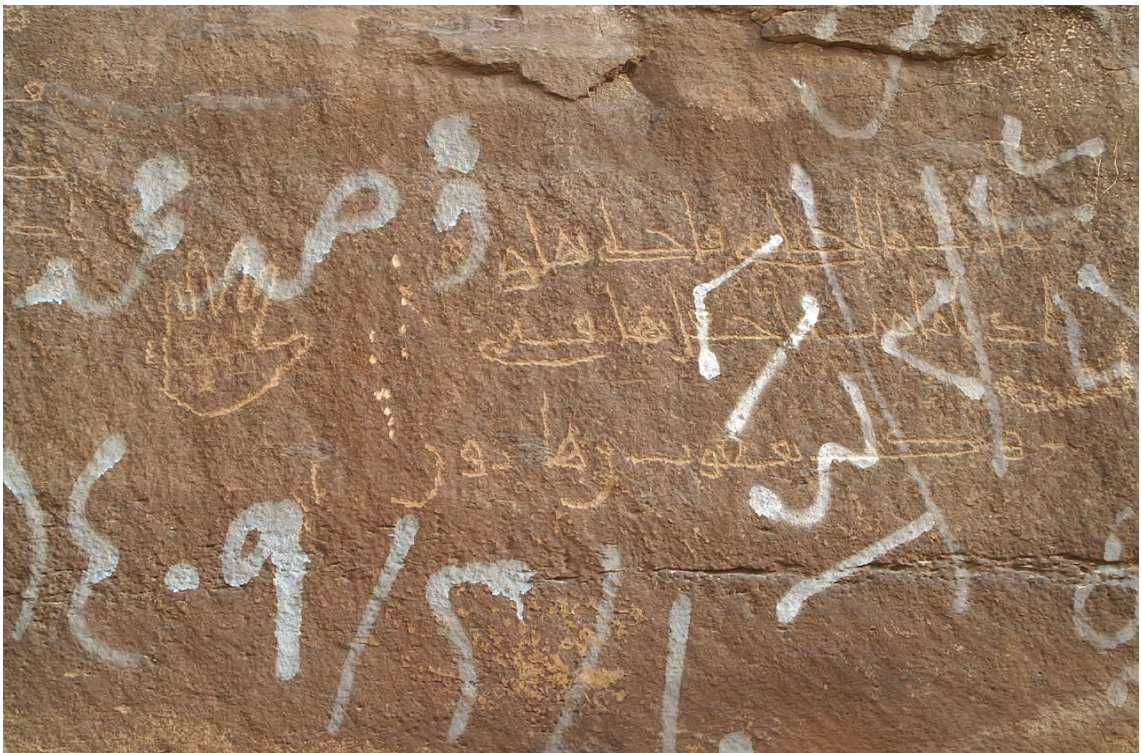


Fig. 8. Classical Arabic poem, 2nd century h. (Qârat Nîsa, site 11)

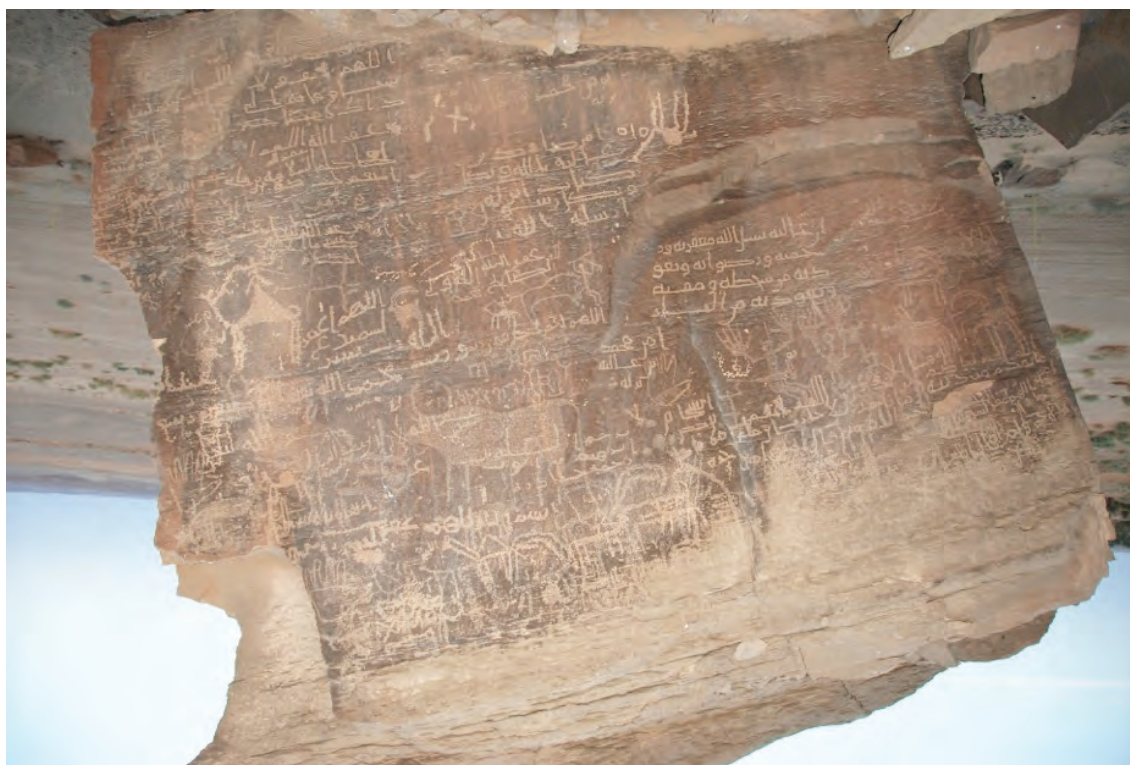


Fig. 9. Upside down rock covered in Kufic graffiti (Qârat Nîsa, site 11)

The hills of Jibâl al-Hamâmiyât (sites 8, 9, 38, 39)

During our fieldwork it took quite a long time to gather all texts from Muwaysin and Qârat Nîsa, so exploration of the Jibâl Hamâmiyât could not be carried out for a long time. In fact we only went on the edge of some hills at the beginning of the massif. During our next season, the survey of this area should be a priority.

During the survey, we gathered about 40 inscriptions on several parts of the massif. We began our exploration around the closest hills, east of the largest part of the Jibâl, where a few texts were discovered (site 39). A young man who “has just passed the age of 20 years” has engraved one of them. It is the first time that we find any information concerning a man’s age in an Arabic graffiti.

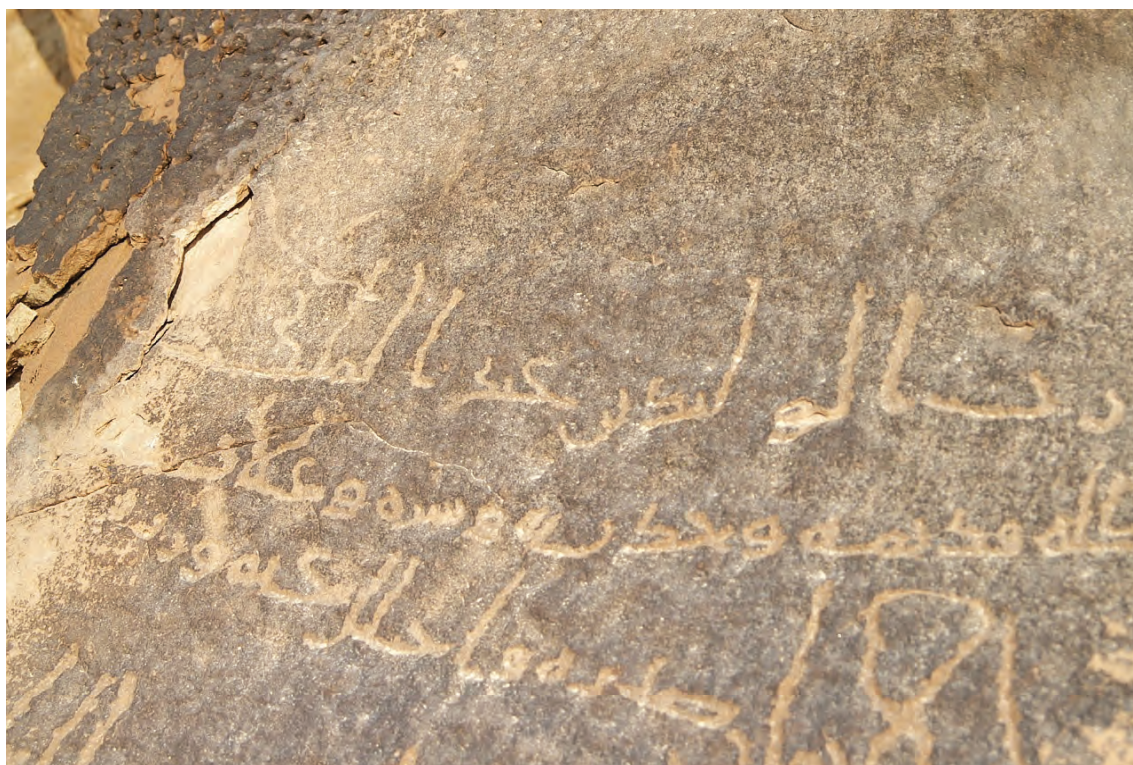


Fig. 10. Prayer for Caliph al-Walīd b. ‘Abd al-Malik (J. Hamâmiyât, site 38)

However, the most interesting graffiti in Hamâmiyât has been found on a hill marking the southernmost point of the Jibâl (site 38). One of them is a prayer addressed to Prince al-Walīd b. ‘Abd al-Malik before he was granted the caliphate as al-Walīd I (**Fig. 10**). The Caliph ruled as an Umayyad from 705 to his death in 715. Al-Walīd was born in 48 / 668 and became caliph in 86 / 705. This means that the text must have been written before year 86 of the Hijra, when he was 37, perhaps around 80 h. He was the builder of the Umayyad mosque of Damascus and the first who ordered the expansion of the Prophet’s Mosque in Medina. Close to this text, another man asks God to purify the Prince (i.e. al-Walīd b. ‘Abd al-Malik).

2012 Excavation in Sector A

Romolo Loreto (University of Naples “L’Orientale”)

The 2012 excavations in Sector A, the historical core of Dûmat al-Jandal, focused in particular on Trench 1. Field work was carried out between September 26th and October 17th, 2012, in the presence of the author, of Dr. Andrea Marcolongo, Thâmer al-Malkî and Mousa al-Garni.

The excavation area opened in 2009 by the Italian archaeological Mission in Saudi Arabia, was gradually enlarged during the 2010-2012 campaigns of the Saudi-Italian-French archaeological project, until it covered an area of 25 x 18m (**Fig. 1**). The project aims to expose a large excavated surface, in order to bring to light structures and urban features of ancient Dûma. Finally, the team attempted during the various seasons of fieldwork to define a relative chronological sequence of occupational phases of the site whose historic centre revolves around the Acropolis, on which stands the Mârid Castle.



Fig. 1. Trench 1.
The beginning of the
2012 excavations

After four excavation seasons conducted at the foot of the Acropolis, it is possible to provide data on three main topics:

1. from a diachronic point of view, the possibility of defining a relative chronology that covers a time span between the first and the sixteenth cent. AD, based on the large amounts of ceramic material related to the different periods of occupation identified so far; the material culture will lead to studies carried out by specialists of each chronological phase;
2. preliminary data on the site's urban development, especially the earliest identified occupational phase (i.e. Nabataean), as well as Islamic phases;
3. based on the study of the evolution in building techniques, more or less different and elaborate according to the different periods, on the wealth of the ceramic material, on the study of bone finds in the occupational levels and the construction of the new settlement (western enclosure, Sector C), it is now possible to begin defining a socio-economic framework in order to observe how, over time, the ancient caravan city of Dûma underwent economic and productivity changes and how the ancient inhabitants adapted to new socio-economic conditions.

This report is therefore structured in the following way: firstly the presentation of the results of the excavations conducted in 2012 and, subsequently, the complete stratigraphic sequence identified since 2009; this report features notably a description of the structures of each individual period recognized and a highlighting of the urban character currently visible at every stage.

Part I: the 2012 Excavations

The 2012 excavations were conducted along the southern edge of Trench 1 (**Fig. 2**), confirming that the site presented a more complex stratigraphy than initially thought. This is typical of an urban environment that has not suffered particularly long periods of abandonment which isolated the structures but, on the contrary, has witnessed looting, re-occupation and re-adaptation of existing structures.

In fact, as early as 2009, it was possible to see that the oldest structures (Building A) were better preserved as one proceeded towards the south.

Fieldwork took place in quadrants N6 IIb-c, N6 IIIa-b, O6 IIb-c and O6 IIIa-b¹ according to the excavation grid, over an area of 5 x 17m (**Figs. 2-3**).

The primary aim was to verify the southern extension of Building A, the largest and most impressive construction identified in the historical centre of the site and, if necessary, to proceed with a test probe under this Nabataean structure.

Given that the excavation resumed from where it stopped in 2011 (**Fig. 3**), the numbering of the archaeological levels, structures, features and contexts followed on progressively from that of 2009-2011.² The first two defined levels are Level 1 (the surface), and Level 2, an aeolian sand accumulation detected and visible over the entire surface of Trench 1.

Level 2 covers a range of structures and rooms: M14, M10, M11, M 47, M53, M54-55, L21-22; it also covers Level 14 (between M53, M11 and south and east sections of Trench 1), Level 3a (between M10 and the west limit of Trench 1) and mud brick collapse M11 (**Figs. 4-5, 9**). Since M11, already exposed in previous campaigns, is built above the Building A level of collapse (Level 7)³ and acts as a dividing line between the levels and structures along its east and west sides, from this moment on it was decided to excavate to the east and west of M11.

¹. Loreto Forthcoming (*Dûma 2*): 101.

². See Loreto 2014-Forthcoming (*Dûma 1-2*). L=locus (room), M=Muro (wall), Liv.=Livello (level).

³. Loreto 2014 (*Dûma 1*): 127.

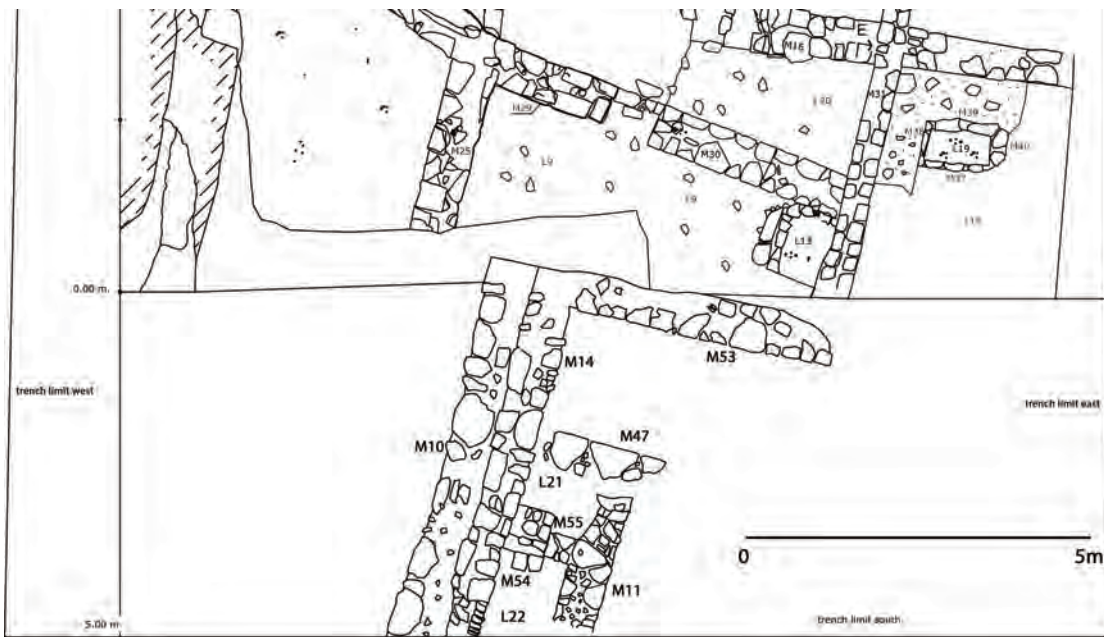


Fig. 2. Detail of the 2012 excavated area



Fig. 3. Latest structures identified during the 2012 season

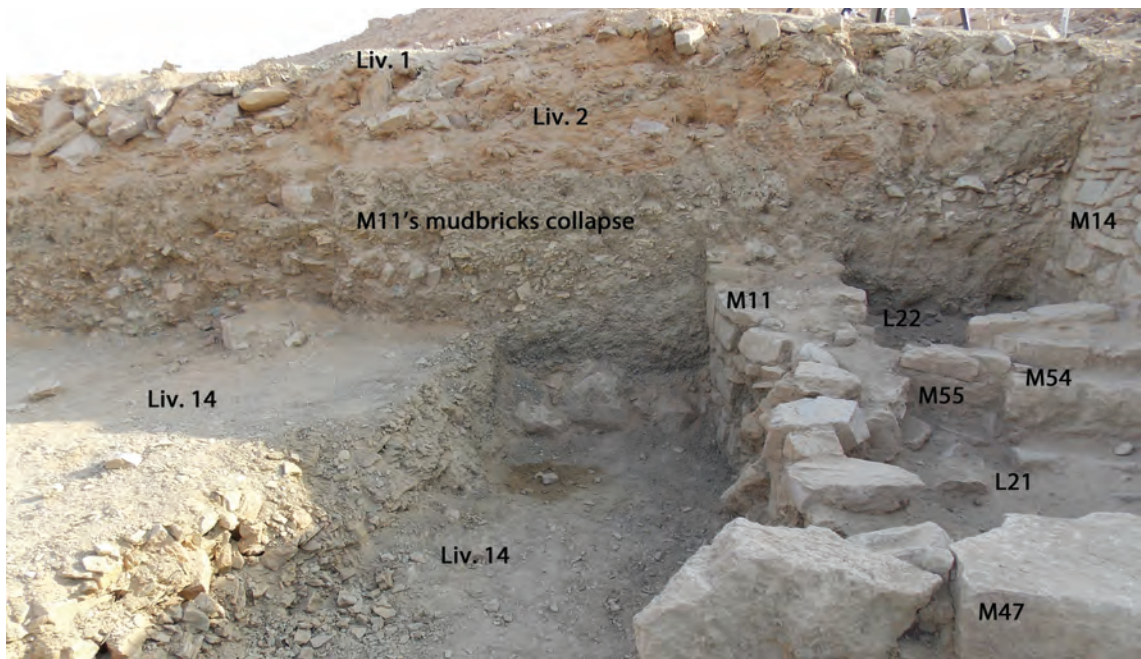


Fig. 4. Trench 1, detail of the southern section west of M11

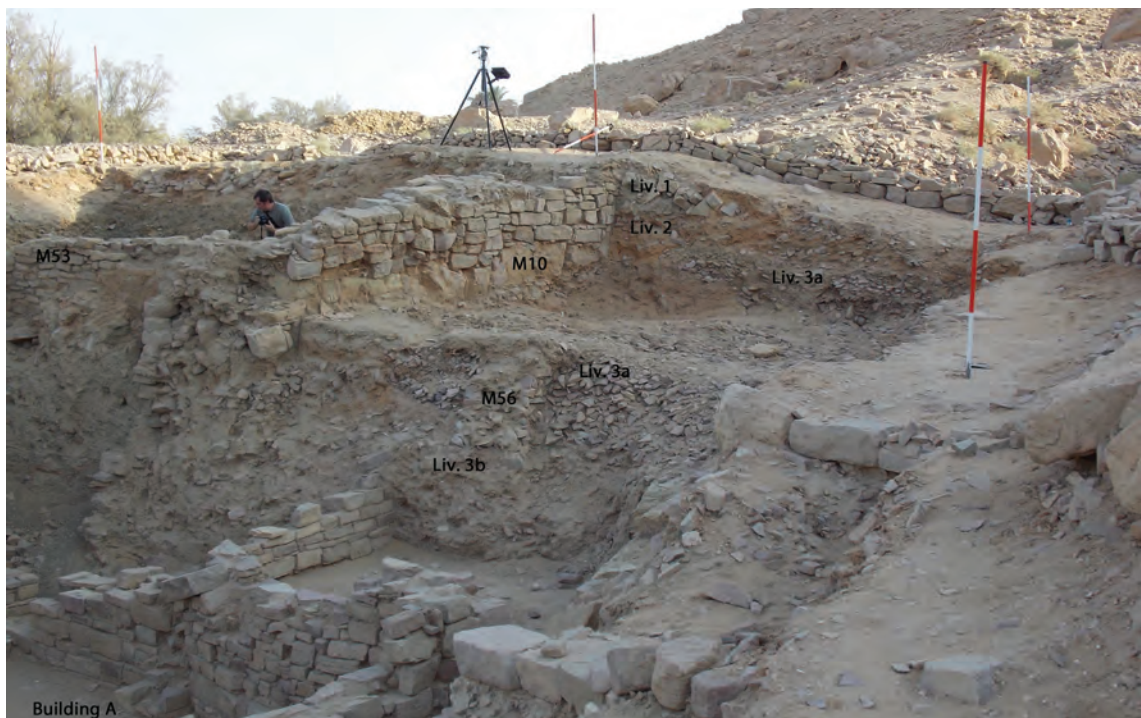


Fig. 5. Trench 1, detail of the southern section west of M11

West of M11: the Excavation of M10-M14 (Middle Islamic period)

M14 and M10, walls 1-1.50m thick on average were already defined in 2009; both walls are related to Building L6.⁴ They were built above Level 3b and continued south along the ridge (**Fig. 5**). M11, also identified since 2009,⁵ was far more impressive. It had a raised stone basement, 2-2.50m high on average, with upper structures made of rows of mud bricks. The first identified loci, L21 (2 x 1.26m) and L22 (1.36 x 0.80m), are two small spaces outlined by M47, M54-55 and M11 (**Fig. 3**). They are rather flimsy spaces obtained by the laying of one or two rows of blocks between M11 and M47. L21 preserves part of a floor made of compacted earth lying against M54 and M14.

M11 also features the re-use of upper rows – i.e. a series of irregular blocks placed after the mud-brick elevation's collapse above the original stone rows - to create a plan of homogeneous structures that define L21-22 (**Figs. 6, 7**).

M47 was built above Level 14, which did not extend west of M11. M54-55 and L21-22 were lying on a level of aeolian sand (Level 16) between M11 and M14 (**Fig. 6**). M14 and M10 were built on Level 3a, which extended to the western limit of the excavation and itself lay on bedrock (**Fig. 9**).

To the west of M10, after the removal of Level 3a, M56 emerged. It was built on Level 3b and was covered by Level 3a. M56 recalls M5, a huge wall made of small discarded stones that was part of Building L6's foundations (**Fig. 5**).⁶

East of M11

Level 14 consisted of a single layer of green silt (tourbe) that suggests the digging of a well (perhaps one of the many hydraulic installations around the Mârid Castle hill); it did not contain any ceramic fragments or bones. Level 14 covered the southeast corner of trench M58; it is a new curving wall of whose the northern face is the only one visible (**Fig. 7**).

⁴. Loreto 2014 (*Dûma I*): 109, 122.

⁵. Loreto 2014 (*Dûma I*): 124.

⁶. Loreto 2014 (*Dûma I*): 116.



Fig. 6. Removal of M47



Fig. 7. Excavation east of M11

To the east of M11, after the removal of Level 14, Level 15 was cleared: it was composed of brown earth and silt, which makes one imagine a first infill of earth resulting from the excavation of a well (Figs. 7-8). In fact, Levels 14 and 15 (and also Level 15b) followed each other in a coherent way, probably due to the digging of a well that initially affected ground level, and were gradually covered with the silt that characterized the area (Fig. 8). After removing the later structures (M47, M54-55, L21-22) it became possible to observe how M11 constituted a watershed between Level 14 and Level 15 to the east, and Level 3a-b to the west (Figs. 8-9). To the east of M11, at the same level as Level 16 (2.80m below the surface of the hill), a second layer of silt (Level 17) and a level of aeolian sand leaning against M11 (Level 18) were the only features seen (Fig. 8).

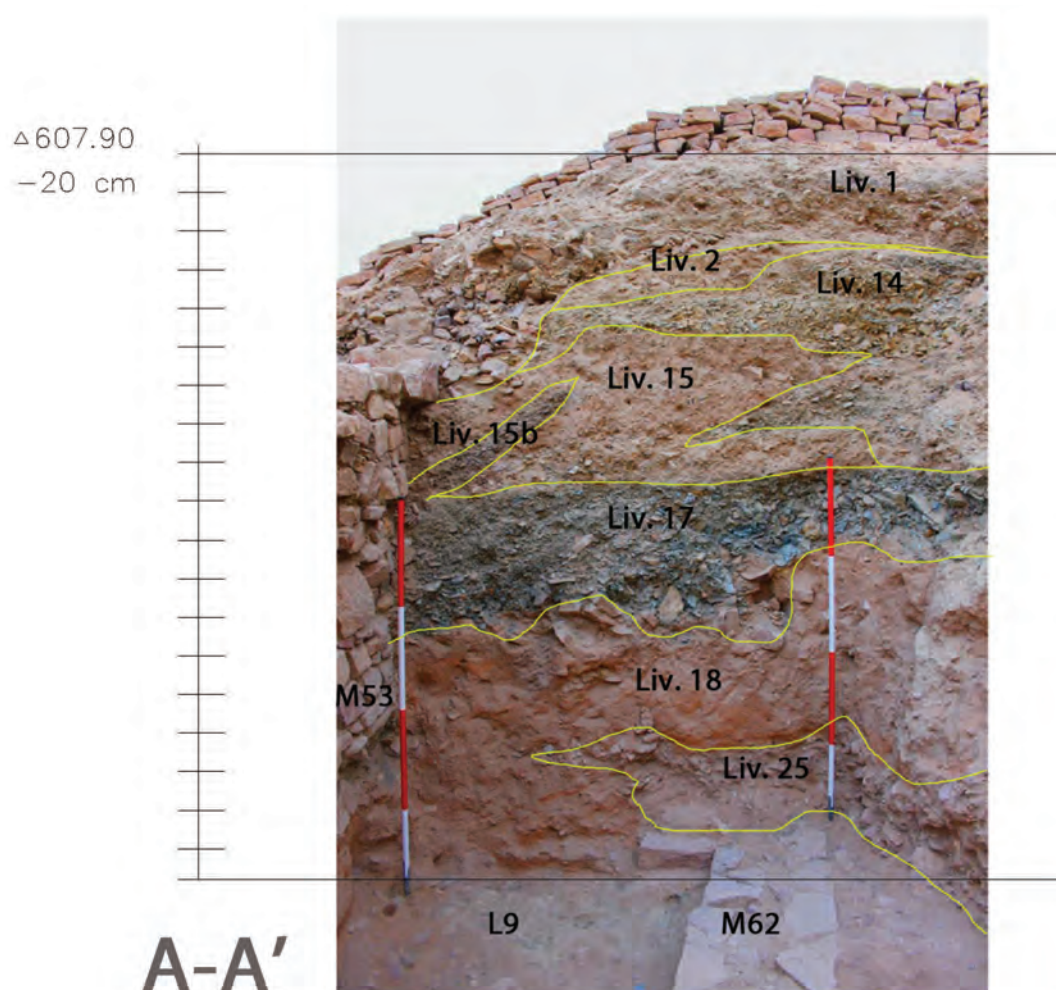


Fig. 8. Excavation west of M11, orthorectified section

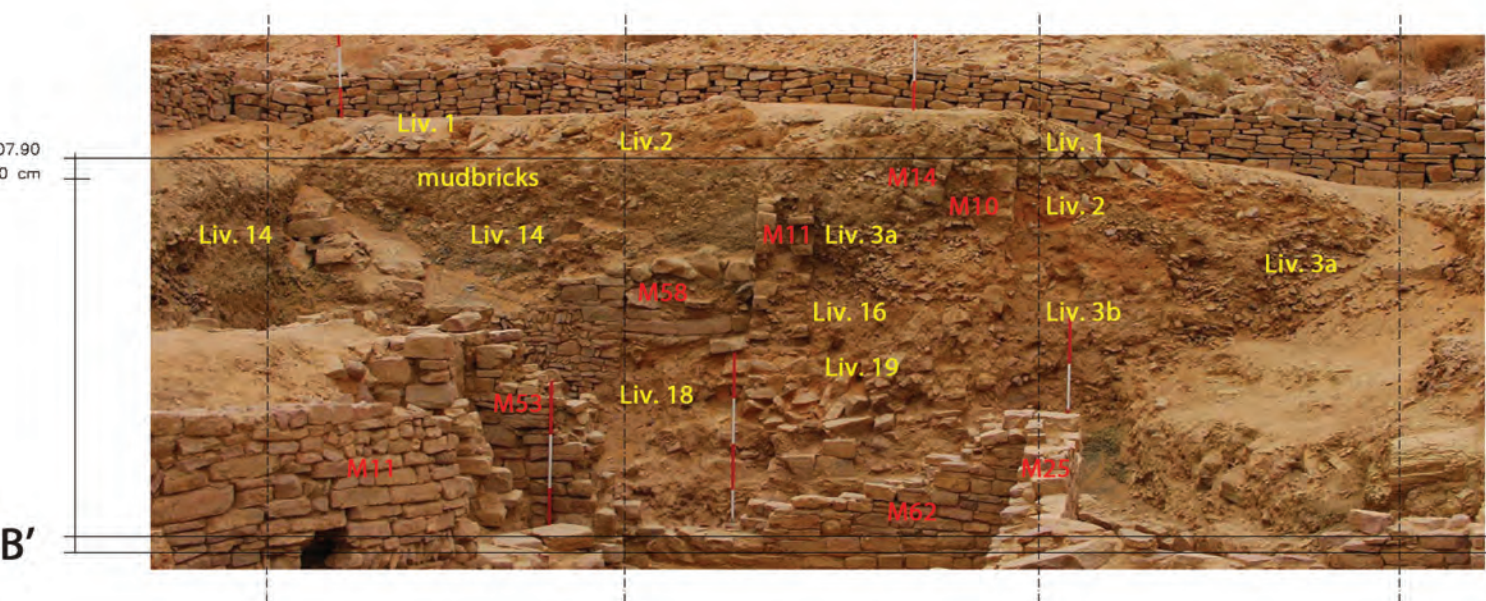


Fig. 9. Trench 1, southern orthorectified section (after removal of M11)

West of M11. Excavation of L23, the last reoccupation of Building A (Early Islamic period)

To the west of M10, at 2.60m below the surface, a new wall (M57) emerged, covered by Level 3a and M56. It is a 75 cm wide structure, built in small and beautiful blocks reused from Building A. M57, in fact, was constructed on Level 3b and M25 (Building A's wall) (Figs. 10-11).

To the west of M11, once M10, M14, M56 and L21 were disassembled, M59 and Level 19 emerged; the latter a level of collapse made up of blocks, either reused from Building A or irregular stones (Fig. 12). Level 19 extended into an open space (L23) defined by M11, M57, M59, M61 and M53 (Figs. 13-17). Locus 23 was paved with small irregular stones, 3m below the surface of the hill.

To the east of M11 the level of silt (tourbe) (Level 17) extended east of M60, an ephemeral wall with a single curtain of blocks, while between M60 and M11 extended the surface of Level 18 which covers Level 19. Level 19 represents the collapse of the last phase of re-occupation and re-use of Building A. M11, in fact, was built above Level 19 (Figs. 16-18).



Fig. 10. M56 and M57 west of M10



Fig. 11. Detail of M57, partly built above Building A's M25



Fig. 12. Area west of M11 after the removal of M14 and M10. Level 19 above Locus 23

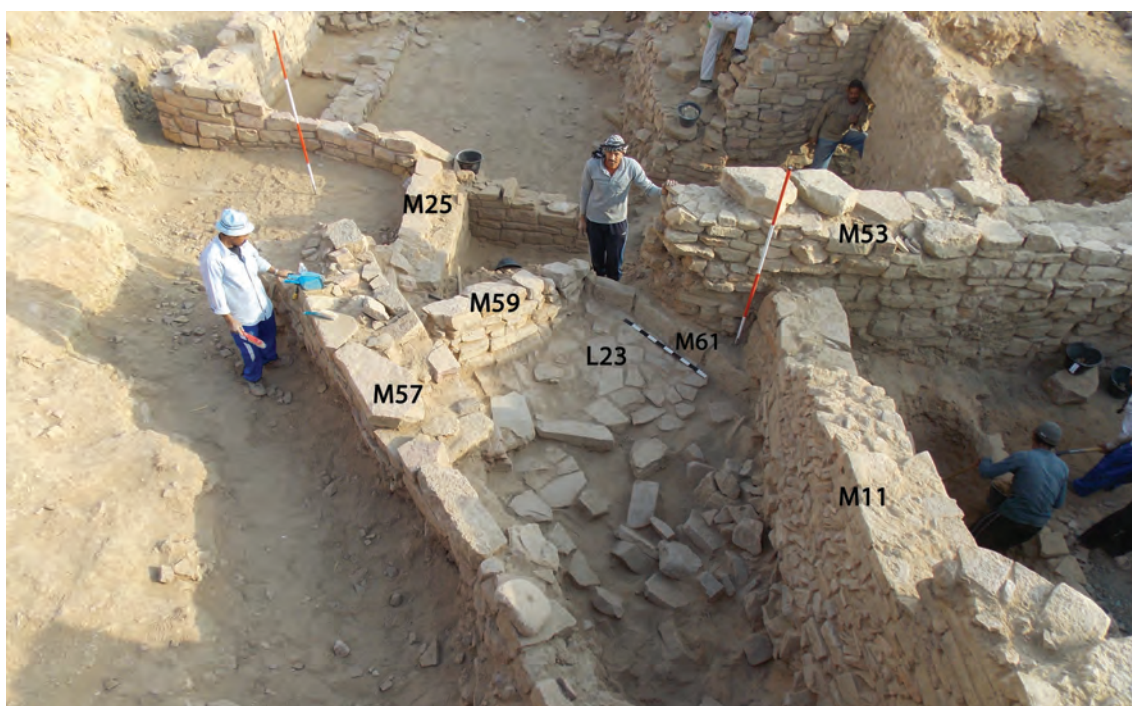


Fig. 13. Area west of M11 after the removal of M14, M10 and Level 19: Locus 23



Fig. 14. Structures related to Locus 23 and built on M25



Fig. 15. Area west of M11. M11 lies above Level 19



Fig. 16. Area east of M11. M11 lies above Level 19



Fig. 17. Plan of the excavated structure after the removal of M14 and M10



Fig. 18. Removal of Locus 23 and tracing of M62, Building A's new wall

After the removal of M11: The excavation of L25, the first reoccupation phase after Building A's collapse (Early Islamic period)

After the removal of M57, M62 appeared. It lay parallel to M29 and M30 and enclosed Locus 9, Building A's southern room, to the south (**Fig. 18**). We proceeded during excavation with the removal of M11, which clearly covered the southern part of the structures of Building A. M11 (**Fig. 19**) appeared as an imposing fortification wall, which ran in a north-south direction and adapted to existing structures it encountered. Not only was it built on levels of collapse (Level 19), but it abutted on M16 and M53. After the removal of Level 19, three new walls appeared: M63 (only visible in the southern section), M64 and M65 which defined a space (Locus 24) outside Building A bounded by the rocky hill slope and the Nabataean building (**Figs. 20-21**).



Fig. 19. M11 general view (2010-2012 excavations)



Fig. 20. General view of Loci 24 and 25

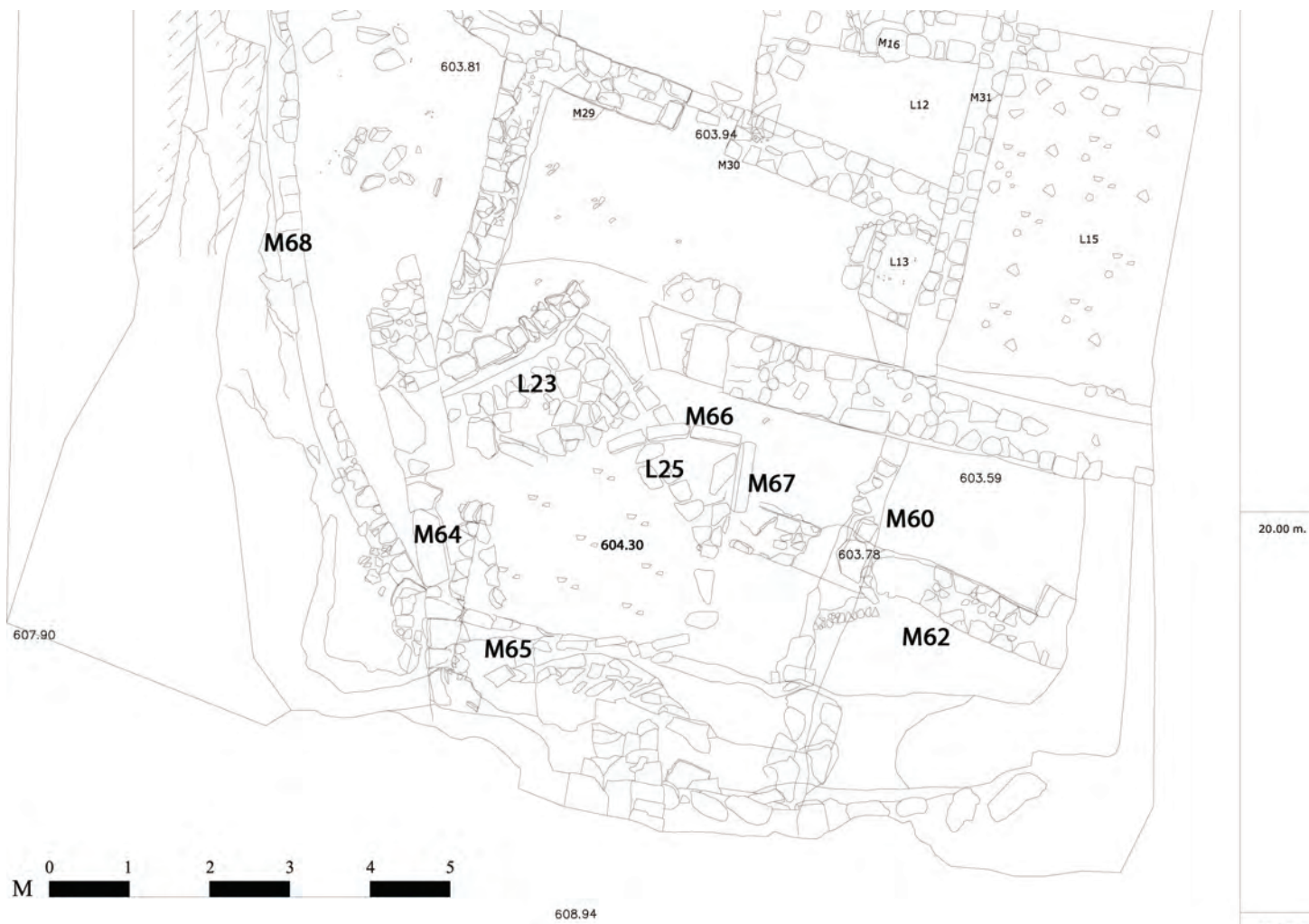


Fig. 21. Plan of the excavated structures after the removal of Locus 23



Fig. 22. Detail of Loci 24 and 25

After the removal of M11 and Level 19, another open space (Locus 25) appeared. It was contiguous to L23, was located 1.70m below the surface of L23, was also paved in stone, and was bordered by M66 and M67. Level 19 lies above the floor of L25 (**Fig. 22**). L25 is built on a brown and level ground (Level 20) representing the occupational deposit outside Building A. This layer contained pre-Islamic pottery akin to the sherds identified in 2010 in Level 5 (**Fig. 23**).⁷

⁷ Loreto 2014 (*Dûma I*): 101.

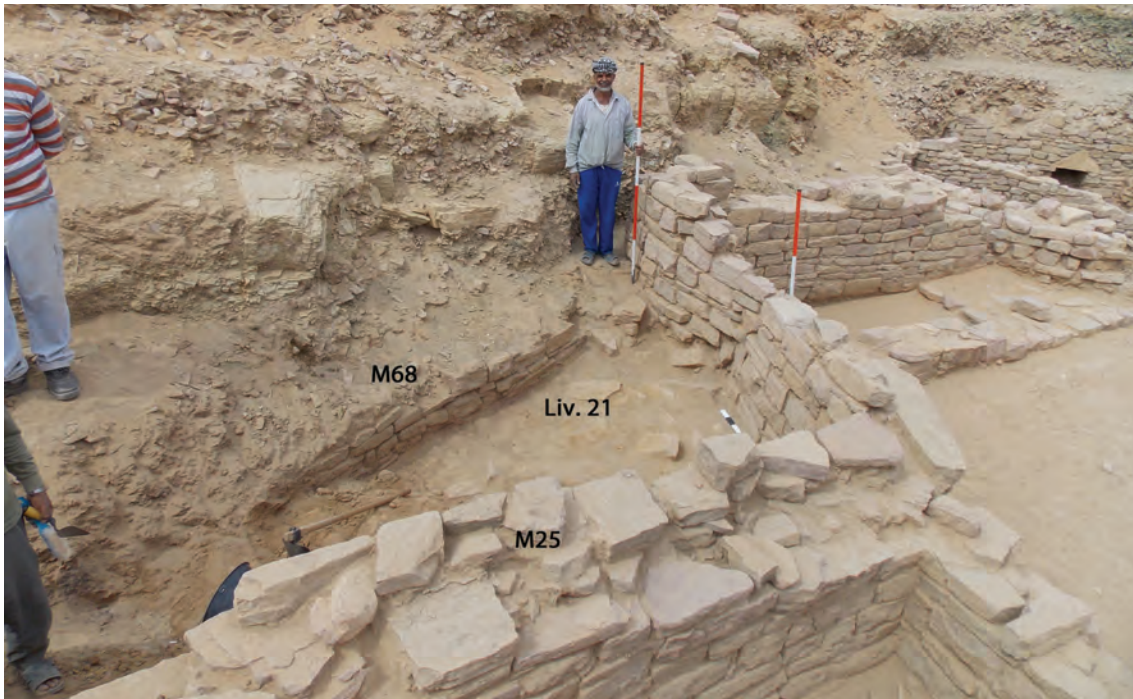


Fig. 23. Level 21 between Building A and the rocky slope of the hill



Fig. 24. M68, a retaining wall made of stone foundation courses and mud-brick superstructures

The excavation of Building A and of related structures (Nabataean/Roman-Byzantine)

Between M25 and the rocky slope, a depth of 4.30m below the top of the hill was reached, and we proceeded to remove Level 3b. A new level of collapse came to light: Level 21, the western collapse of Building A, in particular of M25 (**Figs. 23-24**). The collapse covered M68, a retaining wall running along the rocky slope and consisting of not more than 6 rows of stone and a raised row of brick. M68 joined M65. It was therefore a system of protection and terracing constructed in order to border the natural bedrock and create a walkway (L26) outside Building A.

Of particular interest is the fact that M68, M25 and the external façade of the beaten earth floor of L26 present clear and abundant traces of a coating of white stucco and plaster (**Figs. 25-26**). A few traces of this type were found in the 2011 campaign on the inner faces of Building A's M6 wall. It is therefore relevant to describe the building's appearance and its place in an urban context, since it was probably completely covered in white.

We proceeded with the removal of L25, which was in fact located above M62 and the collapse of Building A (**Figs. 27-28**). After the removal of L23 and L25, Level 23 came to light, which corresponded to the aeolian sand Level 11 covering the collapse of Building A in L9 (**Fig. 28**); M62 was completely traced, and it ran east towards the eastern corner of L9 (**Fig. 34**), where it appeared sealed by Level 25, a compact accumulation of earth and stone quite similar to Level 3b (**Fig. 8**). Following M62 to the east, the wall appeared increasingly damaged by the re-use and looting of its blocks for the construction of M53 (**Figs. 29-30**).

In the whole of Locus 9, the removal of Building A's collapse revealed a thin layer of aeolian sand (Level 22) which extended over the entire earth floor (**Fig. 28**): this testified to a very short period of abandonment. What is now clearly visible is the base of M53, which was built directly on the floor of L9 (**Figs. 31-32**) and demonstrated the existence of a substantial phase of re-use of Building A. M53, in fact, served as the southern boundary for the rooms delimited by M31 and M16, highlighted in the 2011 campaign. M53 is a major disruption of Building A, being constructed of beautiful blocks looted from the Nabataean Building. After the removal of M64, which allowed one to observe how M68 and M65 were linked (**Fig. 30**), and after the removal of L25 and M60, it turned out that the entire L9 was 8 x 5m



Fig. 25. M68, retaining wall covered with white plaster



Fig. 26. Detail of the white plaster used to cover M68 and Building A's walls



Fig. 27. Level of collapse inside L9, southern room of Building A



Fig. 28. Level 23 removal and Level 22 in L9



Fig. 29. M62, southern limit of Building A

wide, with a huge outdoor area surrounding Building A to the south and west. One could therefore appreciate the extension of Building A and its articulation with outer areas (**Fig. 33**): Building A was therefore surrounded by an outdoor paved(?) area of compacted earth and was bounded by walls with the retaining wall running along the rocky side.

The sounding in L9 (S4)

Having defined the perimeter of Building A, excavation proceeded with a probe (S4) below the floor of Locus 9 (**Fig. 34**). The sounding, covering 2.5 x 3m, revealed a stratigraphy similar to that seen in Locus 8 in 2011. Level 9, the Locus 9 ground floor made of compacted earth and pre-Islamic ceramic, was followed by Level 10, a huge infill of discarded stone mixed with earth and pre-Islamic pottery (of Nabataean attribution) which parallels the ceramics collected in previous soundings (**Fig. 35**).⁸ The S4 probe, however, in contrast to what was seen in Locus 8, revealed a new level: Level 24, a layer of collapse which lay above bedrock (**Fig. 36**). The collapse consisted of well-dressed blocks, placed on a layer of rock equalized manually, as seen in L10B in 2011.⁹ It was therefore the oldest occupational phase of the site, prior to Building A, and it testifies to an earlier occupational phase. The massive Level 10 identified in 2010-2011 was then placed to level both the irregularity of the rock and the presence of structure (M44)¹⁰ and of collapse (Level 24) present prior to construction of Building A.

Apparently the pottery collected from Level 24 is not different from Nabataean sherds identified in Level 10. Further studies are planned on this corpus of material.

⁸. Loreto 2014 (*Dûma 1*): 133.

⁹. Loreto Forthcoming (*Dûma 2*): 125.

¹⁰. Loreto Forthcoming (*Dûma 2*): 125.



Fig. 30. Plan of Building A's southern structures and Building A's related evidence (M68, M65 and outside floor level L26)



Fig. 31. Wall M53, Early Islamic reoccupation of Building A



Fig. 32. Early Islamic structures: M53, built above L9 ground floor and Locus 13, itself constructed above the collapse of Building A



Fig. 33. In color: Building A structures; in grey: re-occupation structures



Fig. 34. Plan of sounding S4 in Locus 9

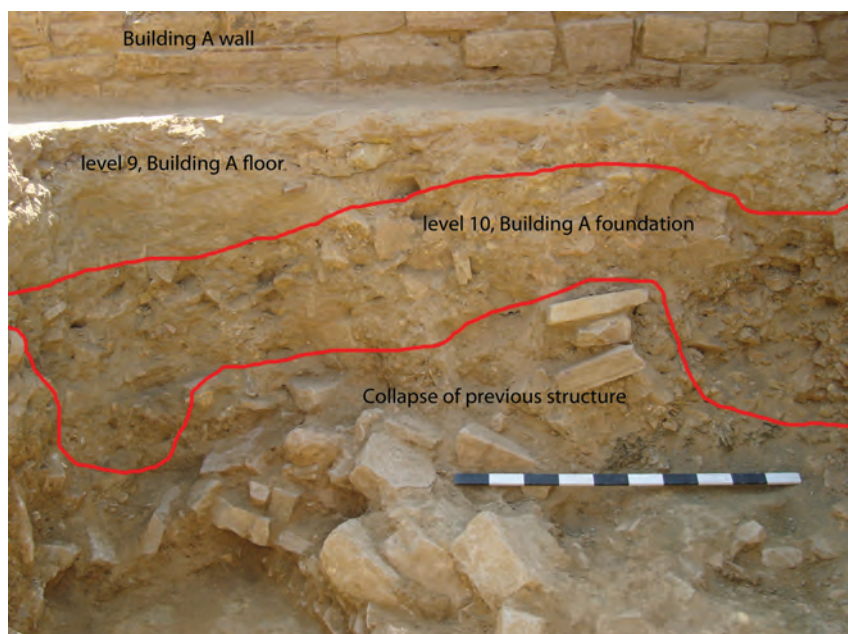


Fig. 35. Stratigraphy within Locus 9



Fig. 36. Level 24, level of collapse prior to the construction of Building A's foundation

Part II: The stratigraphy in Sector A

After four excavation campaigns at the foot of the Mârid Castle, a huge building was identified, relating to a Nabataean period of occupation: Building A. As we have seen, its southern and western limits were clarified, together with an outer walkway area which gave us an initial idea of ancient urbanization, despite the fact that the northern and eastern limits of the building were not very well preserved. Having defined as much as possible this 17 x 11m wide structure, we will present the complete sequence of archaeological phases identified until now, revolving around Building A, in order to expose the entire stratigraphic sequence obtained since 2009.

The stratigraphy will be arranged by considering the sequence of architectural features and archaeological levels; the material culture, pottery in particular, will be taken into account in order to suggest a date for each phase (**Tables 1, 2, 3, 4a-b**).

Chronology derives from the various architectural and archaeological phases involved following the collapse of Building A, and dates and historical phases for the Islamic levels presented here are therefore provisional.

Preliminary Archaeological Phases from Dumat al-Jandal	Structures and Materials	Archaeological Levels	Provisional Dating
Late Islamic	M1	level 1 (surface) - level 2 (wind-borne sand) (Figs. 10-11 Loreto Duma I)	15th-18th century AD
Middle Islamic I	Building L6, L2, M3, L21, L22, M47, M54, M55	level 2b (M10 collapse) (Fig. 53 Loreto Duma I)	8th-15th century AD
Middle Islamic II	M10, M14		8th-15th century AD
Middle Islamic III	Level 3a-b Levels 14, 15, 17, M5, M56	level 3a-b (stone rubble) - (level 4, part of level 3 gravel) (Figs. 33-35 Loreto Duma I) - Levels 14, 15, 17 (excavation of a well), M11 mudbricks collapse	8th-15th century AD
Early Islamic I	M11, L23, M57, M59, M61, M58, M60	Level 19 (collapse) - Level 18 aeolian sand above Level 19	8th century AD
Early Islamic II	L15 (Islamic locus), L12, L13, M16, M19, M31, M35, L10a-b, L16, L17, L19, L23, M7, M8, M15, M22, M23, M27, M28, M36, M37, M38, M39, M49, L25, M64, M66, M67	level 6 (occupation deposit above L10-L10a) (Figs. 66-67 Loreto Duma I)	7th century AD
Roman Byzantine	L8a, M21	level 7 (collapse of building A above Locus 8) (Fig. 51 Loreto Duma I) - level 8 (life deposit above Locus 8) (Fig. 51 Loreto Duma I) - level 11 (wind-borne sand above the collapse of building A in Locus 9) (Figs. 55-56 Loreto Duma I)	2nd - 6th century AD
Late Nabataean	Building A construction, M52, M68, M65, L26	level 5, 22 (occupational level outside Building A) - level 9 (building A floor)	1st - 2nd century AD
Early Nabataean	Materials from Building A foundation trench (Fig. 57 Loreto Duma I) / M44 (Figs. 31-32 Loreto Duma I)	level 10 (Nabataean pottery items); Level 24 (collapse on bed-rock)	1st century AD

Table 1. Archaeological phases proposed including relative structures and levels (2012 excavation)

Levels	Description	Provisional Dating (AD)	Preliminary Archaeological Phases from Dumat al-Jandal
1	surface	XVIII/XIX century	Late Islamic
2	wind-born sand	XV-XVIII century	Late Islamic
2b	M10 collapse	XV-XVIII century	Late Islamic
3a	stones mixed with sand	VIII-XV century	Middle Islamic III
3b	stones compacted with earth	VIII-XV century	Middle Islamic III
4	stones compacted with sand	VIII-XV century	Middle Islamic III
5	life deposit	I-II century	Late Nabataean
6	life deposit above L10a-b	VII century	Early Islamic II
7	collapse of Building A	II-VI century	Roman Byzantine
8	life deposit above L8	II-VI century	Roman Byzantine
9	Building A floor	I-II century	Late Nabataean
10	Building A foundation	I-II century	Late Nabataean
11	sand above Building A collapse inside L9	II-VI century	Roman Byzantine
12	life deposit above L15/L19	VII century	Early Islamic II
13	L15 floor surrounding L19	VII century	Early Islamic II
14	discarded materials (peat)	VIII-XV century	Middle Islamic III
15	discarded materials (peat) mixed with earth	VIII-XV century	Middle Islamic III
15b	discarded materials (peat)	VIII-XV century	Middle Islamic III
16	wind-born sand between M11-M14	VIII-XV century	Early Islamic I
17	discarded materials (peat)	VIII-XV century	Middle Islamic III
18	wind-born sand above Level 19	VIII century	Early Islamic I
19	Locus 23 collapse	VIII century	Early Islamic I
20	life deposit south of Building A	II century	Late Nabataean
21	Building A collapse in L26	II-VI century	Roman Byzantine
22	wind-born sand above Locus 9 floor	II-VI century	Roman Byzantine
23	sand down L25	II-VI century	Roman Byzantine
24	collapse in S4 above the rock	I century	Early Nabataean
25	stone mixed with earth above M62 (eastern limit)	II-VI century	Roman Byzantine
Building A collapse in L9	L9 collapse	II-VI century	Roman Byzantine
M11 mudbricks collapse	M11 collapse	VIII-XV century	Middle Islamic II
L6 charcoal	deposit inside Building L6	VIII-XV century	Middle Islamic I
L6 sand	deposit inside Building L6	VIII-XV century	Middle Islamic I
M31 roof collapse	stone slabs collapse above L15	VII century	Early Islamic II
M31 mudbricks collapse	mudbricks collapse above L15	VII century	Early Islamic II
L13 fire place	charcoal and bones	VII century	Early Islamic II
L16 fire place	charcoal and bones	VII century	Early Islamic II
L17 fire place	charcoal and bones	VII century	Early Islamic II

Table 2. Archaeological levels recorded since 2009

Loci	Description	Provisional Dating (AD)	Preliminary Archaeological Phases from Dumat al-Jandal
1	south of M1 surface (2009)	XVIII/XIX century	Late Islamic
2	north of M3 -0.50 m (2009)	XVIII/XIX century	Late Islamic
3	walkway outside Building L6 (2009)	VIII-XV century	Middle Islamic I
4	between M6 and rocky colluvium -2 m (2009)	VIII-XV century	Middle Islamic III
5	between M7 - M8 - 2 m (2009)	VIII-XV century	Middle Islamic III
6	Building L6 (2009-2010)	VIII-XV century	Middle Islamic I
7	Building A eastern portico (2010)	II century	Late Nabataean
8	Building A open court (2010)	II century	Late Nabataean
9	Building A southern room (2010)	II century	Late Nabataean
10a-b	Islamic rooms north of L8 (2010-2011)	VII century	Early Islamic II
11	between M17, M25 and rocky colluvium - 3 m (2010)	VII century	Early Islamic II
12	between M31, M35, M16 and M19 (2011)	VIII-XV century	Middle Islamic I
13	fire place in L20 (2011)	VII century	Early Islamic II
14	north of L10a-b (2011)	VII century	Early Islamic II
15	between M31, M16, M35 (2011)	VII century	Early Islamic II
16	fire place (2011)	VII century	Early Islamic II
17	fire place (2011)	VII century	Early Islamic II
18	north-west of M44 (2011)	VII century	Early Islamic II
19	fire place in L15 (2011)	VII century	Early Islamic II
20	between M31, M35, M16 and M19 (2011)	VII century	Early Islamic II
21	between M11, M14, M54, M55 (2012)	VIII-XV century	Middle Islamic I
22	between M11, M14, M54, M55 (2012)	VIII-XV century	Middle Islamic I
23	paved room between M59 and M61 (2012)	VIII-XV century	Middle Islamic II
24	between M64, M65 and L25 (2012)	VII century	Early Islamic II
25	paved room between M66 and M67 (2012)	VII century	Early Islamic II
26	whole outside walkway of Building A (2012)	II century	Late Nabataean

Table 3. Loci defined since 2009

Walls	Description	Provisional Dating (AD)	Preliminary Archaeological Phases from Dūmat al-Jandal
1	surface, isolated (removed) (2009-2010)	XVIII/XIX century	Late Islamic
2	Building L6 wall (removed) (2009-2010)	VIII-XV century	Middle Islamic I
3	surface, isolated (removed) (2009)	XVIII/XIX century	Late Islamic
4	above M7 (removed) (2009)	VIII-XV century	Middle Islamic I
5	foundation of L3/Building L6 (removed) (2009-2010)	VIII-XV century	Middle Islamic III
6	Building A wall (2009-2010)	II century	Late Nabataean
7	circular wall north of L8 (2009-2010)	VII century	Early Islamic II
8	linked to M7 (2009-2010)	VII century	Early Islamic II
9	between M7 and rocky coluvium (2009)	VII century	Early Islamic II
10	north-south wall related to M14 and Buildig 6 (partially removed) (2009-2012)	VIII-XV century	Middle Islamic II
11	fortification wall on north-south axis (partially removed) (2009-2012)	VIII century	Early Islamic I
12	Building L6 wall (removed) (2009-2010)	VIII-XV century	Middle Islamic I
13	Building L6 wall (removed) (2009-2010)	VIII-XV century	Middle Islamic I
14	north-south wall related to M14 and Buildig 6 (partially removed) (2009-2012)	VIII-XV century	Middle Islamic I
15	north of M16 (2010)	VII century	Early Islamic II
16	linked with Locus 15/20 (2010-2011)	VII century	Early Islamic II
17	Building A wall (2010)	II century	Late Nabataean
18	above M17, linked to level 3b (removed) (2010)	VIII-XV century	Middle Islamic III
19	(M11) between M16 and M53 (removed) (2010-2011)	VIII-XV century	Middle Islamic II
20	Building A wall (2010-2012)	II century	Late Nabataean
21	inside Locus 8 (removed) (2010)	II-VI century	Roman Byzantine
22	linked to M7 (2010)	VII century	Early Islamic II
23	inside Locus 8, above level 8 (removed) (2010)	VII century	Early Islamic II
24	outside and parallel to M25 (removed) (2010)	VII century	Early Islamic II
25	Building A wall (2010-2012)	II century	Late Nabataean
26	Building A wall (2010-2012)	II century	Late Nabataean
27	linked to L10a-b	VII century	Early Islamic II
28	linked to L10a-b	VII century	Early Islamic II
29	Building A wall (2010-2012)	II century	Late Nabataean
30	Building A wall (2010-2012)	II century	Late Nabataean
31	linked to M53, M16 and loci 20-15 (2010-2011)	VII century	Early Islamic II
32	linked to L13 (2011)	VII century	Early Islamic II
33	linked to L13 (2011)	VII century	Early Islamic II

Table 4a. Walls defined since 2009

Walls	Description	Provisional Dating (AD)	Preliminary Archaeological Phases from Dūmat al-Jandal
34	delimited L14 to the north (2011)	VII century	Early Islamic II
35	delimited L10b (2011)	VII century	Early Islamic II
36	inside L14 (2011)	VII century	Early Islamic II
37	linked to L19 (2011)	VII century	Early Islamic II
38	linked to L19 (2011)	VII century	Early Islamic II
39	linked to L19 (2011)	VII century	Early Islamic II
40	linked to L19 (2011)	VII century	Early Islamic II
41	deleted		
42	deleted		
43	deleted		
44	between L10b and L18 (2011)	I century	Early Nabataean
45	delimited L18 to the north-east (2011)	VII century	Early Islamic II
46	deleted		
47	delimited L21 (removed) (2012)	VIII-XV century	Middle Islamic I
48	deleted		
49	delimited L17 (2011)	VII century	Early Islamic II
50	delimited L16 (2011)	VII century	Early Islamic II
51	delimited L16 (2011)	VII century	Early Islamic II
52	contemporary to Building A north of M7 (2012)	II century	Late Nabataean
53	delimited L20/L15 to the south (2011-2012)	VII century	Early Islamic II
54	delimited L21/22 (removed) (2011-2012)	VIII-XV century	Middle Islamic I
55	delimited L21/22 (removed) (2011-2012)	VIII-XV century	Middle Islamic I
56	related to level 3b and M5 (removed) (2012)	VIII-XV century	Middle Islamic III
57	linked to L23 (removed) (2012)	VIII century	Early Islamic I
58	visible in section south (2012)	VIII-XV century ?	Middle Islamic II
59	linked to L23 (removed) (2012)	VIII century	Early Islamic I
60	wall delimiting Level 19 to the west (removed) (2012)	VIII-XV century	Middle Islamic II
61	linked to L23 (removed) (2012)	VIII century	Early Islamic I
62	Building A wall (2012)	II century	Late Nabataean
63	visible in section south related to M65 (2012)	II century ?	Late Nabataean
64	above M68, linked to L25 (removed) (2012)	VII century	Early Islamic II
65	retaining wall south of Building A (2012)	II century	Late Nabataean
66	linked to L25 (removed) (2012)	VII century	Early Islamic II
67	linked to L25 (removed) (2012)	VII century	Early Islamic II
68	retaining wall east of Building A (2012)	II century	Late Nabataean

Table 4b. Walls defined since 2009

Early Nabataean

The first archaeological phase observed corresponds to the structures and levels covered by Building A's foundations (**Fig. 37**). According to the pottery from Levels 9 and 10 (Building A floor and foundation) the building's construction can be attributed to the 1st-2nd cent. AD, one can thus define walls M44 and Level 24 as Early Nabataean (**Fig. 36**).¹¹ The pottery from Level 24 will be studied at a later stage, but it appears to be of the same cultural horizon as Level 10 Nabataean sherds, i.e. the 1st cent. AD.¹² Furthermore, we could associate to this phase the process by which the virgin rock has been cut, in order to create a flat and even level on which M44 and the collapsed structures in S4 were built. Both M44 and Level 24 are on a same level, above the flattened rock excavated by hand, at the same elevation (602.44/602.50m), i.e. 6.40m below the top of the excavation area.

Late Nabataean

Late Nabataean is the period, i.e. the 1st and 2nd cent. AD, that best appears to relate to the construction of Building A, M68 and M65 (**Fig. 38**). The huge size of Building A and its pseudo-isodomic masonry, together with the wealth and variety of the pottery collected¹³ (locally-made ware of the mid 1st cent. AD, "egg shell" fine and painted wares imported from Jordan, also of mid. first cent. AD date, and *terra sigillata*) seems to be the period of greatest prosperity detected until now in the historical centre of Dûmat al-Jandal.

Moreover we can observe the first traces of ancient urban planning. Building A was built very close to the foot of the ancient Acropolis, following a system of terraces, comprising M68 and M65 which created an outside walkway (L26) around the main building and protected it from the collapse of material and runoff flowing from the top of the hill (**Fig. 39**). It is still unclear if Building A was a private house or a public building. The huge quantity of wares indicating ostentatious consumption and food processing suggest a private structure, a particularly rich one at that, considering the amounts of pottery and the building's huge proportions (L8).

¹¹. Loreto Forthcoming (*Dûma 2*): 134-137.

¹². No clearly defined Pre-Nabataean material has been identified until now.

¹³. See Loreto 2014 (*Dûma 1*): 133-135; Loreto 2012b.



Fig. 37. Trench 1 plan after 2012 excavation with indication (in blue) of Early Nabataean structures and levels



Fig. 38. Plan of Late Nabataean structures (in red)



Fig. 39. Building A. General view from south

It remains unclear whether M52, made of identical masonry, must be considered part of Building A or of another contemporary structure; if so, the whole building should measure 20m north-south and 13m east-west wide (**Fig. 38**).

Roman/Byzantine

The excavation of Building A revealed that the building collapsed before the advent of Islam. Roman-Byzantine sherds recovered in the building's floor and collapse levels suggest that the edifice was already reoccupied at the end of the Nabataean period. However, only part of the building was reoccupied. The collapse identified was located within L9, inside the building's western portico and, in addition, outside L9, along L26 (**Fig. 40**). Only the open court (L8) was found empty of traces of collapse; this was where M21 was built (**Fig. 41**).



Fig. 40. Plan of the Building A's various indications of collapse (in red)

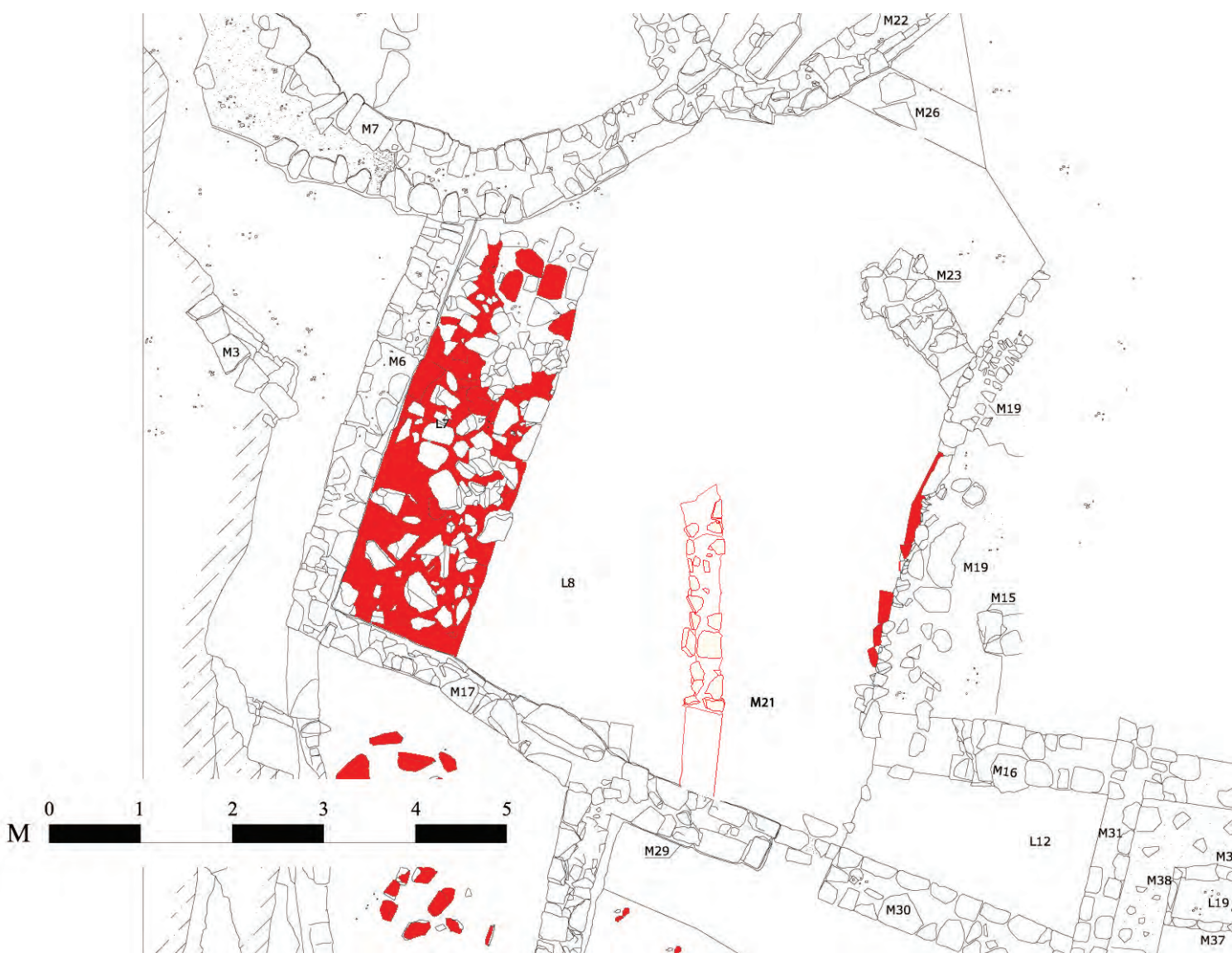


Fig. 41. Reoccupation of L8, detail of M21

Furthermore, M21 was covered by Level 8, an occupational deposit from which Roman-Byzantine sherds were collected.¹⁴ This suggests that the building was only partially reoccupied after its collapse, between the 3rd and 6th cent. AD. No traces of fire were observed and no wooden elements were found, possibly implying that the building was not destroyed by fire or by a sudden event but rather it was probably abandoned until its collapse.

¹⁴ See Loreto 2014 (*Dàma I*): 123-126.

Early Islamic II

The main re-occupation phase of Building A begins when Islamic pottery appears in archaeological levels (**Fig. 42**). Above the collapsed levels of Building A (L25 above M62) or directly above the features and the floor level of the Nabataean building (M35 above L9; M7 against M6; M22 above M26), various structures were built re-using spaces and materials from the previous building. The new structures appear to reveal less wealth, both in terms of construction techniques and in arrangements. Only L15 and L20 seem to be rooms revealing the presence of an elite, since in it, on wall M31, painted stucco (red and white) was found.

The first Islamic re-occupation took place to the north, south and east of Building A. To the north, a complex of rooms (L10a-b, L14, M7, M8, M28, M29, M22, M34, M35, M35, M45) was built re-using Building A's stone elements, directly above the bedrock (L14) or above Building A's floors (L10a-b).¹⁵

To the east, M35, M31 and M16 defined a series of rooms (L20, L15) and fireplaces (L13, L19). These walls were constructed once more by re-using Building A's stone elements.¹⁶ In the northern half of Locus 8, M23 was built above Level 8, although its relationship to this context is not clear. To the south L25, a poorly-laid open space, was built above the collapse of Locus 9 (**Fig. 20**).

Early Islamic I

The distinction between Early Islamic II and I rests on the construction of M11, the huge north-south wall built between M16, M53 and above L23. M11 was clearly erected with a defensive purpose, distinct from the houses delineated by M53, M31 and M16. For this reason, an Early Islamic I phase has been proposed. M11, in fact, was built above Level 19, a collapse over L23. In addition, L23, an ephemeral structure, could be attributed to this period (**Figs. 12, 43**), together with M57, M59, M61, M58, M60 and Level 19, above which M11 was built (**Fig. 44**).

A date around the 7th and 8th cent. AD is suggested based on the fact that no huge aeolian sand deposit was identified between M11 and the previous levels of occupation.

Level 18 is the only level of large-scale abandonment; it is located west of M11 and covers both Level 19 and M11 (**Figs. 11, 19**).

¹⁵. See Loreto Forthcoming (*Dûma 2*): 124-137.

¹⁶. See Loreto Forthcoming (*Dûma 2*): 107-114.



Fig. 42. Plan of the Early Islamic II structures (in yellow)



Fig. 43. Detailed plan of L23 (in green)

Middle Islamic III

A Middle Islamic III phase was identified in the huge discarded level constituted by Levels 3a-b and 4, the latter a substantial layer of discarded materials coming from the construction of the medieval village that can be seen today surrounding the Mârid Castle.¹⁷ Following observation of the pottery and objects collected, the entire Middle Islamic period (III-I) was tentatively attributed to between the 8/9th and 15th cent. AD.

This amount of material covers the whole area east of M11 and, partly, that to the northwest of M11. Southeast of M11 Levels 14, 15, 15b and 17 were traced; these were a series of levels of earth and green silt resulting from the digging of a well (**Fig. 45**).

Both Levels 3a-b and Level 14 cover the entire area, creating a benchmark for all later structures (Middle Islamic II-I and Late Islamic).

M5, M18 (both excavated in 2009-2010) and M56 (2012) could be attributed to this phase.

Middle Islamic II-I

Two walls could be attributed to this phase: M10 and M14 (Middle Islamic II); the distinction was made in order to distinguish them from Building L6 (Middle Islamic I). Middle Islamic II-I are two phases which are strictly connected. We made a distinction between them, essentially to separate the construction phases of M10 and Building L6 (**Fig. 46**).

Building L6, with its external walkway (Locus 3), represented the last real built structure in the area of Trench 1; it was related to the ephemeral structures of L21 and L22.¹⁸

Late Islamic

This phase could be attributed to the very last occupation of the Medieval village, between the 15th and 18th cent. Level 2, an extensive deposit of aeolian sand which covered Building L6, could be related to this period of abandonment, as well as M1, M3, L1 and L2 (structure excavated in 2009).¹⁹

¹⁷. See Loreto 2014 (*Dûma I*): 116.

¹⁸. Level 2, huge aeolian sand level which seals Building L6 can be dated to the 17th-18th century thanks to Ottoman pipes contained in there. Loreto 2014 (*Dûma I*): 102-107.

¹⁹. de Maigret 2010.

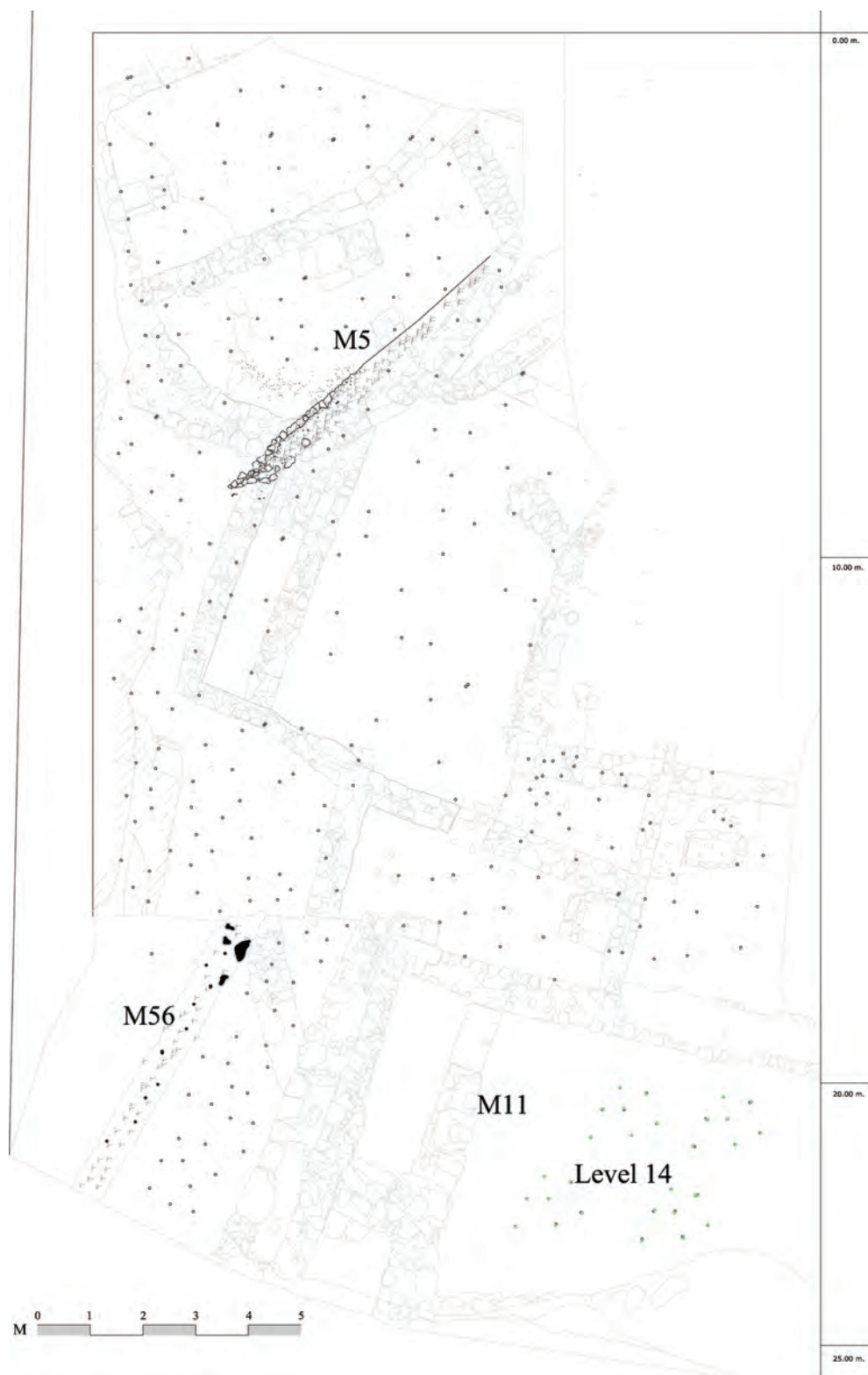


Fig. 45. Level 3a-b and Level 14 (in grey) seal the entire area



Fig. 46. Middle Islamic II-I plan

The Faunal Remains of Sector A: Preliminary Results

Hervé Monchot (Labex-RESMED, PRES Sorbonne Université)

This preliminary report presents the archaeozoological study undertaken on the faunal material of trenches 1 and 2, excavated by Romolo Loreto in 2011 in sector A.¹ The analysis was carried out during the 2012 field season, from the 1st November to 15th. This work follows the study made in 2011, which involved the analysis of material from the excavations of the years 2010 and 2009.² Methodology and archaeological context are summarized in 2011 season report.³

During this period of time, 3337 bones were examined. Some bones from sector C, published in a separate article, were also analysed.

Results

In sector A (trenches 1 and 2), the 2011 faunal excavated material comprised 3337 bone specimens, which were unearthed in various archaeological levels, especially in the filling levels 2 and 3 (Tab. 1).

As in the case of previous studies, the majority among these was identified as belonging to camels (n=1023), followed by ovicaprids (sheep/goat, n= 485). No complete long bones or camel teeth were recovered during excavations, due to fragmentation. No articulated specimens were retrieved.

1. Loreto 2013.

2. Monchot Forthcoming.

3. *Ibid.*

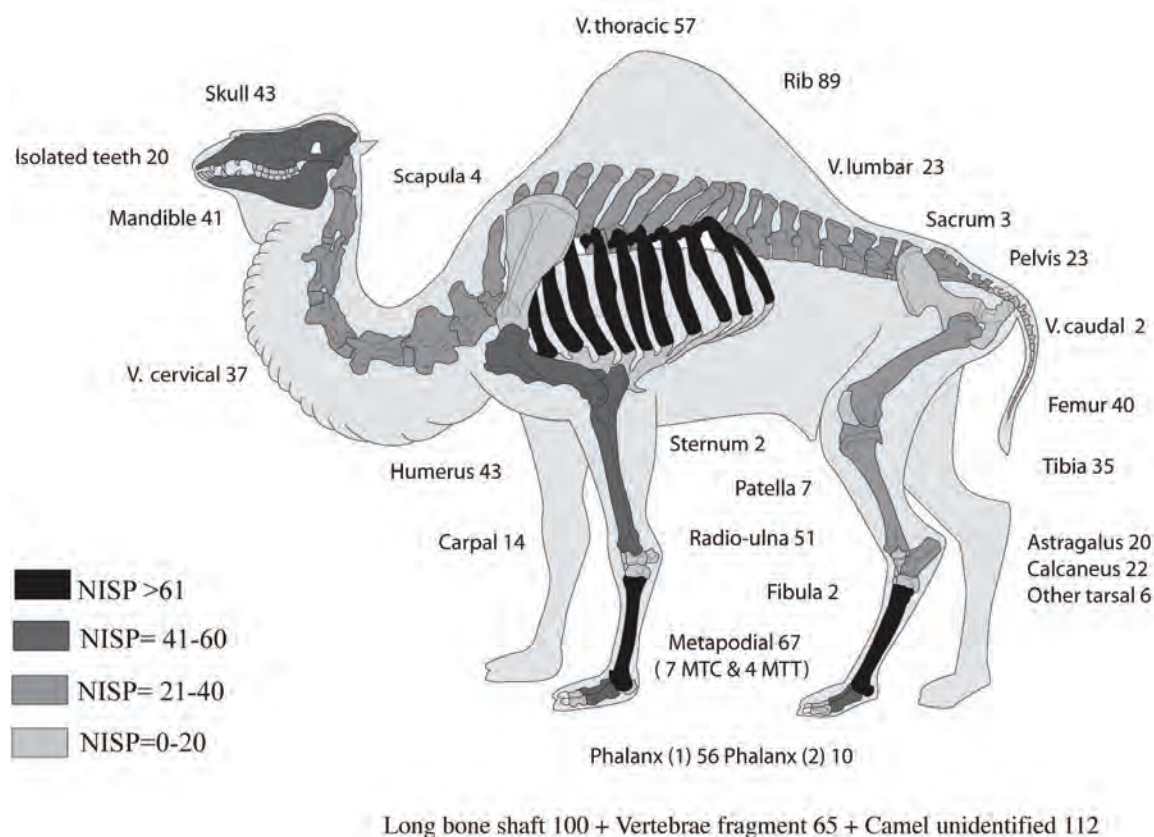


Fig. 1. Skeletal bone representation of a camel in number of identified specimens (NISP) for the whole assemblage.

Dromedary/ Arabian camel (*Camelus dromaderius*)

As in the previous results, the dromedary is in number of identified specimens the species best represented at Dûma ($n=1023$): the dromedary played an important role in human exploitation of desert regions and it is therefore not so surprising to find camel bones in almost all stratigraphic units. All skeletal parts were identified among the bone assemblage (i.e., head, trunk, forelimb, hindlimb and extremities) (**Fig. 1**).

This anatomical representation is more or less similar to that observed at Al-Yamama.⁴ Nevertheless it is important to clarify a few things: this figure is preliminary and shows the raw data. It will be more nuanced and realistic when bone fragmentation, the side of each bone and stratigraphic position of each element (i.e., using MNE, MAU or MNI unities) will be considered.

⁴ Monchot 2012.

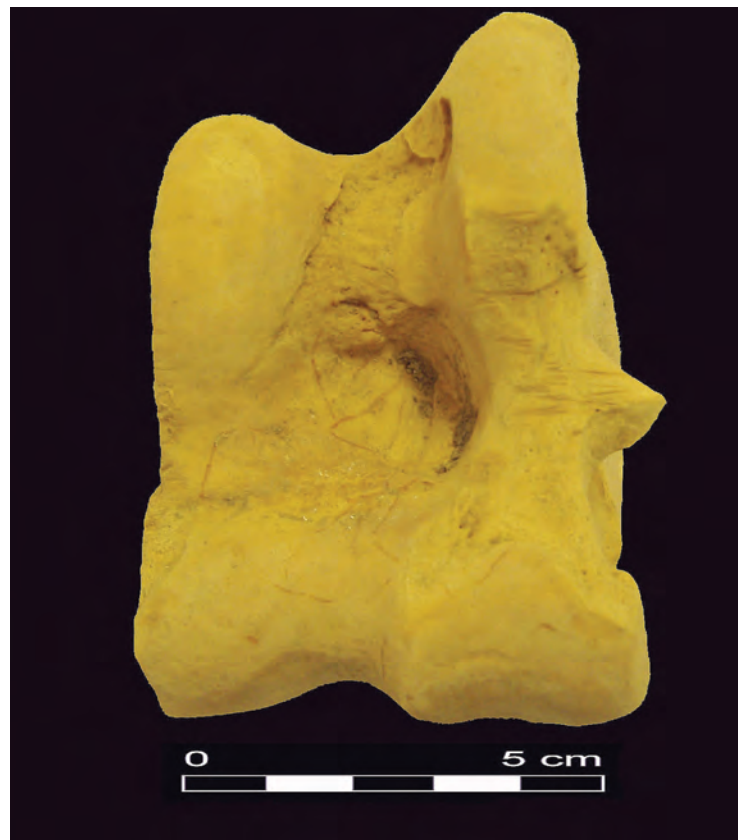


Fig. 2. Camel astragalus showing fine cutmarks

The fact that all skeletal elements have been identified on the site suggests that people brought the entire individual, it is still unclear whether these remains represent whole carcasses scattered under the influence of taphonomic conditions or whether they represent portions of discarded skeletons or an admixture of both. Camel consumption is attested by the presence on bone of traces of burning, of fine cut marks made with a knife, perhaps a reflection of skinning, dismemberment (**Fig. 2**), or filleting activities, or by the presence of chop marks (especially on vertebrae) made by a cleaver, features which point to primary butchery of the carcass.

Caprine/sheep and goat (*Ovis aries/ Capra hircus*)

Caprines are represented by 485 specimens, tooth and bone fragments. They were found in almost all UF (Tab. 1) and all parts of the skeleton were identified among the bone assemblage (**Fig. 3**).

It is likely that much of the bone identified as being from small mammals also originated from caprines (e.g. ribs, skulls, vertebrae). As for camels, one needs to accept this figure with caution, since it does not for instance take into account the fragmentation of bone. Nevertheless, one can observe an over-representation of long bones and an under-representation of foot elements.

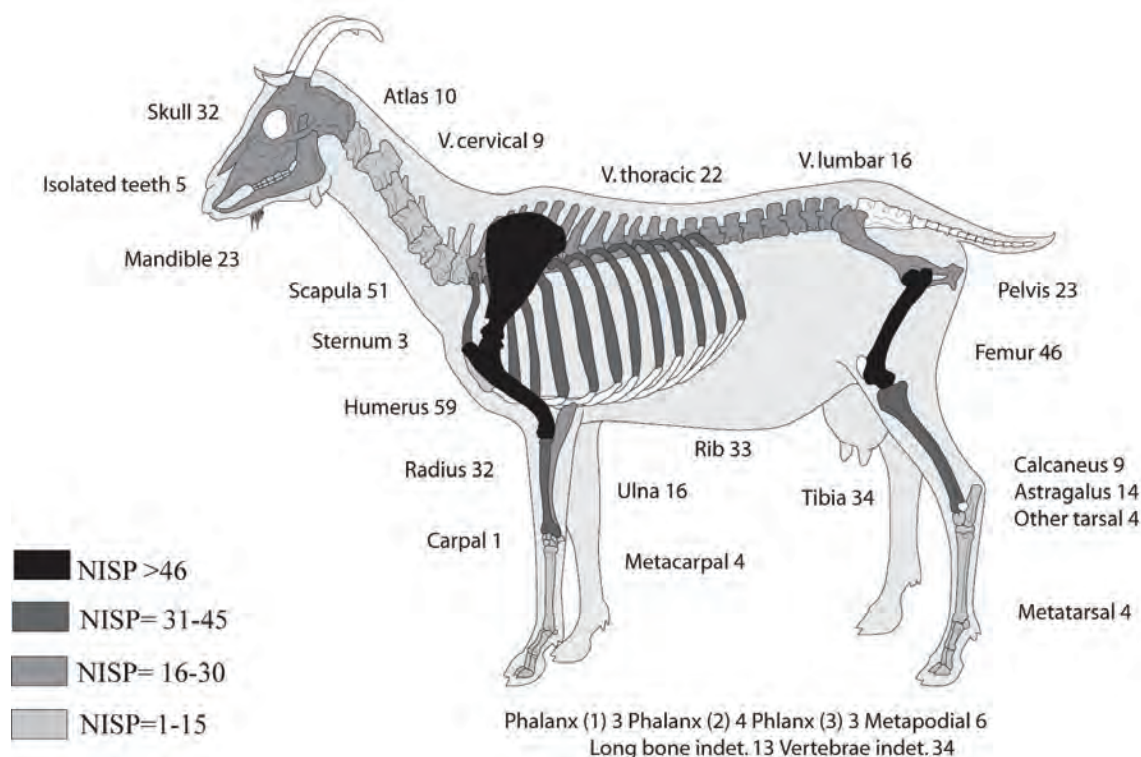


Fig. 3. Skeletal bone representation of sheep/goat in number of identified specimens (NISP) for the whole assemblage.

It is not surprising to find many sheep/goat individuals, given the important role played by these animals in the diet of desert inhabitants: they were the main source of meat, but also of milk for the inhabitants of Dûmat al-Jandal. As for the camel, the use of its flesh is confirmed by the presence of butchery marks.

Cattle (*Bos Taurus*)

The presence of cattle was suspected but could not be evidenced in previous seasons. The presence of a right upper molar 2 found in locus 12 of level 12 and of a distal left humerus in level 3a undoubtedly confirms the presence of cattle.

Nevertheless, the cattle remains are marginal compared to that of ovicaprids and camels and could be explained by its specific ecological requirements (e.g., water and pasture). As an animal, many of its qualities are easily provided by camels.

Eagle

A coracoid of an eagle (the species will be determined) was found in a fireplace in locus 16 (**Fig. 4**).



Fig. 4. Coracoid eagle found in a fireplace (locus 16).

Other species

Other species encountered were found in small numbers but are all already mentioned in the faunal list of 2011:

Gazelle (*Gazella* sp.)

Gazelle remains (N=11) are present in many layers: one bone was found in level 2 (a proximal humerus), two in level 3a (a distal and a proximal tibia fragment), one in level 6 (a cubonavicular), one in collapse M19 (a right distal femur), six in level 12, 3 in locus 12 (a left radius proximal, a right calcaneus, a right cubonavicular) and 3 in locus 15 (an unfused dexter distal tibia, a right unfused calcaneus, a right talus; these remains belong to a juvenile individual).

Gazelle bones present characteristic osteomorphological features and a further biometric analysis will attempt to identify the species involved (e.g., the Arabian gazelle, *Gazella arabica* also called to the Saudi gazelle, *Gazella saudiya*, or the mountain gazelle (*Gazella gazella*).⁵

Oryx (*Oryx leucoryx*)

Three bones, one in level 2 (a left distal tibia) and two in level 3a (a left distal humerus and a right astragalus) testify to the presence of oryx in the assemblage. But because of the intense fragmentation of bones and teeth and the difficulty in recognizing oryx bones,⁶ other parts may be also present among the various fragments classified as bovids or MH.

Equids (horse/mule/donkey)

Identifying Equid bones specifically is not easy because of the recurrent distinction between horse (*Equus caballus*), donkey (*Equus asinus*) and hybrid mules. Only 13 remains attest the presence of equids: one in level 2 (a distal left radius), two in level 3a (a distal left tibia and a proximal fragment of a phalanx 1), 6 in level 7 (four right lower teeth and two incisors), two in level 10 (a proximal metacarpal 3 and a distal extremity of a metapodial), one in M19 (a phalanx 2) and finally one in the M31 collapse (a right distal humerus).

For equids, given the small size of the assemblage analysed to date, results may instead indicate that equid meat was rarely consumed in this part of the site or that equids were hardly used at Dûmat al-Jandal.

5. Peters 1989; Thouless *et al.* 1991; Munro *et al.* 2011.

6. Peters *et al.* 1997.

Dog (Canis familiaris)

Twelve remains were identified, four in level 2 (a left proximal humerus, a left distal humerus, a left proximal radius, a left distal femur), five in locus 14 of level 10 (four right metatarsal and one right distal tibia), three in the locus 16 fireplace (two fragments of a mandible and one fragment of maxillary with a D3 belonging to a juvenile).

Chicken (Gallus gallus)

Two remains of chicken (a left complete tarsometatarsus discovered in level 2 and a incomplete left ulna) originate from level 12 (locus 12).

Birds (indeterminate)

In level 1, one subcomplete tarsometatarsus was found; identification of the species is still in progress.

Conclusion

These results are consistent with those obtained in the 2009 and 2010 seasons of excavations in the same area, and are broadly similar to those found at other sites in Saudi Arabia (e.g. al-Yamâma): the diet is dominated by camels and caprines, hunting remains are marginal, but nevertheless present as evidenced by gazelle or oryx. The results of the year 2011 will be integrated to those obtained during fieldwork in 2009 and 2010. Different archaeological levels will be taken into account in order to observe any temporal and cultural variations with time.

The Western Settlement

Sector C

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Excavations in Sector C (Dûmat al-Jandal's Western Sector) – whose exploration began in 2010¹ – were continued in 2012, thanks to the opening of four new soundings in the sector's lower part (SD6, 7, 8, 9), in order to better understand space encircled by the ancient enclosure wall, and therefore to explain its function (**Fig. 1**).

Soundings 6 and 9, opened at the location of stone structures visible on the surface or in recent sections created by bulldozers, have sought to clarify the nature of settlement on both opposing slopes in the valley, at two locations currently neither built up nor cultivated. The picture gathered at the end of the season showed the presence of vast terraced structures, parallel to the slope. Sounding 6, at the base of the promontory, is certainly the most promising in terms of architecture. Excavations have brought to light stone and mud brick remains preserved over a height of 2 metres. Three phases were identified. These built remains are perhaps related to the presence of a well or cistern going back to the Roman period (and probably even earlier). The sounding will be extended in the next season.

By contrast, Soundings 7 and 8, which were approximately aligned with Sounding SD3 carried out in 2010,² attempted to better understand the different activities taking place at the centre of the valley: Sounding SD3 has in effect exposed small agricultural installations, and it was possible to surmise the existence of gardens, of divided small installations and perhaps of farms, comparable to what can be observed nowadays. The loamy, thick and quite fertile soil is actually favourable to this kind of agricultural activity. The results of excavations carried out in 2012 appear to strengthen this suggestion.

Research was carried out in 2012 on the rocky promontory of al-Burj, where a vast structure identified as a *triclinium* the previous year was cleared.³ Two phases of use were

¹. Charloux *et al.* 2014, Forthcoming.

². Charloux *et al.* 2014: SD3.

³. See Charloux *et al.*, Forthcoming.

distinguished. Detailed excavation of the structure, with systematic sieving of the layers, the flotation of fine soil, the topography of the structures and of stones, together with photography with a telescopic rod, will enable a better interpretation of the function of this ancient construction.

Finally, one should recall the activities carried out by the expedition in order to preserve the ancient remains. The team decided to infill Soundings SD1, SD3, SD7 et SD8 with sand and earth moved by bulldozer,⁴ in order to safeguard ancient structures unearthed in 2010 and 2012; soundings were in particular at risk from collapse (SD1), and security was also of major concern (SD3, 7, 8), to the extent that it was urgent to solve this problem prior to our departure. The 2012 season, moreover, gave new opportunities to become involved with the protection of the Western enclosure: a presentation was given at the Jawf Archaeology and Ethnology Museum on November 21st, 2012, together with participants of the al-Sudairi Foundation symposium on the protection of Saudi Arabian Heritage, and on November 28th 2012, we also presented the expedition's activities to His Excellency Ahmad Âl-Sheikh, Vizier of the Jawf Emirate, who favourably received our requests for the protection of the enclosure area.

4. Work was carried out under the supervision of G. Charloux and E. Lanoë.

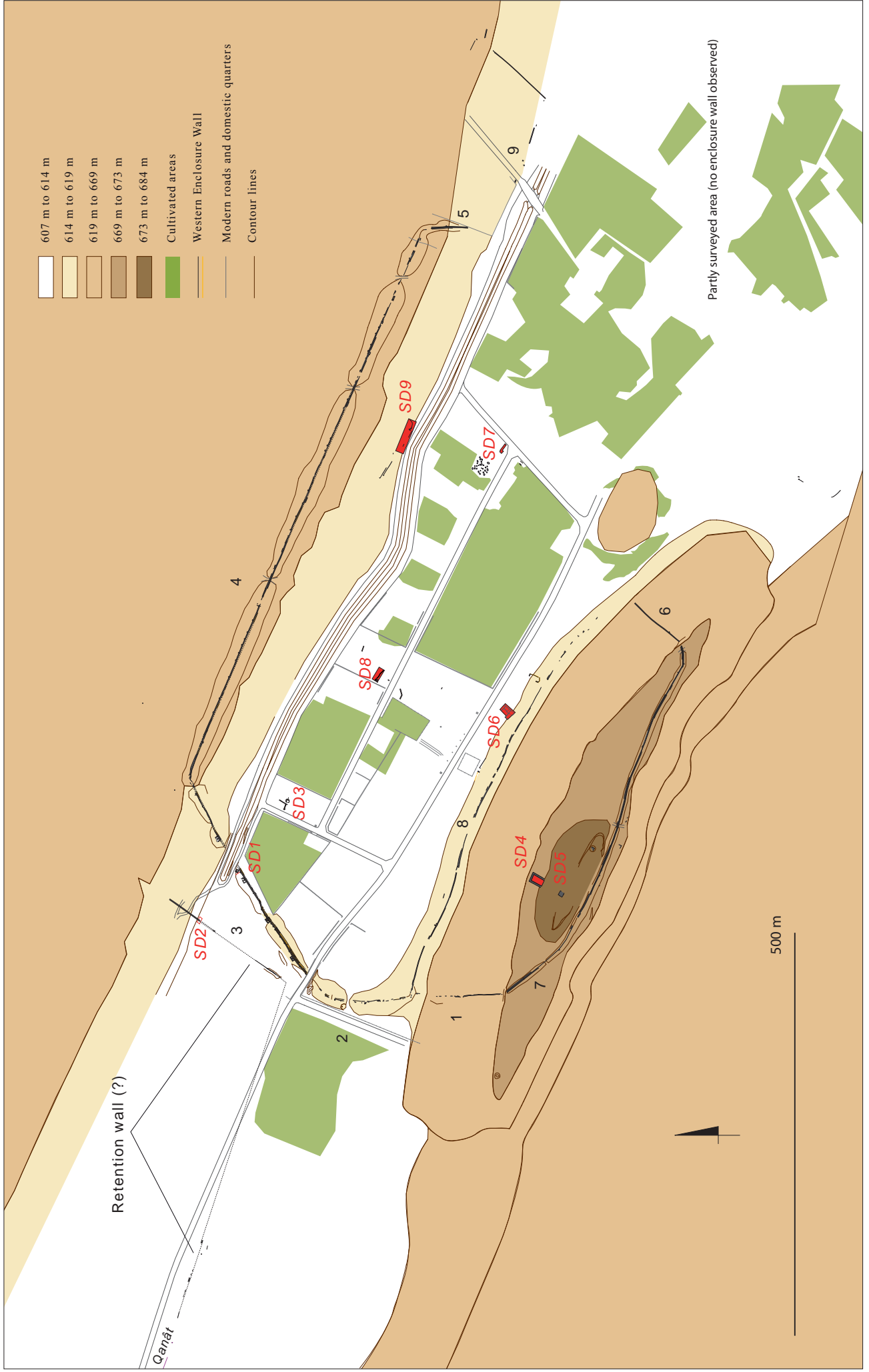


Fig. 1. Plan of the western settlement at Dumat al-Jandal (sector C). In red, the soundings opened in 2012

Sounding 4

The *triclinium* (continued)

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Archaeological excavation of structure L2017, discovered in 2011 on a natural terrace of the Rijm al-Burj promontory in Sector C (cf. **Charloux, Cotty et al. Fig. 1**), was restarted and completed between November 4th and November 30th, 2012. This work was carried out jointly by G. Charloux and A. Thomas with the collaboration of Dar'ân al-Qahtanî and Mûsa al-Qarnî, assisted by 3 to 4 workers only, so as to optimally manage the clearing and exposure of floor surfaces, the gathering of numerous samples of earth and the systematic sieving of archaeological deposit (**Fig. 1**).

In 2011 it was suggested that this vast masonry construction was the foundation of a *triclinium*.¹ This hypothesis is founded on several clues:

The structure's U-shape: L2017 is in effect constituted of three bench walls, each 1.90 m in width: M2020 to the west, M2021 to the north and M2022 to the east. No other architectural remains were discovered and recorded in the southern part, either because they have disappeared, or because none ever existed in the first place. This second suggestion nevertheless appears to be confirmed by the technical analysis of this architectural piece of work: excavation and hewing of the bedrock did not extend towards the south, and both walls M2020 and M2022 are set on a slope abutting, in this direction, the natural surface. Moreover, the floor continues below the base of the walls in the southern part of the *triclinium* without bonding any wall whatsoever, and what looks like a staircase or a ramp (see above, phase 1) allowed one to reach the upper circulation floor. One can at first glance disprove the hypothesis of a fourth wall constructed directly over the promontory's present surface, to the south.

No subdivision is visible in the central space, despite its impressive dimensions (ca. 8 x 14 m).

1. Charloux et al. 2012: 155-178 (Sector C).



Fig. 1. The structure L2017 looking east

The absence of a level of collapse and of scattered blocks covering the structure renders unlikely the existence of an upright installation, this despite quite strong erosion due to wind, to rain and to motor engines.

The monumentality of the structure, the latter reflecting a collective function, an aspect confirmed by the covering of the benches' inside and outside surfaces with a white coating.

Finally, a strategic location, above a promontory dominating the valley, an ideal situation to take advantage of vistas over the oasis.

These arguments in favour of a *triclinium* are completed by the unearthing of a few fine ceramic sherds of characteristic Nabataean pottery, i.e. type-fossils known as *egg-shell* ware dated from the end of the first century BCE to the middle of the first century AD.

This set of observations was confirmed by others made during the 2012 season. The stratigraphic sequence of the entire structure identified in 2011 also underwent no substantial modifications. The building was completely explored, with the exception of a central baulk one metre wide, intentionally left in place for future generations of scholars. Two soundings were also extended: SD4a to the west² and SD4b to the east.

This is how, during the 2011 and 2012 seasons, the entire layers and deposits of the *triclinium* were sieved; from these layers only about a hundred pottery forms were recovered. The volume cleared represents approximately 60 m³. Hearths, fireplaces and almost all ashy layers were sampled for fine sieving and flotation, the latter done manually (0.2 cm and 0.05 cm) by archaeologists, who abided by a protocol established by the archaeobotanist Charlène Bouchaud.

Archaeological remains were positioned on a GIS of the site thanks to a differential Trimble R4 GPS, with a base placed upright in the oasis' historical centre. Floors and layers excavated were photographed using a rod 6 m in height. Thanks to GPSD points, photographs were then ortho-rectified on the *Autocad* software for the drawing of a final ground plan.

². Sounding SD4d, opened in 2011, was included within sounding SD4a in 2012.

Architectural logic

The clearing of the extension of wall M2022 towards the south was one of the new surprises of the 2012 season (**Fig. 2**). The term “extension” is in fact not quite accurate, since excavations revealed the prolongation of a line of stones continuing the wall’s inside facing, which continues and reaches lengthwise the same limit as parallel wall M2020. Aligned stones originate from the boulders falling from M2022 into the inside of the structure, a collapse that can be explained by the presence of a pit going back either to the second phase of the *triclinium*’s use, or by a later attempt to recover buried blocks of stone and rubble.

This line of fallen stones was deliberately left in place so as to preserve the *triclinium*’s architectural integrity. In effect, it does appear that the outside facing of wall M2022 stops 3 m before the inside facing. Removing the fallen stones, themselves not a particular annoyance for our study, would have led to important differences in elevation between the two faces and reduced the structure’s legibility. Bearing all of this in mind, the face of wall M2022 was followed while digging under the fallen stones and undermining them along more than 1.5 m towards the south (with respect to the limit reached in 2011), confirming the general understanding of the structures.

A salient result of this study was the new measurements of the interior face of wall M2022, which was approximately 14.40 m in length (i.e. about 30 cm more than M2020); this means the *triclinium*’s interior space is a little larger towards the south than was foreseen last year, since it is approximately 7.80 m as opposed to 8.20 m to the north. The structure is therefore slightly asymmetrical, as had been observed in 2011.

Though the construction appears to follow an architectural logic of sorts – its length being 16 m, its width 12 m, its walls 1.90 m wide and the size of its central space being 8.20 m – no satisfactory methodological grid could be applied to the *triclinium*, due to its asymmetrical and imperfectly rectilinear aspect.

Stratigraphy

Only one level of the *triclinium*'s use before likely abandonment was ascertained. Three phases are to be distinguished:

- Phase 0, the *triclinium*'s construction
- Phase 1, the *triclinium*'s first period of use
- Phase 2, the *triclinium*'s second period of use

Despite the modern surface's erosion, the existence of a later phase remains implausible.

Phase 0: the construction

The construction of the structure was marked by four successive stages of work:

1. The cleaning of the terrace's surface over a rectangular area of 14 x 17 m; this resulted in a depth of rock of approximately 15 cm being levelled (a little deeper to the north), in order to reach the hard part of the natural bedrock substratum (comprising a succession of marly and sandstone deposits). It is noteworthy that the natural north-south slope is approximately at a gradient of 4.8% (a difference in height of 0.80 m over a length of 16.54 m), and a slight inclination of a few tens of centimetres was also recorded in the east-west axis.
2. A levelling of marl, mainly in the southern part, in order to equalize the earliest circulation floor (but also probably in the northeastern corner). The floor only rises by 0.28 m towards the south over a length of 12.02 m (starting from wall M2021), which indicates a slope gradient of 2.3% only; then two steps (?),³ 9 and 12 cm in height (h.: 0.46m over a length of 2.44 m, i.e. a slope with an average gradient of 18.8%), led to the unprepared rock surface. It was assessed that the maximum depth of rock excavated and removed from the surface, prior to the installation of floor L2020, was about 60 cm.
3. The digging of foundation pits/trenches for the walls. This digging was uneven on the three sides and was carried out according to the bedrock substratum encountered by the builders, since in the *triclinium*'s northern part, limestone was reached, which is not the case in the southern part where workers stopped after getting to marl covering this limestone. The digging of these foundations trenches in all cases did not exceed about

³ Two steps with an intermediary lump of 2.20 m are visible in section over the *triclinium*'s entire width. Nevertheless, open area excavation did not reveal a rectilinear nosing. If the initial intention was probably to create the steps of a staircase, it is likely that the marly rock making up the stairs quickly crumbled, blunting the regular edges and leading to a strongly undulated stair nosing. The eventuality that we are dealing in places with a deepened ramp cannot be dismissed.

15 cm in depth in relation to the adjacent floor, and this was only in the northern part a feature which enabled at best to stabilize the first stone course. In the southern part, M2020 and M2022 reached the terraced surface without any foundation trench whatsoever (SD4a, see **Fig. 2**).

4. The construction of the benches with interior and exterior façades exhibiting a quite fine white coating. Traces of a white coating were also observed on floor L2020 in the western part of the structure (SD4a, see **Figs. 2-3**).



Fig. 3. Traces of a white coating on floor L2020, looking west

Phase 1

The *triclinium*'s initial use is characterized by a succession of loamy-sandy deposits, by pits and post holes, whose succession cannot be sequenced in concrete terms (**Fig. 4**, phase 1). It thus appeared that the distinction between layers 2058 and 2056, marking the presence of intermediary floor L2021 (as observed in 2011 over a small distance) is quite difficult to establish. Although 2058's surface was stratified and indurated in places, distinguishing with a degree of precision the archaeological material of respective layers was awkward (**Fig. 5**). We are here speaking of a deposit 15-16 cm thick lain over floor L2020, in fact the result of constant treading of the gradual accumulation of dust and aeolian sand. This was a phase during which the *triclinium* underwent substantial activity of a duration impossible to ascertain, spanning from a few years to a several decades.

During this phase, the *triclinium*'s floor coating eroded and was perforated a number of times, which testifies as to a certain time span of activity and above all to the location's functional importance. This observation also finds confirmation in the superimposition of post holes and of pits or hearths/fireplaces. A relative sequence of these features is feasible over a small surface, when one is dealing with only a few hearths or post holes, but by no means over the *triclinium*'s entire surface, even when based on elevations taken systematically during excavation.

The relationship between post holes, pits and the *triclinium*'s walls is in addition a legitimate question. Can it be imagined that a number of them preceded structure L2017 chronologically? One cannot be absolutely adamant about the matter, but in most cases it is certain that layer 2058, which is linked to walls, was subsequently dug/partly removed by the *triclinium*'s users, that the coating of floor L2020 was perforated, and even that the walls constituted a limit to the digging process.

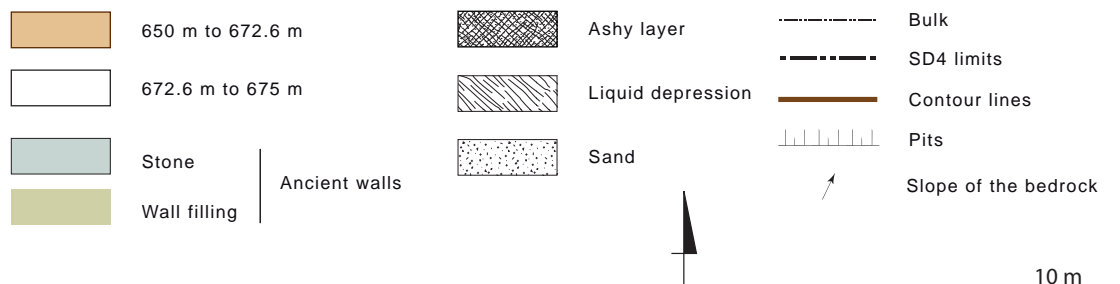
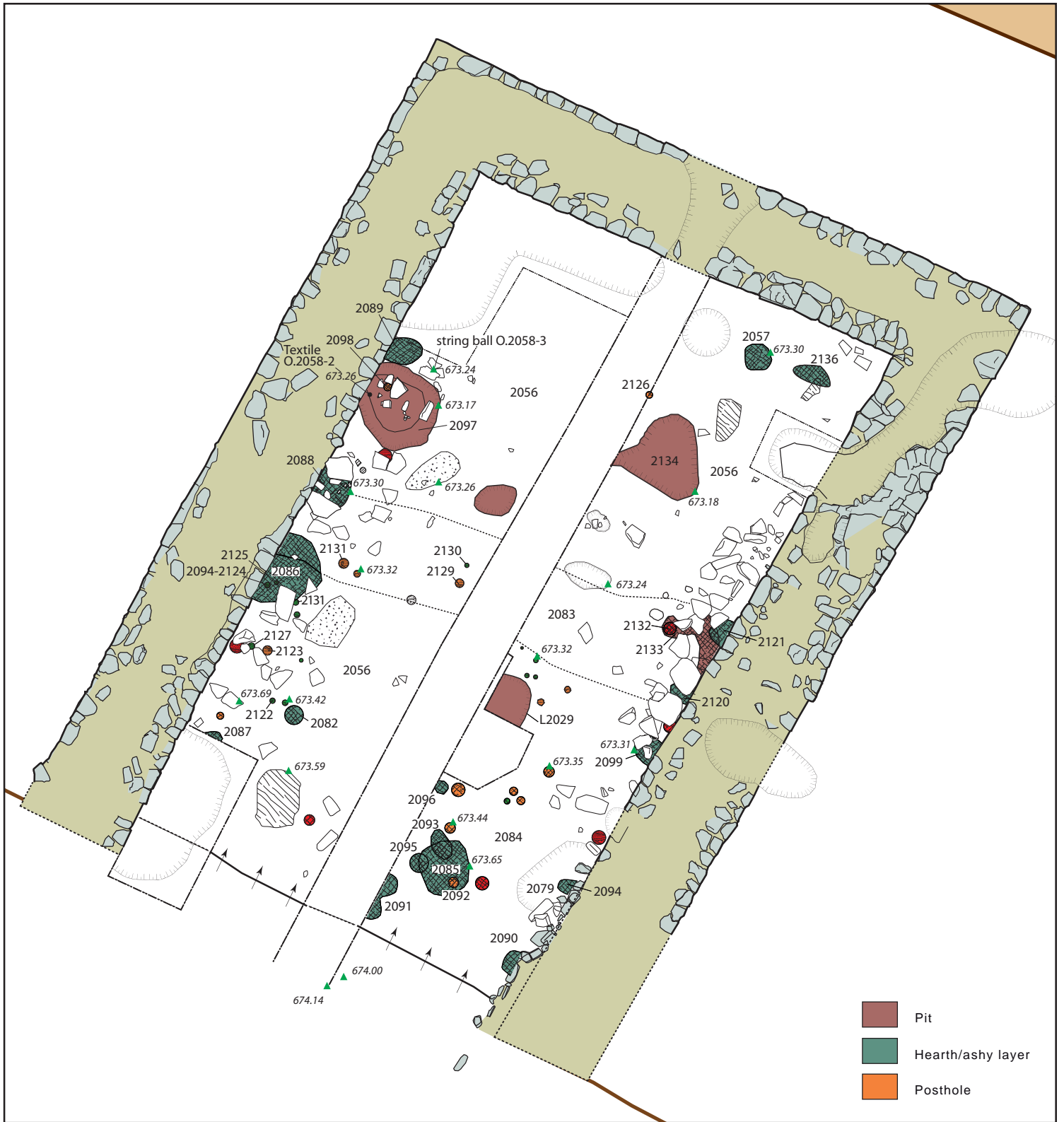


Fig. 4. Plan of Phase I

10 m

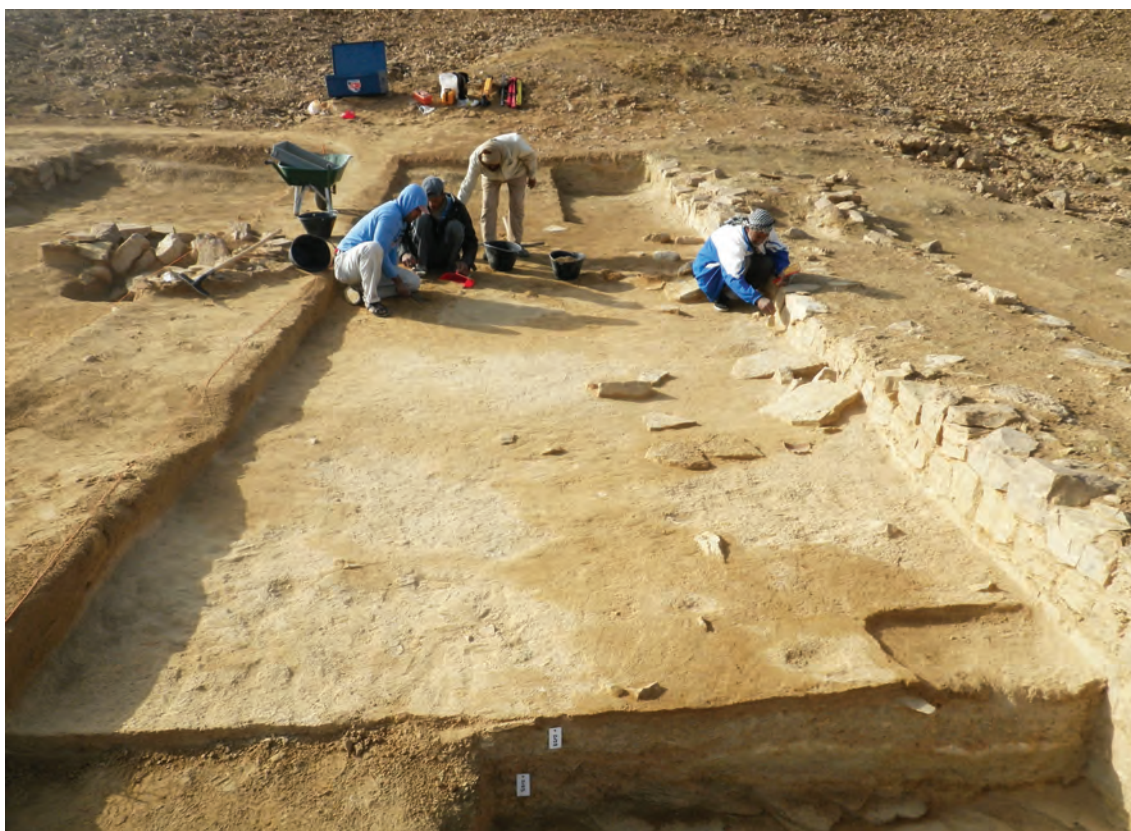


Fig. 5. Removal of 2056 and apparition of 2058

The issue of post holes

Only four of the entire group of post holes⁴ were linked with the *triclinium*'s second phase of use (**Fig. 6**), since in this case a post hole appeared over the section's entire height. The link between the other post holes and the first phase is supported in certain cases (for instance those of large dimensions: red circles on the plan), by the presence of phase 2 blocks placed above them or on archaeological sections (in the case of post hole 2128, please refer to **Fig. 7**).

Forty-five post holes were observed (**Fig. 8**). Only 13 of them were numbered for sampling. The diameters of post holes vary between 5 and 25 cm. One is dealing in general with simple circular holes in the floor. In some cases a stone stabilizing/blocking device was observed (2098, 2122).

4. Spatial analysis is a delicate matter: how many post holes have left no trace at all? They are sometimes partly filled with charcoal, and therefore easily identifiable, but sometimes made up of a beige-grey loamy deposit virtually identical to adjacent earth. How many have been missed during excavation, despite the attention of archaeologists? Moreover, how many are still under the baulks, under preserved structures, and how many have been destroyed by previous excavation (Dayel 1986, see Charloux *et al.* Forthcoming: 187) or by robber pits? Difficulties of interpretation also are to be mentioned, since it is sometimes difficult to distinguish post holes from a small circular charcoal-filled layer.



Fig. 6. Posthole of phase 2 dug in 2068 (L2028), looking east



Fig. 7. Posthole 2126 of phase 1, looking west



Fig. 8. Posthole 2123 of phase 1, looking west

First of all, one can observe that post holes are located in their great majority to the south of the bisecting line dividing the *triclinium* into two equal parts.

If one classifies the holes into groups of three sizes (small, middle, large), a rationale of sorts becomes apparent:

- Post holes of small size (in green) are concentrated in two places, to the north of later phase structure L2028, and in the centre-west, against wall M2020.
- Those of middle size (in orange) are above all encountered at the centre of the *triclinium*.
- Finally, post holes of large size (in red) are found around the perimeter and perhaps formed a large circle.

Pits

By contrast with the distribution of post holes, pits are mainly located to the north of the *triclinium*'s bisecting line.

The existence of pit L2029, where structure L2028 of the following phase was located, is likely, even though its outline could be drawn. Layer 2058 appears to go under the base

of structure L2028 of the later phase, and seems to have been cut during the excavation of L2028. One should remain cautious however with this interpretation.

Pit 2097 is particularly impressive, roughly circular in shape, deep and entirely filled with a thick succession of finely bedded layers of loam. It is blocked to the west by wall M2020 (**Fig. 11**). It was used to prop up post hole 2198 (with a stone blocking device) and its southern side was slightly re-dug by quite a large post hole.

Pit 2133, bean-shaped and stopping directly in front of M2022, was filled entirely with a thick ashy layer, probably the discarded remains of a hearth. It is for sure located under hearth 2121.

Three other small pits were observed at the centre of the structure, dug into the floor. A fourth of greater dimensions (2134) had been recognized in 2011, at the edge of SD4b. It was entirely cleared out this season. All pits were practically empty of material and finds (one sherd only in 2133).

Mention should be made of certain areas where liquids apparently stagnated, in particular to the northeast and a larger zone to the southwest (see **Fig. 4**).

The distribution of hearths/fireplaces appears to be quite significant, since they were clearly placed around the central space, against the benches (to the west 2087, 2086, 2088 and 2089; to the north 2057 and 2136[?], and to the east 2121, 2120, 2099, 2094 and 2090) (**Fig. 10**). Hearths 2085, 2093, 2095, 2091 are exceptions in that they were located at the southern extremity, astonishingly in the middle of the suggested passage; 2082 is also unusual.

This distribution of pits stands in contrast with the distribution of part of the post holes located at the middle of the space and with the presence of the central pit. Can one trace any connection between these?

One should note that only one hearth (2088) yielded any bone. No other faunal remains were found in the *triclinium*, in both the lower and upper phases, to the noteworthy exception of very rare, quasi-insignificant bone splinters. This hearth also showed another particularity: it was the only one to be provided with installations; two large flat stones placed obliquely against wall M2020 enclosed a small space on two sides, in which three small boulders were set vertically (**Fig. 11**). The fourth side to the south was open and allowed the disposal of refuse. A vessel might have rested on the triangle formed by these inserted stones.

Moreover, this is one of the few locations in the *triclinium* where a concentration of 4-5 sherds lying flat and belonging to various vases has been noted (**Fig. 12**).



Fig. 9. Excavation of pit 2097

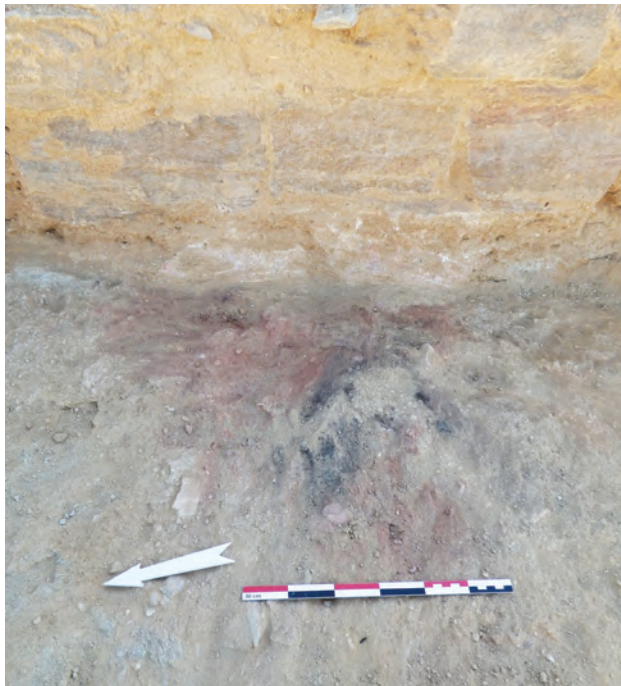


Fig. 10. Hearth 2099



Fig. 11. Hearth 2088



Fig. 12. Filling of hearth 2088

Conclusions

The presence of these numerous installations, mostly ephemeral, is of primary interest in the understanding of the role of the structure and of how it operated.

Nevertheless, the main obstacle encountered during fieldwork was the problematic reconstruction of the sequence of these installations: were they built and used immediately after the *triclinium*'s construction or during subsequent phases of use? And were they used more or less simultaneously? The C^{14} date of samples might yield a few clues for a solution to this problem of chronology.

In any case, several preliminary conclusions can be drawn from our observations.

First of all, the quite significant density of post holes is in itself supporting evidence for the hypothesis of an open-air construction. It is likely that the post holes (of middle and large size) were used as supports for a movable cover such as a tent cloth. However, was the aim to cover the side benches – something which could not be ascertained because of the destruction of the upper part of the walls/benches – or part or all of the central space? Moreover, all

holes were not necessarily meant for this use and one can imagine that those small in diameter were used for other installations which are difficult to identify. As in 2011 a textile fragment, this time black in colour, was sampled (O.2058-2), on the top surface of pit 2097 (**Fig. 13**). Likewise, a ball of fur and hair, partly dyed in red, was retrieved in the vicinity (O.2058-3; see **Figs. 4, 14**).

As always, interpreting the pits is a difficult matter: is one dealing, for instance, with simple zones for storage, or small reservoirs to gather dispersed liquids, as the deliberate fill of pit 2097 would seem to indicate? The distribution of the pits in the northern half could thus be explained by the floor sloping in this direction.

Hearths/fireplaces do not appear to have been meant for cooking: the archaeobotanical study should enlighten us on the matter. To the possible exception of hearth 2088, they must have been used for heat or lighting. Their more or less regular distribution against the base of the benches suggest they were made and in use simultaneously, and must have consequently created a somewhat theatrical atmosphere. Each fireplace could be shared by two guests lying or sitting on the benches.

The end of this first phase of use was marked by the accumulation of blocks lying flat against the inside facing of wall M2022 and by thick aeolian deposit 2054. Was this a temporary installation and an indication of the *triclinium*'s continuous use? Or is it a clue for the structure's partial destruction, since the stones of the accumulation are likely to have originated from the benches themselves? It is moreover not impossible that wall M2022's southern extremity was looted as of the end of this phase. In addition, traces of white plaster coating appeared in layers 2054 and 2056, suggesting the cessation of the structure's maintenance. Was then that the latter lost the function we ascribe to it?

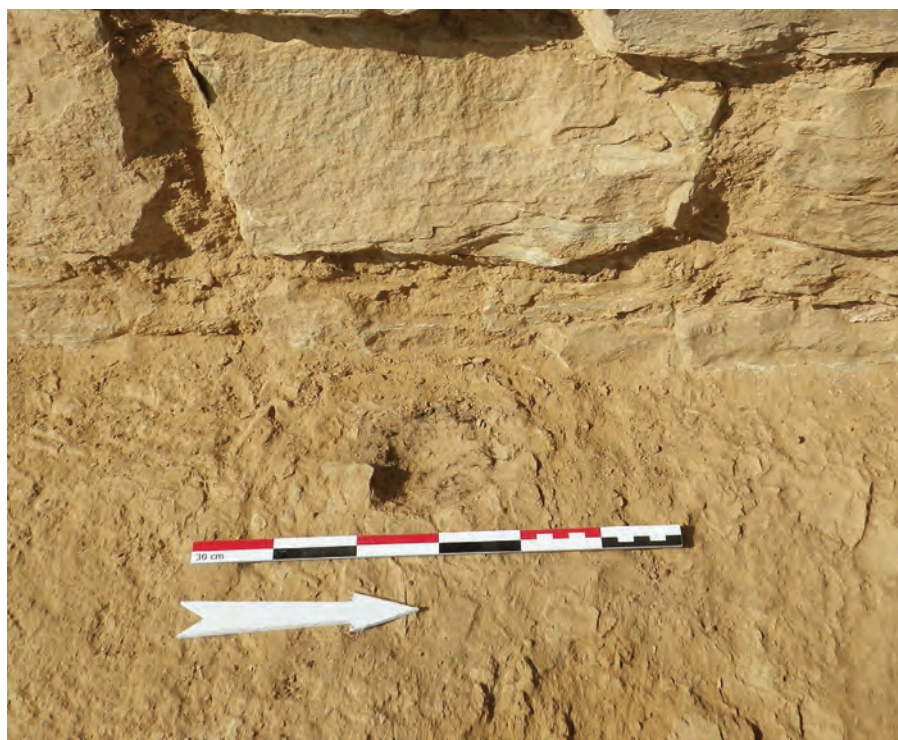


Fig. 13. Textile O.2058-2



Fig. 14. Ball of fur and hair O.2058-3

Phase 2

The *triclinium*'s second phase of use was encountered barely 20 cm above the previous phase, and is marked by more primitive, differently distributed installations, as well as by the strong diminution in the number of post holes. On floor L2022, dense activity was nevertheless observed; it was signalled by stone installation L2028, by several hearths and by floor layer 2052-2051, identified the previous season, with several depressions, small ashy layers, and areas where water stagnated (**Figs. 15-16**).

Structure L2028 (2.25 m x 1.70 m) is located in the *triclinium*'s southeastern quarter (SD4b), slightly set back in relation to the bisecting east-west and north-south axes of L2017 (**Figs. 17-18**). Its construction required the digging of a large pit, probably at the very location of a previous depression, the result of the partial infilling of the one of the previous phase (2135). As shown by archaeological sections, the structure was inserted above the geological substratum (floor L2020).

The structure comprises four entities:

1. A low wall extending around three-quarters of an oval. It is rectilinear and oriented north-south to the west (M2027) and rounded to the south (M2028 differentiated). The oval is not closed to the northeast. Low wall M2027 is made up of stones of various dimensions, which are not bonded and do not have mortar in between. Numbered part M2028 comprises long flat stones positioned obliquely against the edge of the pit.
2. A central low wall subdividing oval space M2029, connecting the middle of M2027 at the extremity of M2028. It is built of roughly superimposed blocks following an east-west axis, and was built in part right above the paving of the southern space.
3. A space to the south (0.9 x 0.5 m), whose base is covered with irregular and imperfectly bonded stones (**Fig. 19**), filled by layer 2076 (a succession of fine layers of fine beige loam, slightly indurated, and by grainy greenish beige sand (**Fig. 20**).
4. A larger space to the north (1.24 x 0.80 m) whose northern and western limit was created by the edge of the pit. It was bordered to the south and east by walls M2027 and M2029. The base of the pit appears to have been covered by small stones, placed against the edge of the earlier pit. Infilling 2068 (**Fig. 21**) cannot be distinguished from 2076, except for the upper few centimetres where ashy lines were observed against the pit's edge.

Structure L2028's masonry is very mediocre in terms of quality, and made of unhewn blocks of variable dimensions. These were unjointed and set without any mortar. The feature was in all likelihood used as a small reservoir, as indicated by the type of infilling of spaces,

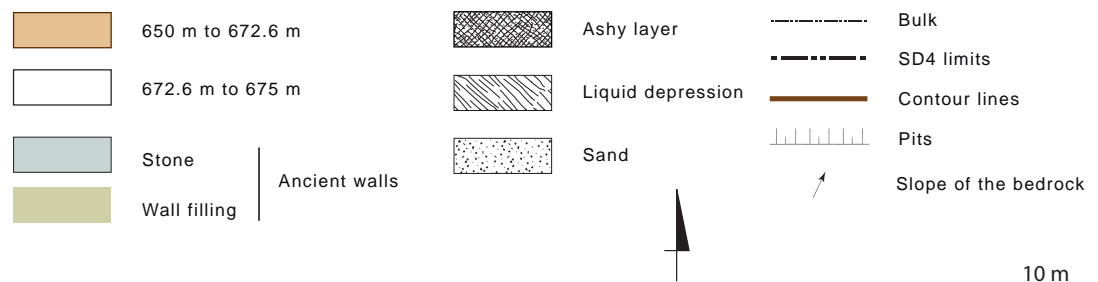
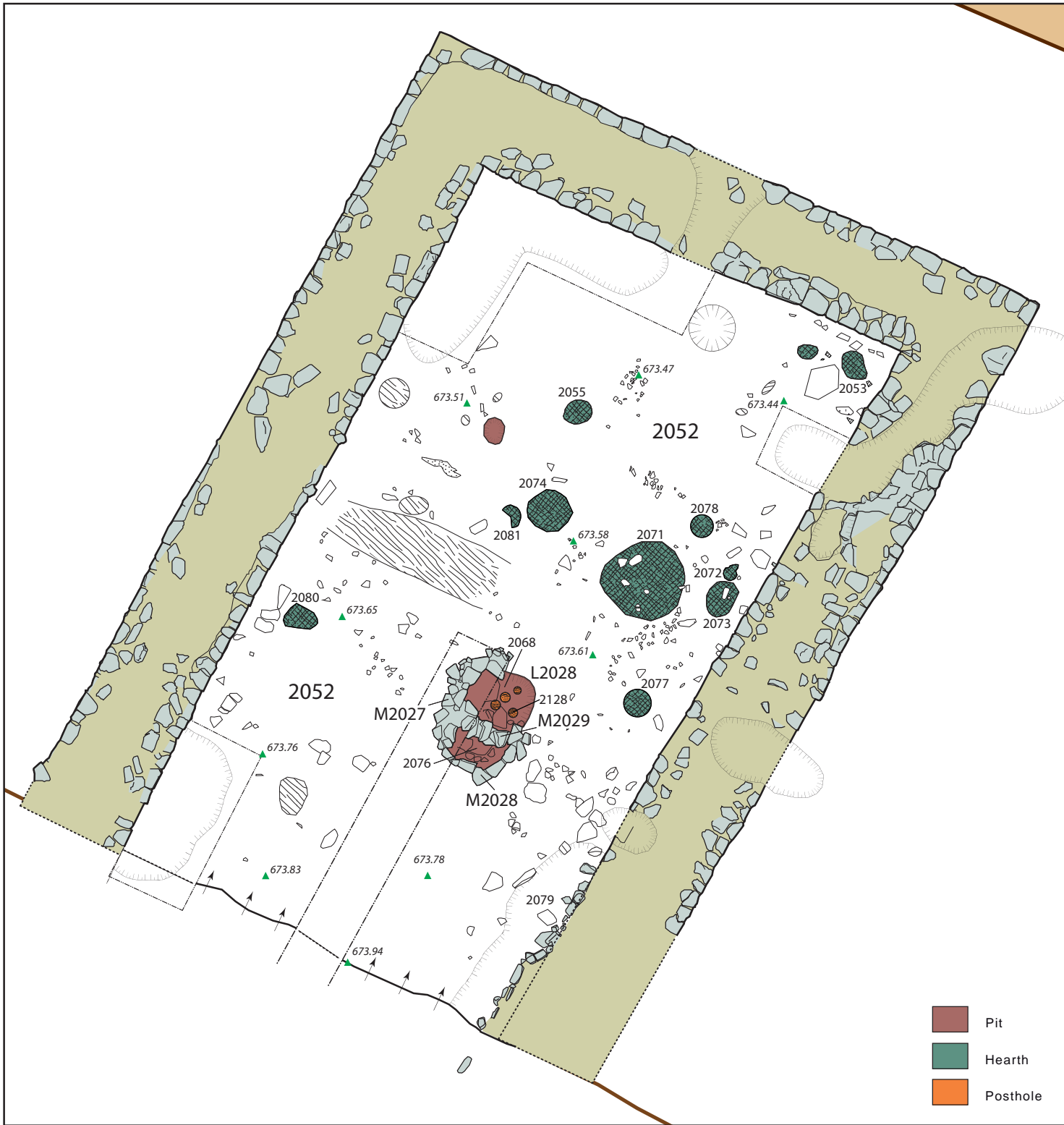


Fig. 15. Plan of Phase 2

10 m

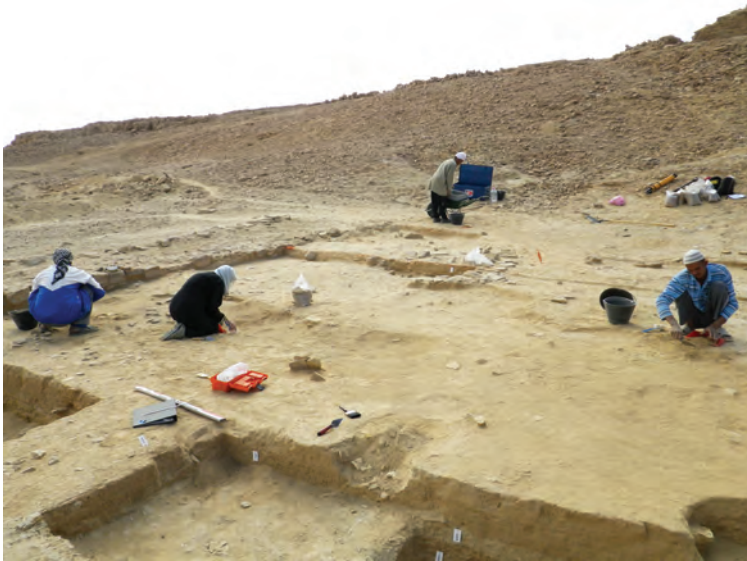


Fig. 16. Excavation of floor layer 2052-2051

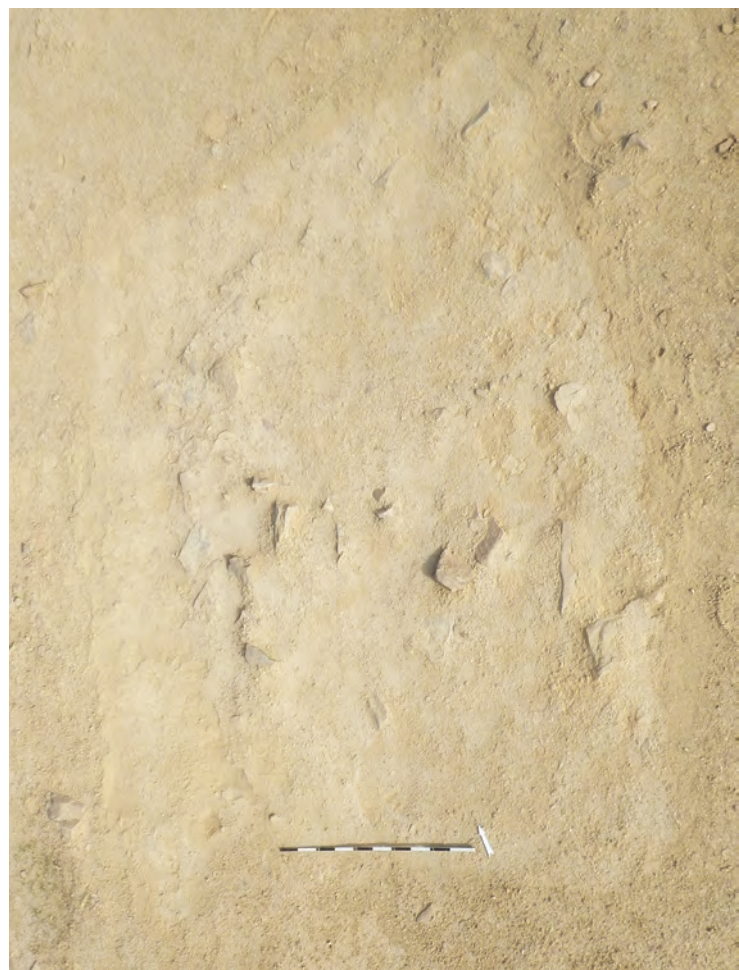


Fig. 17. Apparition of structure L2028

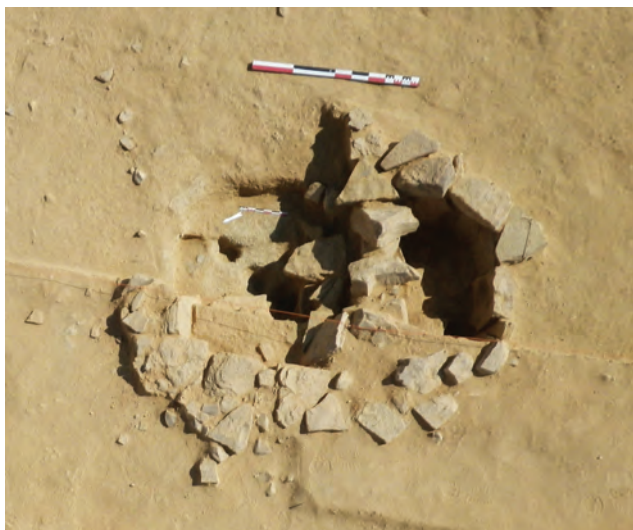


Fig. 18. Structure L2028



Fig. 19. Base of L2028



Fig. 20. Infilling 2076 in L2028



Fig. 21. Base of L2028

totally lacking in archaeological material. There still is no certain explanation for the absence of masonry to the northeast: was enclosing the structure unnecessary? The same can be said of the central separation: did the two interior spaces have a different function: one collecting water, and the other enabling its evacuation?

An observation which is not trivial: fireplaces /hearths belonging to this phase (2053, 2055, 2071, 2072, 2073, 2074, 2077, 2078, 2080 and 2081 [ashy layer]) are located in their majority in the northeastern quarter and therefore in the direct continuation of the structure's opening.

Fireplace / hearth 2071 is particularly remarkable (**Fig. 22**) because of its dimensions (1.50 m in diameter), its depth and the quantity of ashes was assessed to approximately 100 kg – 85 kg were recovered, sieved and floated (nine large bags). Small flat stones were seen on its eastern part, and the surrounding floor has the particularity of being carpeted in places with small stones 7-8 cm wide, that are found beyond, to the north of the structure.

Six other hearths/fireplaces (2072, 2073, 2074, 2077, 2078 and 2081), of smaller size, appear to be distributed around 2071. No faunal remains have been retrieved during sieving and flotation.

Indurated zones and areas where liquids have stagnated (**Fig. 23**) are located from now on to the west of the structure (**Fig. 15**).

Globally, one can observe that activities evolve during this second phase, and seem to concentrate from now on in the structure's north-eastern quarter, although use of the entire surface is attested. By contrast with the first phase, hearths / fireplaces are not distributed around the space but concentrated in a single area.



Fig. 22. Hearth 2071 in centre of the picture



Fig. 23. Indurated zone

A major question arises from this overall configuration, distinct from that of the first phase: did the structure undergo a functional change? The following clues might suggest that it did a different layout of installations, the central structure's poor quality, the lack of any maintenance affecting the structure. But the following observations would suggest that perhaps the structure was used for similar purposes: the pottery assemblage mainly comprises bowls, as in the previous phase, that no faunal remains were recovered and that no traces of food preparation were encountered at this stage. A dialogue and agreement with ceramologist, archaeologist and archaeobotanist alike is, from this viewpoint, quite indispensable for the formulation of the structure's functional interpretation.

Conclusions

Archaeological clues recorded during two seasons (2011 and 2012) have led the team to interpret the structure unearthed as a free-standing open-air *triclinium*. The identification of one construction phase and of two subsequent phases of use reveals new aspects of what is known about this type of structure. Unfortunately, excavation reports on *triclinia* in the Near East have not provided detailed data when it comes to their concept and use: construction techniques, types of installations encountered, interior layout, etc...

Structure L2017 was first constructed in a large trench dug on the slope of the hill's terrace, before being plastered with a coating. The circulation floor was roughly levelled. A ramp (or staircase) to the south enabled people to exit from the structure.

The study of the first phase revealed activities distributed in homogeneous manner across the entire surface of the structure's central space. Hearths / fireplaces were placed against the *triclinium*'s benches. Post holes were found at the centre of the space, pits were discovered to the north. The archaeological assemblage mainly included fine bowls and jars, and samples of coloured textiles. Only one fireplace contained installations and yielded faunal remains. It is possible that the structure's masonry was partly damaged at the end of this period of use.

During the second phase, activities were from then on concentrated in the structure's northeastern quarter. Archaeological assemblages do not seem to be of a different nature, and the same applies for the composition of fireplaces. The structure's poor maintenance and the bad quality of the central construction are however clearly apparent.

The duration of the hiatus between both phases is difficult to assess: perhaps several decades. As for chronology, it is dependent on ceramic analysis, since the results of radio-

carbon analysis of the textile sample provided last year (O.2058-1) are still forthcoming, and despite the demand of 12 C¹⁴ dates requested to the Artemis lab at the beginning of 2013.⁵ The few fragments of fine pottery and *egg-shell* Schmid type 2C painted ware appear to point to a date at the turn of the Christian era.

It should be emphasized that no other cult location was discovered in the vicinity, nor has the presence of a betyl been mentioned. The very existence of Nabataean occupation in the valley below the towering promontory is undetectable at this stage of our research.

⁵. The results should also enable a correction of the relative sequence presented here.

Sounding 6

Martin Makinson (univ. Genève) & Majid Ibrahim al-Faqir (SCTA)

On November 4th 2012, the excavation team decided to carry out fieldwork in threatened areas close to the enclosure wall, in order to understand the relationship between this huge, well-preserved fortification, visible almost everywhere on the site's surface, and houses and buildings lower down in the oasis. Work was urgent in this sector of Dûmat al-Jandal because of ongoing construction and bulldozing, which had already levelled a substantial part of occupation in the southern part of the valley, along the interior face of the enclosure (unit 8). These modern levelling works had affected a surface of 150 x 30 m. They had in fact partly cut into the inner face of the enclosure wall (unit 8), as well as into the bases of abutting towers or bastions, whose foundations lie lower than the wall itself; these bases, made of stone and built directly over friable bedrock of green and grey marl, were visible in a huge east-west section parallel to the lower slopes of the Rijm al-Burj cliff. Also visible was a north-south section at the eastern end of this huge bulldozed area (**Fig. 1**), where one could see: at least two levels of floors and fills, walls and domestic units preserved over a height of up to 2 m and finally, at the southern extremity, rubble collapsed from the enclosure wall itself. It was apparent in this exposed cut, which was subsequently cleared and straightened, that the occupation adapted to the slope thanks to a terracing system of sorts. This bulldozing exposed a long 17 m section, which was subsequently cleaned and photographed in detail (**Fig. 1**).



Fig. 1. Section cut by the bulldozer and cleaned by the expedition, 150 m east of SD6, showing floor levels and well-preserved architecture (DJ2012a1763B)



Fig. 2. A view of work on SD6 towards the end of the season, from southeast, showing the modern asphalt road in the background and its proximity to the excavated area (DJ2012a1467B)

Opening of sounding 6

It was decided to open an archaeological trench (SD6) some 150 m to the west of this 17 m section, close to the modern asphalt road, in an area which was still only partly affected by modern bulldozing. Its size was that of a 10 x 10 m square, but it extended slightly towards the south.

The area was disturbed by a bulldozer trench some 3 m wide and 9 m long, parallel to the modern asphalt road through the valley. This modern trench had been refilled with sand, dead palm fronds and modern rubbish (2200).

This disturbance had exposed the relatively well-worked and squared stones of a wall face running east-west (M2051). It was thought that by digging out the sand and earth fill between the southern face of this wall and the enclosure at the cliff's base, well-preserved levels of pre-Islamic periods could be reached. These would reflect the sequence of occupation in the oasis and in settled areas within the enclosure, from bedrock to the modern surface. We therefore began by removing the sand fill and rubbish (2200) re-deposited by the bulldozer on the northern edge of sounding SD6 (**Fig. 3**). It was quite a surprise to see, in the very first moments of excavation, mud brick and brick collapse appearing, as well as stone. This happened within the angle formed by the walls M2051 and M2052; the northern extremity of M2052 protruded above the surface.¹ It became clear that what would come out was well-preserved architecture including mud brick walls, not just stone foundations, as in other areas closer to the centre of the oasis.

Bulldozers have not only dug trenches in mud brick and sand, but have severely damaged certain structures: for instance, they destroyed M2068, the northern extension of the longest wall in the area (M2052), digging right down to the first course of stone foundations (built in phase 1); these appeared as a confusing jumble at the northeastern corner of the modern disturbance, close to the northeastern corner of the SD6 trench. The stones were piled in haphazard fashion because of mechanical shovelling, at an elevation between 613.66 m and 613.58 m.

¹ Rows of rectangular bricks forming a pattern initially associated – wrongly – with internal partition walls were then encountered. This led to erroneous subdivision into two spaces (L2050 and L2051), which were later merged.



Fig. 3. Walls M2051 and M2052 seen from north. In the background, view of the SD6 building with mud brick collapse US 2208 covering room L2052 (DJ2012a0883B SD6)

Architectural trends in the SD6 building

Very quickly, it appeared that walls which seemed contemporary were not always bonded: they might have been contemporary in later stages, but were more often than not founded during different construction phases. It therefore became clear that this was an opportunity to explore a building with a complex chronology, a multi-layered stratigraphy, erected during the course of several architectural stages. A remarkable aspect of Sounding 6 area is the stark contrast between some of the well-preserved architecture, both in irregular hand-made mud bricks and flat stones, and the complexity of stratigraphic relationships between features. One should add to that the flimsiness and low elevation of some of the walls, revealing perhaps a process of razing of certain structures and change in size and function of internal and external spaces (L2051-L2055).

Bearing in mind the relationships between architectural components of SD6 and other features, various tentative stages can be proposed (namely, **three construction phases, two**



Fig. 4. Work in progress - A view of SD6 from the south, during mid-season (DJ2012a0891B)

main ones and one intermediate phase). These are a result of both horizontal and vertical stratigraphy, but it should be recalled that this phasing awaits final confirmation by further analysis of the features in future seasons. The area's stratigraphic complexity was something quite unexpected; moreover, the excellent preservation of most of the walls discovered contrasted with the thin deposit between the earliest and latest floors in some rooms.

So far, the trend in the SD6 building was that of a **reduction of large spaces**: a large long rectangular room at least 13 m N-S, during the first phase of construction (**Fig. 5**), was subdivided into smaller units (L2050-2051, L2052 and L2053) by partition walls made of mud brick with stone foundations (**Fig. 20**). The function of the building might not have evolved very much over time, since its most important feature must have been the installation L2064 (water installation/cistern/well?) in room L2054 (see phase 1, below).

The architectural evidence and stratigraphy will begin with the earliest **phase 1** above bedrock.

Phase 1 (Fig. 5)

A possible well/cistern (L2064 in room L2054)

All three phases of the building cleared in Sounding 6 appear to have been connected with the use of a large, curving (and maybe circular) installation in the southwestern angle of the excavated area: L2064 (**Fig. 6**). This installation was at the centre of a space named L2054. It was discovered during the very last week of fieldwork, and therefore only its top part was reached: excavation did not proceed below an elevation of 613.62 m, i.e. 30 cm below the top clay layer 2224 (itself an indication of water seepage) sealing the green marl gravel and reddish pebbles infilling this installation (fills US 2226 and US 2228). Descending into these two fills of gravel, packed pebbles and blocks fallen from the probable lining of the installation (M2069) was very strenuous. Only the northern half of L2064 was cleared, and proceeding further in this northern half would have posed safety issues, given that the top half of the E-W section running through L2064 was made up to a large extent of regularly spaced layers of very soft yellow sand, interspersed with thin lines of darker sand (US 2203, see section 6C, **Fig. 7**). The southern half of L2064 will have to be excavated before further removal of the fill 2228 is resumed.

Whatever the installation's exact function, it is likely it was related to water storage and would have been a massive investment on behalf of the builders, who decided to partly surround it – and hence protect it - with mud brick walls. This device might have been the very rationale for the construction of the building excavated in SD6. Two of these mud brick walls were constructed during the first phase, and were then rebuilt during the last period of the building: M2066 (the early phase of M2064) to the north, and M2065 (the early phase of M2062) to the west (**Fig. 5**). As mentioned, the extremely slow and painstaking process of excavation resulted from the fact that fill 2228 of L2064 included alternating layers of extremely compact 2 cm thick red and green marl gravel. This green marl and red gravel, although in the form of very small pebbles, was geologically of very similar composition to that of the bedrock of the spur on which the SD6 building was constructed. It was also identical to gravel discovered in various locations of SD6 under walls and floors of the earliest phase of construction and occupation. Yet the fact that this fill 2228 was not merely geological was clear from the sherds these gravel layers contained, as well as from the large blocks fallen

from lining M2069 of installation L2064, a structure that appears to have been constructed with large unworked stones.

The interior fill of L2064 included large boulders resulting from the collapse of the eastern, northern and western lining (M2069). As mentioned, the southern lining was not clear: M2070, though much higher up in elevation, could be part of this southern edge of L2064 (**Fig. 5**), yet this is at best conjectural. The stones of M2070 were also covered with a packing of mud brick similar to 2215, yet they could be traced only over a length (E-W) of 95 cm. No complete individual bricks could be recognized while cleaning the top of M2070. Exploring M2070 to ascertain whether it is the same as M2069 on the other side of L2064 is a priority of the next season.

Fallen stones were at their densest near the eastern and southern edges of installation L2064 (**Fig. 5**). Only the top courses of stone of M2069 were uncovered; yet in the northern and eastern part of L2064, the stones do appear to form a line resembling the arc of a circle (**Fig. 5**), which could be the feature's inner face. It will be paramount to follow this possible face in 2013.

Some of the displaced blocks in L2064 exceed 50 cm in length. For instance, a stone which no doubt previously bordered installation L2064 was found lying flat at 613.89 m, on a broken mud brick packing 2215 (**Fig. 5**), which sloped down from the base of phase 1 wall M2065. Installation L2064 was therefore surrounded by this packing (2215), placed directly over the green marl bedrock in which the installation L2064 was dug, in order to stabilize the geology surrounding it. This deliberately placed mud brick was found right to the base of phase 1 walls M2065 and M2066. Another example of a block of large size, which appears to have lined L2064, was encountered at 613.90 m – 613.93 m. It was adjacent to the southern edge of the excavated part of this installation, below hard compact runoff surface of mud 2224 (**Fig. 5**). It is a large rectangular uncarved block of trapezoidal shape, tilted on its side: it hampered the excavation of installation L2064 and fieldwork stopped at the very base of this stone, at 613.60 m.

Removing the huge fallen block close the southern edge of structure L2064, descending into the structure in the coming seasons, and completely uncovering the internal face of L2065, will be the only way to ascertain whether this feature was indeed in antiquity a well or a water-related installation.

L2064 appears to have been the main feature of room L2054 (**Figs. 5-6**). It was arguably the *raison d'être* for the existence of the latter and for the building of walls M2065 and M2066 around it. The friable green marl-like gravel which constitutes the bedrock of the spur on which the SD6 building was constructed was reinforced by the previously mentioned



Fig. 6. View of installation L2064 from south, with, behind, mud brick wall M2066 and M2064 (DJ2012a1731B)

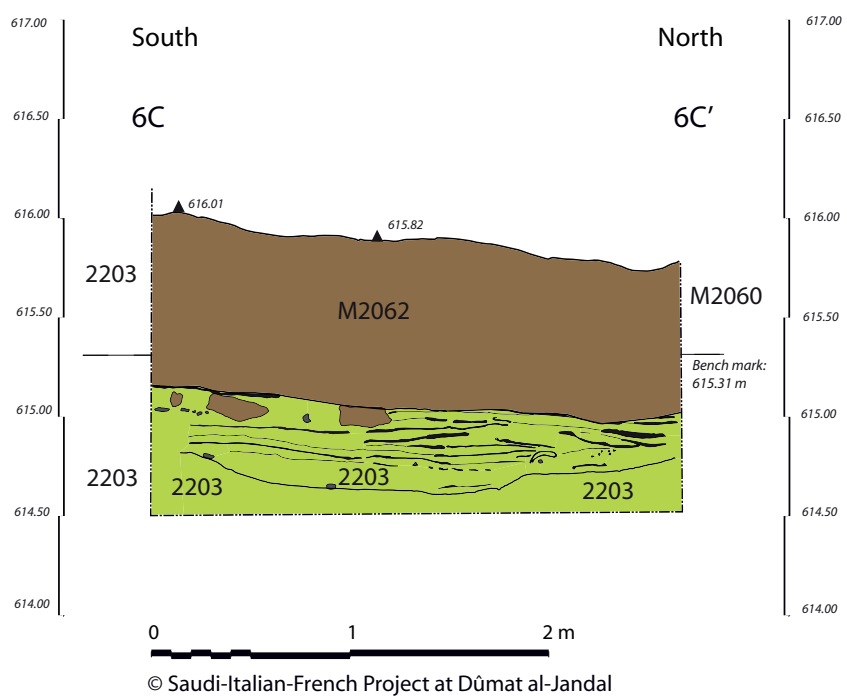


Fig. 7. N-S section 6C across installation L2064



Fig. 8. View of water installation L2064, looking east. Phase 3 stubs of walls M2058 and M2063 are visible, as well as passage L2063 in between (DJ2012a1566B)



Fig. 9. View of the room where water installation L2064 was found, with walls M2065 (phase 1) and wall M2062 (phase 3) in the background. The green marl geological substratum is also visible (DJ2012a1733B)

pieces of hand-made brown loamy mud brick (2215). These were packed haphazardly over the green marl-like gravel to form a surface descending towards installation L2064 on all sides. On the outer edge of L2064, the green marl gravel forming the substratum below archaeological layers was encountered at 614.15 m. Installation L2064 was therefore dug into the bedrock. The broken mud brick and hard earth of 2215 was placed over this marl, around the outside of M2069, in order to prevent erosion of this geological layer.

Yet there appears to have been no physical separation or wall between rooms L2054 and L2053 during this earliest **phase 1**: access into room L2054 and to installation L2064 was not through a door (as in the last **phase 3**, see **Fig. 20**), but by a simple descent along the packed layer of mud brick 2215, as from 614.94 m (the base of lower course of stones of wall M2058, which belongs to phase 3). The mud and brick revetment 2215 sloped down from L2059, i.e. from the pebble preparation of the earliest (**phase 1**) floor in the SD6 building: in effect, 2220 (the layer of pebbles itself) goes under wall M2058, which therefore belongs to the later phases of the SD6 building. Passage L2090 between walls M2058 and M2063 consequently dates only to the last phase (**3**). No staircase leading to installation L2064 was exposed during fieldwork.

Wall M2065 was separated from its later reconstruction M2062 by a 15-20 cm layer of very fine yellow sterile sand under which two small substructures of flat squared stones were built in phase 1. These were corbelled supports of sorts. These small flat corbelled-like structures (**Fig. 9**) began at foundation level immediately above the geological level of green marl, at an elevation of 614.45 m. Their inner spaces filled with sand formed two small triangles. Their purpose remains unclear. Yet these two substructures were by no means identical, and none of them formed a regular arch. The gap between the corbelled stones of the substructure to the north was larger (31 cm).

In the western balk, moreover, no mud brick can be seen beyond the southernmost corbelled substructure of M2065, only layers of fine yellow sand. If M2065 is indeed a **phase 1** wall, its extension to the south stopped well short of its later reconstruction M2062. Further exploration of space/room L2054 is needed to clarify the relationship between M2062 and M2065.

By contrast, there was no separation of sand or earth layer between M2066 and its later reconstruction M2064 (**Fig. 10**). In total, from the base of M2066 to the top of M2064, fourteen to sixteen courses of mud brick were preserved. However the base of wall M2066 was 15-20 cm wider than the top of wall M2064. The lower courses rose almost vertically from US 2215, the mud brick packing above the geological marl. Moreover above this sixth course (the latter being plausibly the top one of M2066), the southern face of the wall is not

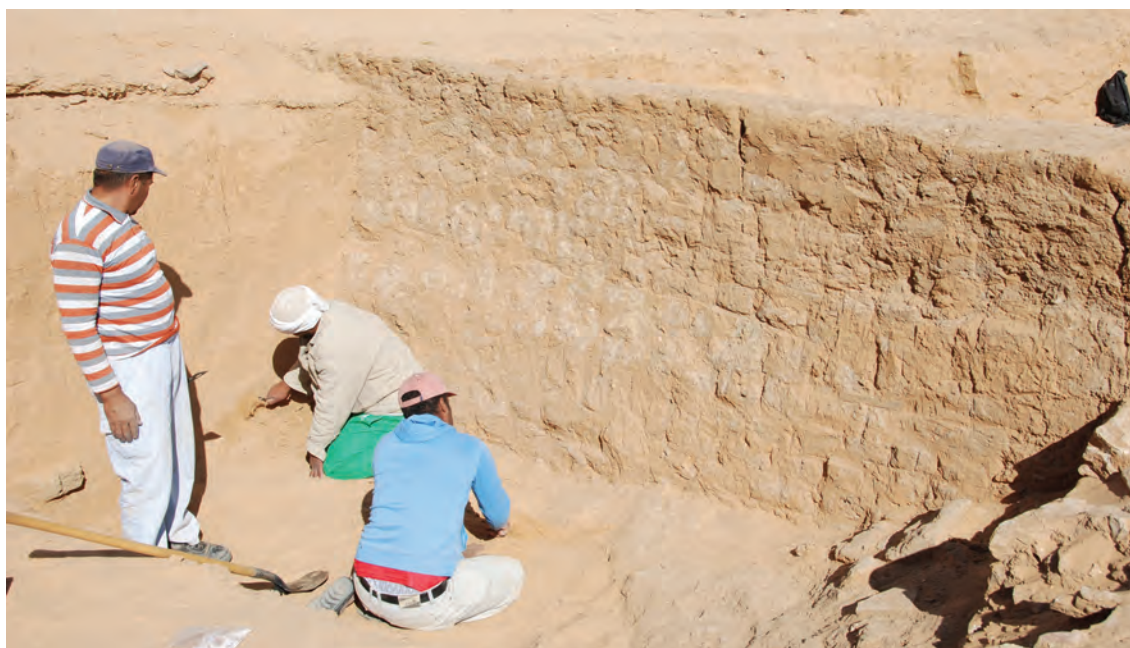


Fig. 10. View of walls 2066 and 2064, showing remarkable preservation of mud brick (DJ2012a0873B)

vertical any more, and the width of the wall suddenly decreases: the lowest elevation of wall M2064 above M2066 could therefore be where this wall becomes thinner. The wall made up of M2066 and M2064 (adding phases 1 and 3) was preserved to a minimum height of 1.91 m.

To summarize, though results are preliminary at best, L2064 appears to have been an installation related to water. The presence of a possible circular lining of fieldstones forming M2069, and of a fill of alternating red and green gravel layers (2228) inside L2064 – layers different from the green marl bedrock matrix; the collapse of stones from M2069 into fill 2228; the layer of broken mud brick 2215 deliberately packed around L2064, over the friable marl bedrock; the sealing of the installation's fill 2228 by a layer of hard humid mud indicating runoff: these are all clues that led to the interpretation of L2064 as a possible well or cistern.

The terracing of the building (Fig. 5)

The construction of the large building entailed large levelling works whose extent became quite evident by the end of the season. In effect, walls M2051 and M2052 were built on a natural spur which was previously flattened or at least equalized. Modern bulldozers and digging machines caused substantial damage to the northeastern excavated corner of the building, destroying the very foundations of the western extension of wall M2052 (namely M2068), right down to an elevation of 612.52 m. They re-deposited the lower courses of M2068 into the pit, together with large bits of modern concrete. It is clear, however, that the SD6 building in its northern part stood on high ground, above whatever was further to the west, beyond the square, and under the modern road. Wall M2051 (**Fig. 3**) must have formed a quite impressive northern face for the SD6 building and was constructed on a slightly sloping glacia or platform of sorts (L2067), composed in this part of the square of a very dense array of sharp small stones overlain with packed mud and mud brick debris. This layer of pebbles (2236), and the packed mud brick debris immediately above it (2235) was also cut into by bulldozing, which reached at least a depth of 612.56 m - 612.72 m; this cut was particularly visible in the western section of the trench; the resulting fill (2200), sloping at a sharp angle towards the west, was filled with re-deposited rubbish, plastic, loose yellow sand and dried palm fronds. The mud brick and packed mud layer (2235), forming part of it in L2067, was exposed along the entire northern edge of the sounding; small stones, none more than 20 cm, were strewn everywhere in between walls M2051 and M2068 (with larger ones closer to the edge of the trench). These stones of 2236, were exposed after the removal of 2235 while digging a probe of 1.80 x 1.90 m located at the intersection of M2051 and M2068 (**Fig. 5**). It is likely that they are to be found everywhere under 2235, in the entire sector of SD6 to the north of walls M2051 and M2067.

It is nonetheless certain that modern digging machines did not entirely remove the sloping base or platform L2067 (2235 and 2236), which did survive to a very large extent. Moreover, the stones of wall M2051 were set directly above this terracing. In fact the disturbance mechanical shovels appear to have caused resulted more from their re-deposition and discarding of modern rubbish around the building (some of this rubbish consisting in large blocks of concrete) than the actual digging of trenches.

It also was clear that a wall M2067, built in **phase 1** above the terracing of stone and mud brick, was the predecessor of wall M2050 of **phase 3**, just as wall M2065 was the re-construction of wall M2062 in the southwest of SD6. Located immediately under M2050 of

phase 3, it was thicker by 5-10 cm than the latter and entirely made of roughly square mud bricks. Three courses were visible when exposing the northern face. The lowest elevation of this early wall was at the point of intersection with the compact mud layer forming the platform/glacis L2067, at 613.06 m - 614.07 m. Unlike M2050, it appears to have had no squared stone foundations. It lay against the angle formed by stone walls M2051 and M2054 (**Fig. 5**), and might thus have belonged to an addition made during the same phase, since it abutted without being bonded to the building formed by stone walls M2051, M2054 and M2052. Its bricks were compact, hand-made, rectangular, dark brown and loamy. Whatever lay during phase 1 within space L2055, enclosed between walls M2067 and M2054, was not investigated; it is likely that, as L2056 in **phase 3**, the space was a courtyard or an exterior trodden surface.

Exploration of the southern extension M2068 of massive wall M2052, built in **phase 1**, once more provided clues on the geological substratum under the SD6 building and the plausible levelling works carried out prior to the building's construction. Against the eastern face of extension 2068, very close to the northeast corner of SD6, two superimposed red gravel and green marl gravel surfaces were exposed over an area of 1.20 x 0.90 m, above 613.24 m (**Fig. 5**). In this part of the sounding, the green marl gravel appears to overlie the red one (in contrast with L2053 and L2055, where the opposite is true). Alternating layers of this red and green gravel were, as said before, discovered while excavating fill 2228 of water installation L2064 (below 2215 and in 2228). The geological origin of the green pebbles is certainly the underlying bedrock constituting the spur on which the SD6 building was constructed; yet they might just be the top, the more friable centimetres of bedrock, deliberately re-deposited in orderly fashion to level the surface. The red gravel, by contrast, might have been brought from elsewhere. The fact that these two layers were not found over a larger surface is due to the season's time constraints: this green gravel (and less securely the red one) remains to be encountered under 2201, the fill of fine yellow and probably wind-blown sand outside the SD6 building (the first layer removed when clearing the exterior face of wall M2052, see **Fig. 15**). Work in the near future should permit an assessment of whether the green marl gravel is indeed found everywhere at comparable elevations under the earliest walls and floors, as seems likely. This would be a clue to whether it was deposited by human agency. It should be added that re-deposited red gravel was discovered in the long section cleared and drawn this season in SD9 by E. Lanoë, on the other side of the valley, perhaps in order to create a street in front of a terraced (and as yet unexcavated) building. Red gravel is also visible in several layers of the 17 m long N-S section that was cleaned and photographed (**Fig. 1**) at the other side of the bulldozed area, east of SD6.

That the excavated building of SD6 was as from **phase 1** on much higher ground than what lay to the east also became evident when we cleared the interior space L2050-L2051, bordered by M2051, M2052 and M2054 (**Fig. 5**): the lowest (earliest) floor discovered in this space/room was 2217 (L2065), at an elevation of 614.54-59 m, i.e. approximately 50 cm above the highest point of L2067 (the mud brick packing 2235 and underlying stones 2236, whose highest point lay at 613.07 m). Floor 2217 (L2065) was the earliest surface of room/space L2050-2051; below it nothing but sterile sand was reached down to an elevation of 614.50 m (fill 2223). The highest course of wall M2051 (visible on **Fig. 3**), encountered at 614.35-614.45 m and bordering room L2051 to the south, was therefore still part of foundations lying below this earliest floor 2217. The top foundation courses therefore eroded away in this northernmost part of the building, and perhaps became the fallen blocks found in a jumble in modern sand fill US 2200, above L2067 formed by the mud and pebble packing/terracing (2235- 2236). This stone collapse lies against the exterior surface of M2051, 50 cm to the northeast of where the wall creates a right angle with M2054, and 45 cm to the west of the western face of M2068. The fallen stones were encountered below an elevation of 613.82-613.89 m, and some of the blocks were as squared as those on the upper course of wall M2051.

The scale of terracing and preparation works became obvious in mid-season, when wall M2059 was cleared in the southeastern quadrant of SD6 (see **Figs. 11-14**). Despite this structure's appearance when uncovered, the many uncarved stones found in it were not merely collapse from a wall; the same can be said of some of the fallen mud brick packed between some of the unhewn stones belonging to M2059. The sand layer 2203, which had to be removed before exposing M2059, was however maybe wind-blown and not just modern re-deposition by a digging machine, because it was extremely homogeneous and, unlike M2200, contained only sherds, not modern rubbish (**Fig. 13**); moreover, typical lines dividing the various stages of sand-fill were visible in the section, indicating a process lasting at least years or decades. There were nonetheless two grooves apparent resembling the shovelling of a mechanical machine: these were located at the intersection between mud brick collapse 2214 below 2203 and structure M2059, while wind-blown sand (2202) was re-deposited downslope, further east. These lines in the sand fills (2203 and 2205), covering spaces between walls, are perhaps an indication of more humid periods resulting in the formation of surface "crusts"; they were particularly visible in space L2055 above phase 3 courtyard surface 2211 of exterior floor L2056 (section **Fig. 18**) and in fills 2203 and 2210 of L2054, above clay layer 2224 sealing water installation L2064.



Fig. 11. View of features of phase 1 - floor preparation 2220 of floor L2059, probe reaching green marl gravel and terracing wall M2059, from north (DJ2012a1483B)



Fig. 12. View of terracing wall M2059 and of floor preparation 2225 of floor L2057 (of phase 3), from east (DJ2012a1486B)



Fig. 13. The southeastern corner of SD6, showing terracing structure M2059 of stones and fills of mud brick fill (2214) and sand (2202) (DJ2012a1480B)

At first, it was thought the stones of M2059, whose lowest elevation was between 614.27 m and 614.48 m, were the upper courses of a wall, destroyed and scattered as a result of this major modern disturbance (**Figs. 11-13**). However, in SD6's southeastern corner, the extension of these stones over a length of 3.40 m (N-S) and an average width of 1.70-1.80 m (E-W), all argued against these stones being dumped haphazardly as a result of bulldozer works.

It is now likely that the gradient of unworked stones forming M2059 and sloping down towards the east was deliberately placed as an eastern outer reinforcement to the building excavated in SD6. It also formed a "glacis"/terracing of sorts, albeit a much more massive and stronger one than its northern counterpart of pebbles and packed earth L2067 (2235 and 2236) (**Fig. 5**). It is true that M2059, the continuation of M2052 to the south, was preserved over only one course above floor L2059 of **phase 1**; initially it was thought that modern disturbance resulted in the stones either tilting or being redistributed and re-deposited towards the east. Yet the regularity of the razing of M2059 to roughly the same level of the latest (**phase 3**) pebble floor preparation 2225 of floor L2057 (see below) was rather the consequence of L2053 later becoming an open-air space: M2059 was probably thus obliterated to its very foundations in **phase 3**: in **phase 1** however, despite the fact that it might have been

unroofed, M2059 may have stood as high as M2052 to the north. Finally, the eastern face of the top course of wall M2059 did not appear clearly at all: at this foundation level there was in fact no eastern face; the large stones sloping eastwards from the top of M2059 were all therefore part and parcel of the same structure, which buttressed the spur on which the building of SD6 was placed.

This buttressing or terracing system of large stones, forming a part of M2059, did not span the entire length of room L2053, but stopped two-thirds of the distance from the southern balk (**Fig. 5** and **Figs. 11-12**): this might be a result of erosion or stone removal after abandonment of the construction. The absence of stones is all the more noteworthy if one considers the slighter gradient of the slope descending from the top of wall M2059, indicating less erosion.

A 0.3 (E-W) x 3 m (N-S) band was excavated below the small and dense stone floor preparation L2059, along the interior face of wall M 2059 (**Fig. 11**). This small probe was adjacent to the northeastern corner of wall M2053. At an elevation of 614.58-614.64 m, the green layer of friable marl under the entire area (forming the top part of the rocky spur's geology) was reached. This was also proof that floor preparation 2220 belonged to **phase 1**, the earliest stage of construction and occupation of the SD6 excavated building. The horizontality of this very bright green marl layer in the 3 m long probe was astonishing; it is another indication of the extensive leveling works carried out prior to construction. These green marl pebbles and small stones were also exposed under the stones of the outer, eastern, face of terracing structure M2059 (**Fig. 14**).

The result of the probe thus supports the conclusions made by investigating the northeastern corner of SD6: that the building excavated this season was built on a bedding of fine bright green - and at times reddish - gravel, spread level over a spur protruding from the base of the Rijm al-Burj cliff. Apart from the previously mentioned contexts, green marl was also found below the foundations of M2056, at the corner formed by this **phase 2** wall and M2054. A small probe 2 m (N-S) x 1.50 m (E-W) was made to examine what lay under 2211, the trodden surface of **phase 3** courtyard/open space L2055. Under the surface, and under a fill of mud brick and loose stones (2213), the same green marl was found.

Until the study of pottery from sealed contexts of SD6 is completed, the relative chronology of the terracing system created immediately prior to the construction of the building will remain unclear. A coin was discovered in fill US 2200 at an elevation of 613.24 m; it was lying immediately above the packed decomposed mud "glacis" (2235 of L2067), in front of wall M2051 and close to the corner with M2068 (the continuation to the north of M2052). Although it was found quite low, its provenance is not from a secure context, since it lay in



Fig. 14. View from southeast of green marl gravel under terracing wall M2059 (DJ2012a1481B)

sand and was not embedded in the mud of 2335. The coin could indeed be from any of the three phases of building in SD6, or might even have been re-deposited from elsewhere as a result of disturbances caused by the mechanical digging machine in the northern extremity of the square. Together with this coin, a stone grinder and a sling bullet of clay (at 613.14 m) were discovered at the bottom of 2200.

Walls of phase 1 (Fig. 5)

As mentioned above, wall M2051, intersecting with M2054, belonged to the earliest building phase of SD6 (**phase 1**). It was made of flat stones 15-25 cm long, mostly unworked, sometimes roughly square in shape, and at other times more triangular: the base of the triangle is always a part of the wall face. The middle of the wall was filled with smaller 10-15 cm stones and rubble. Running in an E-W direction, it was 3.12 m long and 66-70 cm wide. Since what has been uncovered of M2051 is only nine or ten foundation courses, no mud bricks from higher floors were preserved, as opposed to the N-S wall M2054, contemporary and intersecting at a right angle with M2051. Three hand-made mud bricks were identified while scraping the top of M2054 near the intersection with M2051, close to the northwestern corner

of room L2051-L2052, at an elevation of 614.40-614.54 m. They might nevertheless belong to **phase 3**, when E-W wall M2050 (made almost entirely of mud brick with only one course of stones foundations) was constructed.

Wall M2054 thus forms a very sharp and aesthetic right angled corner with M2051 (**Fig. 3**, right of photograph). This corner is what M2050 (of **phase 3**) and its earlier version M2067 (of **phase 1**) leaned upon. Some stones belong both to M2051 and M2054, and the two walls are therefore bonded and strictly coeval (**Fig. 5**).

The contemporaneous nature of walls M2051 and M2052 is much more difficult to ascertain from a purely architectural viewpoint, even though it is indeed plausible. In effect wall 2051 does not merge into M2052 (**Fig. 5**), no stones belonging to both have been cleared, and a straight cut was visible in the northern face of M2051, at the corner it formed with M2052. This might just be construction technique, indicating that the walls of the **phase 1** building were built in segments. Traces of this technique were apparent when the entire N-S extension of all M2052 (and its thicker continuation towards the north M2068) was uncovered.

Wall M2052 was more monumental. The 1.95 m of its northern extension M2068 was much thicker, exceeding 1.15-1.20 m in width. Moreover, it is clear that M2052 was built of large blocks. One of them, discovered while cleaning the top course, was 0.72 m wide, despite being uncarved and roughly trapezoid in shape. It spanned the entire width of the wall, and was last stone of a first building section of wall M2052: a vertical slit going through the entire wall foundation became visible when cleaning the eastern face.

One noteworthy aspect of wall M2052 is that it seemed to tilt towards the east (counter-batter). The upper courses loomed above the lower ones, and the stones did not form a vertical wall face. It is highly unlikely that this was due only to the pressure exerted by the fills of sand, brick and stone pressing from further upslope on the inner, western face of M2052. The tilting does not appear accidental.

Another unusual feature was a stone 'plinth' running for 3.60 m in the middle part of the eastern face of wall M2052 (**Fig. 15** and **Fig. 5**). It was made up of thirteen long, sometimes rectangular or long triangular stones forming one pseudo-isodomic course. These were protruding some 9-11 cm, below the next preserved four courses of wall M2052. These stones were at first thought to be an earlier phase of wall M2052. However, this peculiarity might have been no more than a construction technique for M2052, giving added resistance to the wall. It is likely that, like the bedding of gravel found almost everywhere under the SD6 building, it was meant to provide additional stability.

Wall M2052, its thicker northern extension M2068 and its southern one M2059 (**in phase 1**, simultaneously a wall enclosing a space (L2053) and a terrace or large space): all



Fig. 15. View from the northeast of wall M2052 of phases 1-3, showing the plinth below four courses of stone wall (DJ2012a0884B)

seem to have been built at the same time, forming a single long room L2050-2051-2052-2053, 13.80 m in length. As described above, what was excavated on the outer (eastern) side of all M2059 was the sloping foundations of a terracing system protecting the spur on which the SD6 building was constructed (section **Fig. 21** and **Fig. 13**).

Determining whether such a span was roofed completely or only in places is quite delicate; the covered section was perhaps between walls M2052 and M2054, since the width between them is approximately 3.50-3.60 m, which allows for roofing with palm-tree beams. The unroofed part must have been what became in phase 3 L2053 in the southeastern corner, west of M2059: walls M2058 and M2063 were built on both sides of a door: in any case it was L2054, the room with the possible well L2064, that appears to have been surrounded by at least three walls in **phase 1**, and not L2053 (perhaps also a small courtyard in **phase 3**). The dense bedding of small stones constituting floor preparations 2227 (L2062) of **phase 1** and 2225 (part of L2057) of **phase 3** (**Fig. 16**) are indications of the need to drain the surfaces, which in turn further suggests that space L2053 was left unroofed during these two phases.

While cleaning floor preparation 2225 of L2057, however, larger irregular blocks inserted into this pebble and stone surface were encountered (**Fig. 5**). The pattern of these blocks is rather confusing, since they appear to have belonged to two bonded structures razed

to their very foundations, at least until an elevation of 615.49 m was reached. The two features were considered part of two perpendicular walls, M2071 (E-W) and M2072 (N-S), the former measuring 2.40 m in length, the latter being 0.92 m long. M2072 appears to have been made of large, slightly square and triangular uncarved blocks. It is true that its alignment was identical to that of M2054, and it could have been the latter's extension to the south in **phase 1**. In any case, this extension was obscured, or even completely obliterated, by the construction of **phase 2** wall M2056. It is also possible that M2071 originally enclosed space L2053 to the south; nevertheless this is a mere hypothesis resting on very meager findings. Likewise, the remains of M2071 did not extend all the way to terracing wall M2059, to the east. The blocks constituting M2072 and M2071 are all that remain, and form part of the preparation 2225 of **phase 3** floor L2057: unfortunately they are perhaps even the last and lowest course of foundations directly above the green marl gravel above bedrock, at an elevation of 615.13 m.

As mentioned above, wall M2054, certainly built in **phase 1** of the SD6 building, was bonded and formed a right angle with M2051. It was initially thought that it was in use only in the earliest level, since only one or two courses of foundations were preserved, along with four small square mud bricks appearing just to the south of M2054's intersection with M2051. The construction technique of M2054 was similar to the latter: the bases of triangular stones some 0.20-0.25 m x 0.10-0.15 m were placed along the faces of the wall, and smaller stones and rubble were inserted in the core between the two stone faces. However, the wall continued to be in use until **phase 3**, as shown by two square blocks placed forming stepping stones on either side of a doorway L2091 through M2054 (see below).

The floors of phase 1 (Fig. 5 and Fig. 16)

In phase 1 of Sounding 6, floors were of two very different types:

- The first one consisted of layers of white plaster overlying a preparation of stones and sherds densely packed together. This plaster was clearly visible in floors of phase 3 (for instance in 2219 of room L2053). In phase 1, however, plastering was patchy and in many places could only be surmised from the preparation technique of some floors, very much like that of the later phases: 2220 of **phase 1** was thus identical to 2225, the preparation of floor L2057 of **phase 3**.

- The second was essentially of slightly hardened sand covered by a few sherds, which made them extremely elusive and difficult to trace.

- The third type of floor **was not yet found in phase 1**: it consisted of trodden surfaces

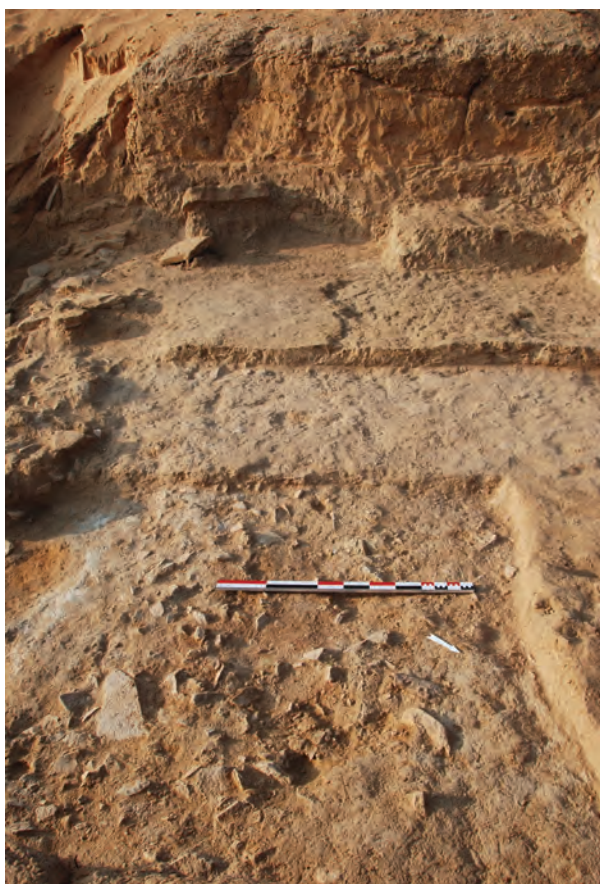


Fig. 16. View from north of phase 1 floor preparation 2227, part of floor L2059. In the background, pebble and stone floor preparations 2226 and 2225 (the latter part of floor preparation L2057) (DJ2012a1306B)

with beaten earth, hardened sand, decomposed mud brick and some flat stones (for instance L2056 of **phase 3**, see below). It characterizes courtyards and large trodden open spaces.

One example of the first type (floor L2059) belongs to **phase 1** and would therefore be an early indication that L2053 – in this phase the southern third of a long rectangular space L2050-L2051 - was unroofed. This feature was uncovered over an area of 2.90 x 2.10 m, immediately to the south of phase 3 wall M2053. Its plaster cover was not found; this is probably a result of the insertion of **phase 2** floor L2058 and of **phase 3** floor preparation 2225 of floor L2057, immediately above L2059. **Phase 1** floor preparation L2059 was discovered at an elevation of 614.86-614.93 m.

Floor 2217 forming L2065 was found in L2050-2051, and was of the second type: it was only discovered in patches, and elements of it were only surmised thanks to a scatter of horizontally lying body sherds. Its elevation was 614.48 m. It is likely that space L2050 (i.e. this section of the long 13.80 N-S room in the **phase 1** building) was roofed. Below this floor lay a level of sterile sand, with no sherds. The layer of green marl and/or red gravel below was not yet reached at the end of the 2012 season.

Phase 2 (Fig. 17)

The remains of **phase 2** were more difficult to trace. Moreover, the attribution of wall M2056 (the main reason for the existence of a phase 2) to this level is to a large extent still a hypothesis, since its foundations are very deep, reaching the green marl gravel layer overlying bedrock. What led the author to conclude that it belonged to an intermediate phase was the fact that it was not bonded with M2054, and it does not prolong M2054 to the south, but is slightly offset towards the west. The northeastern corner of M2056 abuts the southwestern corner of M2054.

Wall M2056 (**Fig. 17**) extends for 3.80 m and is 56-60 cm wide. It is made of uncarved blocks, many squared out, but the quality of the masonry is much inferior to that of M2051, M2052 and M2054. As in the case of other walls, they were piled up without mortar. The size of the small blocks of rubble inserted between the larger stones of the western and eastern faces was much smaller (approx. 10-18 cm) than those of other stone walls. The better carved blocks appearing in M2056's masonry were located at the level of foundations, below floors and at the southeastern extremity. The top course of M2056 was encountered at 615.88 m. The foundations of this wall were laid at 614.25 m, directly over the green marl gravel layer, the product of levelling in phase 1: wall M2056 it was therefore preserved up to a height of 1.63 m (**Fig. 18**).

It was initially thought that M2058, bordering space L2053 to the west, was an extension of M2056 towards the south. This is not the case, since M2058 is some 10-15 cm wider and offset slightly east by some 25 cm (**Fig. 17**).

Only two floors were associated with phase 2. The first one was L2058, in what would become L2053 in **phase 3**; it was found on a surface of small stones (2226, **Fig. 16**). This surface also included a circle of red gravel some 1.20 m across, very close to **phase 3's** door/passage L2063. Floor L2058 clearly went under walls M2063 and M2058, since its black ashy surface was visible under the first foundations of both wall stubs of **phase 3**. Floor L2058 was found at an elevation rising from 614.94 m to 615.07 m.

Another preparation surface for a floor (2232, **Fig. 19**) was discovered in what would in **phase 3** become room L2052, under floor L2060. The fact that it goes under the stone foundations of wall M2053 (built in phase 3) shows that it belongs to an earlier phase and that it might be the same as 2226 of L2058. It was a sandy surface with some sherds above a floor preparation of sharp flat stones of up to 20 cm, particularly concentrated in the northwestern corner of the room. A patch of red gravel was lying close to the north face of wall M2053, immediately to the east of a large oval stone. The floor above this preparation of stones was



Fig. 17. Ground plan of SD6 in phase 2



Fig. 18. View of fill 2205, sloping above outside surface L2056, with wall M2064 in the background, from north. Wall M2056 is to the left (DJ2012a0807B)



Fig. 19. DJ2012a1575B View of preparation 2232 of floor L2058 from phase 2. In the background, view of eastern face of M2056

encountered at 615.01-615.04 m, higher than the **phase 1** floor preparation L2059 in space L2053, but only very slightly above pebble preparation 2226 of L2058 in the northwestern corner of L2053, which lay at 614.94-614.99 m. It is therefore likely that thin surface 2232 was part of floor L2058, went under M2053 and belongs to **phase 2**. The use of spreading of red gravel is also something that L2058 has in common with phase 1.

Phase 3 (Fig. 20)

Due to better preservation, the architecture of **phase 3** is more clearly understood. **Phase 3** was marked by a subdivision of the long space between walls M2051, M2052, M2054 and M2059 into three small units (and probably two rooms): to the south, L2053 was a 4.30 (N-S) x 3.90 m (E-W) unroofed space (perhaps a small courtyard) bordered north and south by two new well-preserved mud brick walls (M2055 and M2053). L2052, a 2.90 m x 3.90 m unit (internal measurements) was a small room closed on three sides by walls M2052, M2056 and new wall M2053. L2050-L2051 has two locus names, because initially it was thought to be two separate units. In **phase 3**, it was separated from room L2052 by M2057, and became a much smaller space than in earlier levels (2.5 m E-W x 5.20 m N-S). Its floors were very poorly preserved; it is likely that the space was covered, just like L2052. L2055 was a large (7.50 m N-S) courtyard with a mud and beaten earth floor enclosed by M2054 to the east, M2050 to the north and M2060, the reconstruction of M2066 in phase 3.

Room L2054 and installation L2064

Water installation L2064 in L2054 was still in use, and was surrounded by walls on at least three sides: M2058, M2063, M2060 and M2062. Access to it from open air space L2053 was through a small passage 0.95 m wide (L2090) between M2058 and M2063. Wall M2060 was the **phase 3** reconstruction of M2066, but as said above the divide between both walls was hard to ascertain and could be tentatively placed after the sixth course from the base: there is an abrupt change in the angle of the wall's southern face. M2062 is the reconstruction of M2065: the divide between them was marked by a 10-15 cm layer of sterile sand. M2058 was on average 0.68 m wide, 2.05 long. Initially, we thought it was the continuation of M2056 of **phase 2** to the south, but, as said, wall M2058 is offset by some 10-15 cm to the east and is slightly wider. No mud bricks were preserved on top of unworked stones, which were often

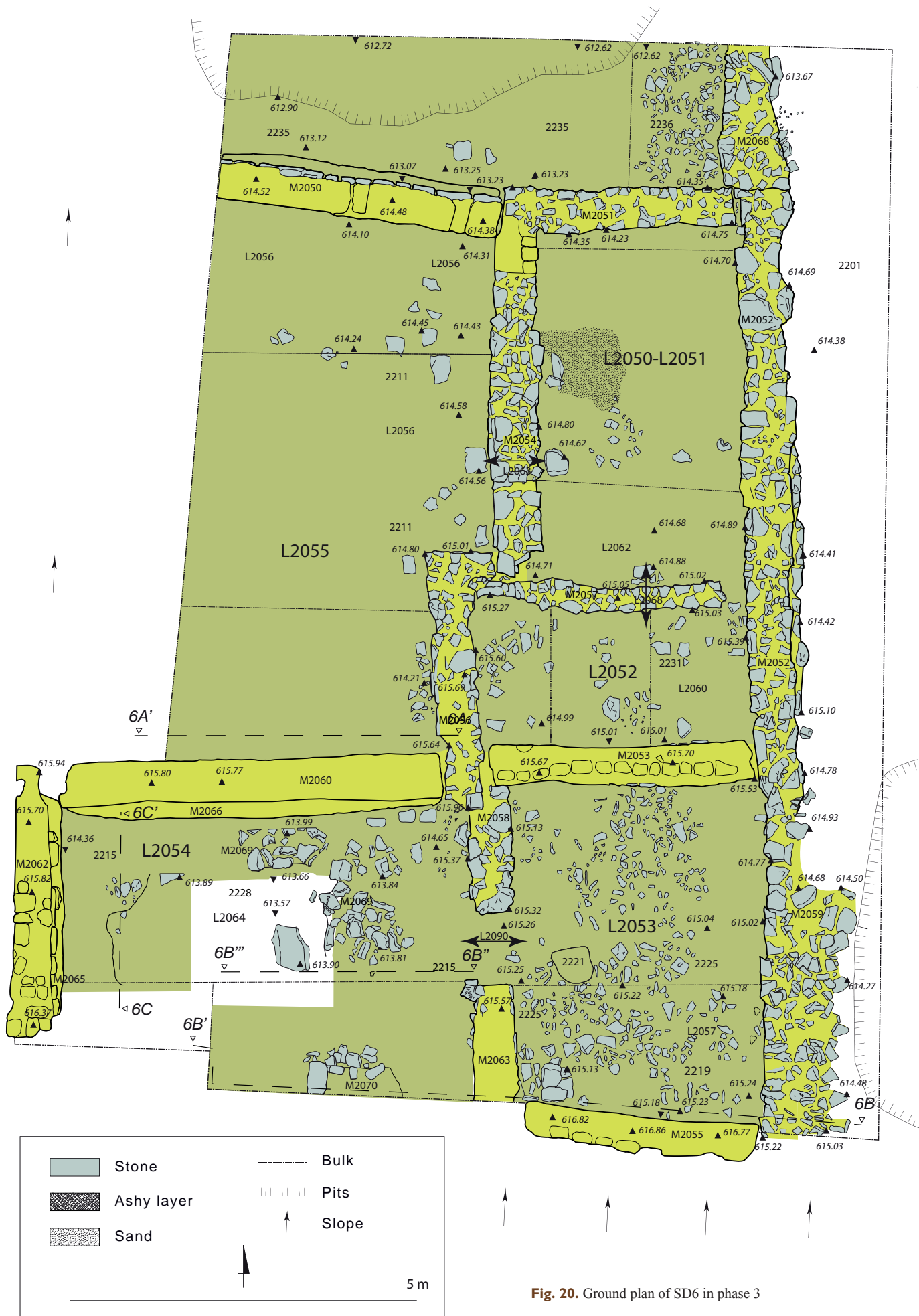


Fig. 20. Ground plan of SD6 in phase 3

friable and laminated. Wall M2063, on the other hand (**Fig. 21**), had two courses of greyish-brown, flat and somewhat square stone foundations very similar to those of M2055. It was covered by a layer of compact mud brick. Its western face was built against the compact mud brick packing (2215) sloping down towards installation L2064, already present in **phase 1** and protecting the latter from the erosion of the green marl bedrock around it. It is interesting to note that M2063 and M2055 were not bonded: it seems a rule that E-W walls of mud brick built as separations, such as M2053 and M2055, are never bonded with the walls they intersect even when both are contemporary.

Space L2053

Space L2053 appears to have been in the open, despite being now bordered by two parallel walls of mud brick (M2053 and M2055, **Fig. 20**). Wall M2055, whose top course was at 616.82-616.86 m, was discovered while cleaning the sand around the edges of the square's southern balk. Apart from three to four courses of foundations of square, 8 cm thick, and 25-30 cm large slabs of brownish grey stone lying at 695.18 m (the level of floor 2219), wall M2055, preserved over a height of 1.68 m, was entirely made of dark brown loamy hand-made rectangular bricks of irregular size. It was approximately 3.90 m long. It was not bonded with M2059 (the terracing wall built in **phase 1**) nor, as said above, with M2063. As for M2053, it ran parallel to M2055 and enclosed L2053 to the north, creating a new space measuring 3.90 x 5.15 m..

The construction technique of M2053 was identical to that of M2055: it did not merge into wall M2058, located to the south of door/passage L2058, nor did it bond with wall M2052 or terracing wall M2059. Moreover, the foundation course of wall M2053 was found above or at the same level as the higher course of wall M2052, built in **phase 1**. M2053 was excavated over a length of 3.85 m and was encountered below bricks that had fallen obliquely or vertically from the wall (**Fig. 20**), at 615.53 m - 615. 72 m.

The floor rising up against the foundation of the northern face of M2055 was 2219 of L2057, made of thick hard white or greyish white plaster, 1-2 cm thick (**Figs. 20-21**). It was encountered between 615.18 m and 615.24 m. When removed, it came out in large layered chunks, some 10 cm in diameter. It overlaid a dense surface preparation (2225) of pebbles, small stones and some large blocks of flat boulders, the latter belonging to what was described above as M2062 and M2071, possibly intersecting walls forming perhaps the southwestern corner of space L2053 in **phase 1**. A hollow filled with very fine black ash was cleaned to the west of doorway L2063: this might have been a small hearth located in L2053.

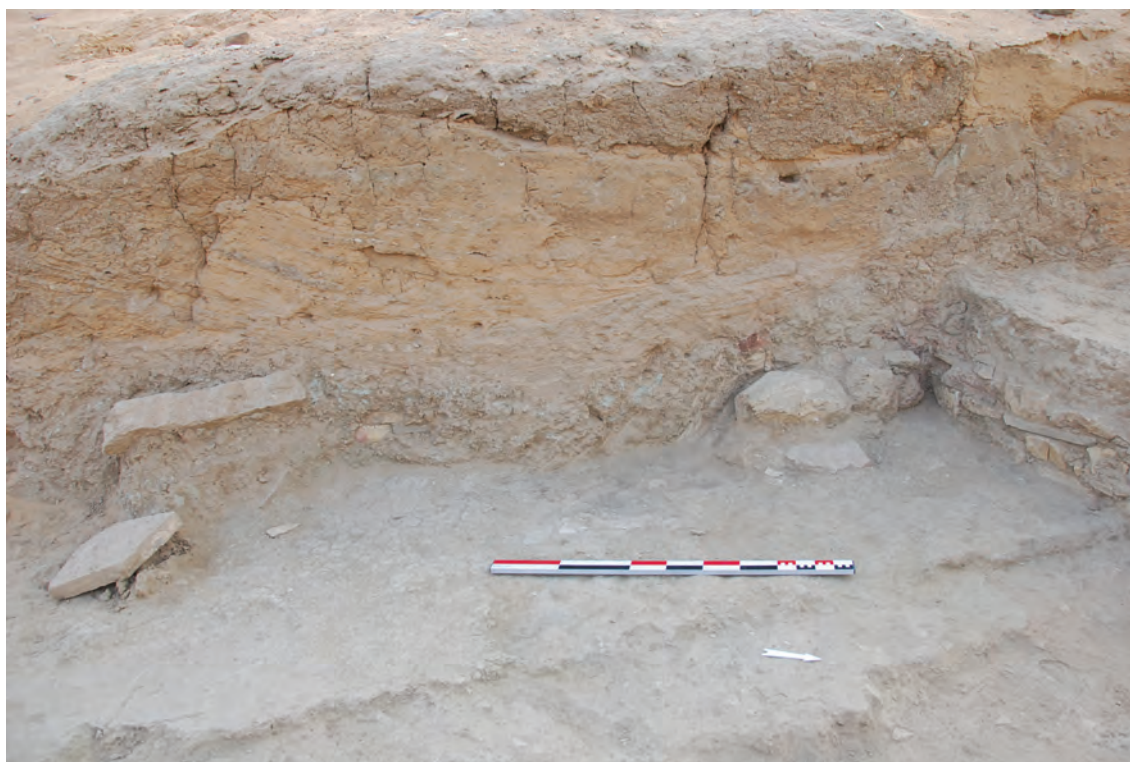


Fig. 21. View from northeast of wall M2055 and associated floor L2057. To the right of the photograph, wall M2063 separating spaces L2053 from L2054 (DJ2012a1313B)

Room L2052

In **phase 3**, partition walls M2053, M2056 and M2052 enclosed a new small space whose internal dimensions were 2.90 m (N-S) x 3.90 m (E-W). It was initially interpreted as a vaulted room. Nine rows of rectangular mud brick, fallen either vertically or at an angle of about 50-60° (especially in the centre of this small room (**Fig. 23**)) were exposed at 615.44-615.55 m. It was thought that this fill of mud brick collapse (2208) would completely seal diagnostic material yielding a clear date of the latest phase of building use. The rows of bricks turned out to be nothing more than collapse from wall M2053: the width over which the fallen bricks were scattered nevertheless enabled a reconstruction of the total height of M2053, which must have exceeded 3.20 m (2.50 m of fallen brick rows + 0.72 m of wall preservation), something quite unexpected for such a small room. Moreover, under the collapsed bricks, which were drawn in section, a sterile layer of sand with very few sherds (2229) was dug below 615.17-615.31 m, until a flat trodden floor (L2060) was reached at 614.93-616.01 m (**Fig. 24**). The plaster surface 2230 of this floor was the most recent one of the room, and was hence associated with **phase 3**.

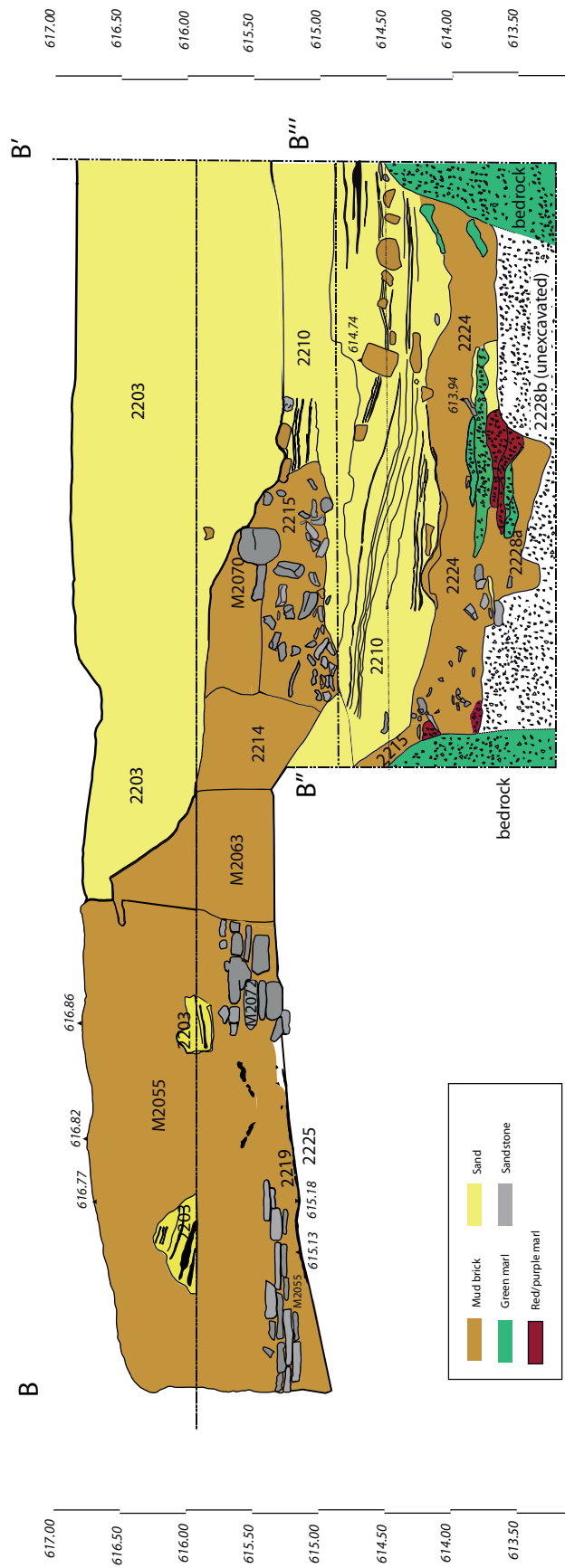


Fig. 22. East-West section 6B across spaces L2053 and L2054



Fig. 23. View of fallen brick layer 2208 from wall M2053 visible in the background. These bricks were initially thought to be the remains of a collapsed vault. Picture taken from north (DJ2012a0489B)

East-West wall M 2057 (**Fig. 20** and **Fig. 25**) was slightly curving and poorly constructed. It was not bonded to wall M2052; in fact it did not completely enclose space L2052, since the stone foundations did not even entirely abut the western face of M2052. It was only 35-37 cm wide and no more than two courses high (approximately 20 cm). It was overlain with brown mud bricks lying haphazardly, which probably do not even belong to the wall itself, but to the above-mentioned rows of mud brick collapse (2208) that had fallen from wall M2053 (**Fig. 23**, front row). M2057 is moreover bonded neither with M2054 constructed in phase 1, nor with M2056 built in phase 2, and the likelihood is that it was built at a later period. The upper course of stone foundations was at an elevation of 615.00 m, i.e. at roughly the same height as floor L2060, which in places was only 1 to 4 cm below. M2057 was possibly merely a dais compensating for the difference in level between floor L2060 in room L2052 and floor L2062 in space/room L2050-L2051 to the north, also of phase 3. In fact an almost square stone, smoothing the transition between rooms L2050-L2051 and L2052, was found in front of the middle part of the northern face of wall M2057, at an elevation of 614.88 m (**Fig. 25** and **Fig. 5**, see arrow). It was tucked against the southern side of curving wall/dais M2057. One should add that similar stones, uncarved but flat and almost square, were found on both sides of what must have been a doorway or passage (L2091) through wall



Fig. 24. View of mud brick collapse 2208 above L2060, in phase 3 room L2052. View from southeast (DJ2012a1503B)



Fig. 25. View from north of floor L2060 behind low wall or dais M2057 in room L2052 (phase 3) (DJ2012a1477B)

M2054, between L2050/L2051 and courtyard L2055, respectively at 614.62 m and 614.56 m (see plan **Fig. 20**). Floor L2062 was thus sloping down by some 40 cm over a distance of 2.00-2.40 m in the southern half of room L2050/L2051.

Courtyard L2055

In **phase 3**, L2055 was a courtyard whose western limit lay beyond the baulk. It was bordered to the east by M2054 and M2056, to the south by mud brick wall M2064. Its northern edge was wall M2050, 55-60 cm thick and made of one course of square stones overlain with brown and quite eroded mud brick. This wall, whose orientation was slightly more to the north than stone wall M2051 on which it leans, replaced M2067 described above, but followed its direction very closely. By scraping off, on the season's first day, the debris and the sand re-deposited by the bulldozer, the expedition found this wall M2067 at an elevation of 614.52 m (**Fig. 20**). M2050 turned out to be slightly different in orientation from M2051, running a little more towards the northwest. Another remarkable feature is that the separation from earlier **phase 1** wall M2067, was in the shape of a sterile layer of sand 10-15 cm thick, comparable to the one between walls M2065 and M2062 in room L2054.

Wall M2050 showed one remarkable feature: the bricks above the foundations were crumbly and eroded. Small troughs or slits of silt and sand appeared, indicating perhaps water leaching due to the gradient of courtyard L2055's **phase 3** trodden surface 2211 (L2056). This runoff would have accumulated in a space exposed to the elements.

Earth surface 2211, constituting floor L2056 of courtyard L2055, rising slowly against M2054, was not easy to trace everywhere (**Fig. 20**). **Phase 3** (2211) of exterior floor L2056 was by no means horizontal (section 6A **Fig. 26**): near the western baulk, it was encountered at 614.24 m; much closer to the northern edge of this courtyard, near M2050, it lay at 694.10 m; closer to M2054, elevations of surface 2211 varied between 614.31 and 614.59 m. In courtyard L2055's northwestern quadrant, many stones embedded in the surface were lying flat, and were not the result of collapse.

Exterior surface 2211, which constituted **phase 3** floor L2056 of courtyard L2055, was gradually filled by a series of approximately 1 cm layers of fine wind-blown sand. Between layers a gray crust appeared, perhaps indicating wetter conditions leading to the formation of a darker, harder sand surface. These harder surfaces separated layers reflecting drier episodes. Section 6A (**Fig. 26**) shows the infilling with sand of L2055. Sometimes the layers were very fine (0.5-2 cm), maybe reflecting a very short gap in time of some years or months (**Fig. 18**). Very few finds, apart from rare sherds, were discovered in this naturally deposited sand layer 2205 above 2211.

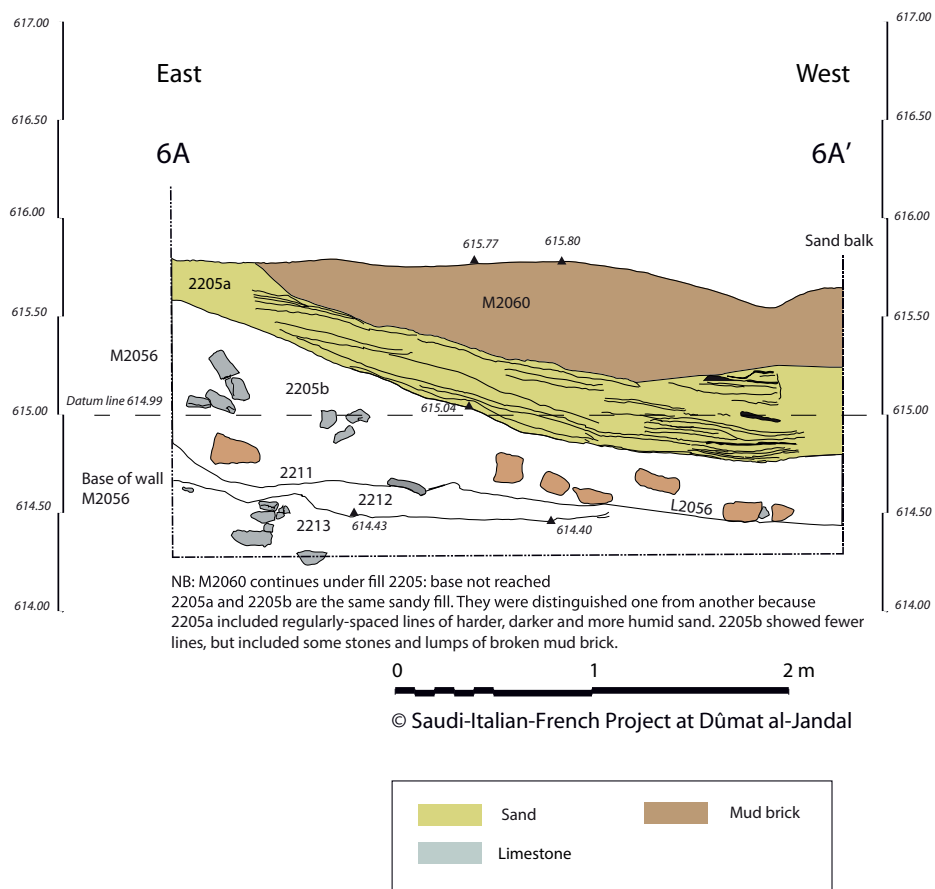


Fig. 26. Section 6A, showing the infilling of courtyard L2055 by layers of sand (2205), in front of wall M2064.

Conclusions

The reconstruction of **phases 1 and 2** of Sounding 6 is tentative, pending further data from the analysis of walls and the removal of several features of **phase 3**. The function of the building appears to have remained unchanged through these three occupation and building periods. The central feature in all three levels appears to be installation L2064 in room L2054. Determining the time lapse would however require absolute dates and a fine study of the pottery collected in all three phases, which appears to be Late Nabataean and Late Roman (around the third and fourth centuries AD). The only almost-complete vessel in the trench was discovered in 2214, a fill of mud brick collapse above phase 3 plaster floor L2057. As for small finds which could reveal the date of the described occupational sequence, there are none, apart from the coin found in the layer of fine sand 2200. It lay above the 'glacis' in front of wall M2051 formed by the stone packing 2236 and the mud and brick covering it (2235).

Figure 2, which was taken from the base of the Rijm al-Burj cliff, shows the overburden of wind-blown sand covering the area between the enclosure wall and SD6. Wall M2055 on the southern edge of the square, opened this year, was preserved to a height of approximately 2 m. Preservation of remains in the square to be opened in the next season (autumn 2013) should in all likelihood reveal even higher standing walls. These will no doubt clarify the complex stratigraphy of the area, the relationship between the Late Roman occupation of SD6 with the enclosure above, and the total duration of settlement from the time of construction of the site's enclosure to the abandonment of the western sector.

Sounding 7

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& Dara'an M. al-Qahtani (SCTA)

Sounding 7 is located in the fertile lower valley of the oasis, slightly east of centre of the area surrounded by the long enclosure wall. Presently, its location is on the northern side of the crossing between two perpendicular streets, north-south and east-west in direction. (Charloux, Cotty *et al.* this volume: Fig. 1).

Excavation of this sounding had several aims. First of all, one should mention our total lack of knowledge of ancient occupation inside the oasis proper. Beyond some traces of walls observed during the topographical survey, the only excavation (SD 3) carried out, in 2010, had revealed installations for irrigation purposes, linked to the presence of ancient gardens. Moreover, the rhythm of present-day development and construction in the palm grove made necessary the swift recording of archaeological materials and small finds before their obliteration. Finally, a landlord residing directly to the south of the crossroads had pointed out the presence of wall foundations – in all likelihood ancient – appearing a few centimetres under the modern floor, at the northeastern corner of his property.

In order to cross-check perpendicularly the constructions located on the same axis as the two walls observed in the neighbouring property (**Fig. 1**), the method chosen consisted in digging a diagnostic trench 10 x 2 m in dimension (**Fig. 2**), placed on the other side of the modern street, dug by hand with a team of workers (**Fig. 3**).

After the removal of overlying rubble and rubbish, we cleared the area's surface, which was almost flat, with only 16 cm of difference in level between the sounding's eastern (elev. 09.76 m) and western (elev. 609.60 m) extremities (**Fig. 4**).

The upper layer (US 2103) is a fill of pink sand and gravel covering the sounded area over an average thickness of 30 cm (**Fig. 5**).

A sand layer of about 10 cm (2104) is directly visible below, at the east of the sounding, then disappears 5 m to the west.

The deposition of these fills is undoubtedly coeval with the construction of the modern street network. In effect, they are covered with a few blocks (US 2106, **Fig. 6**) in the eastern

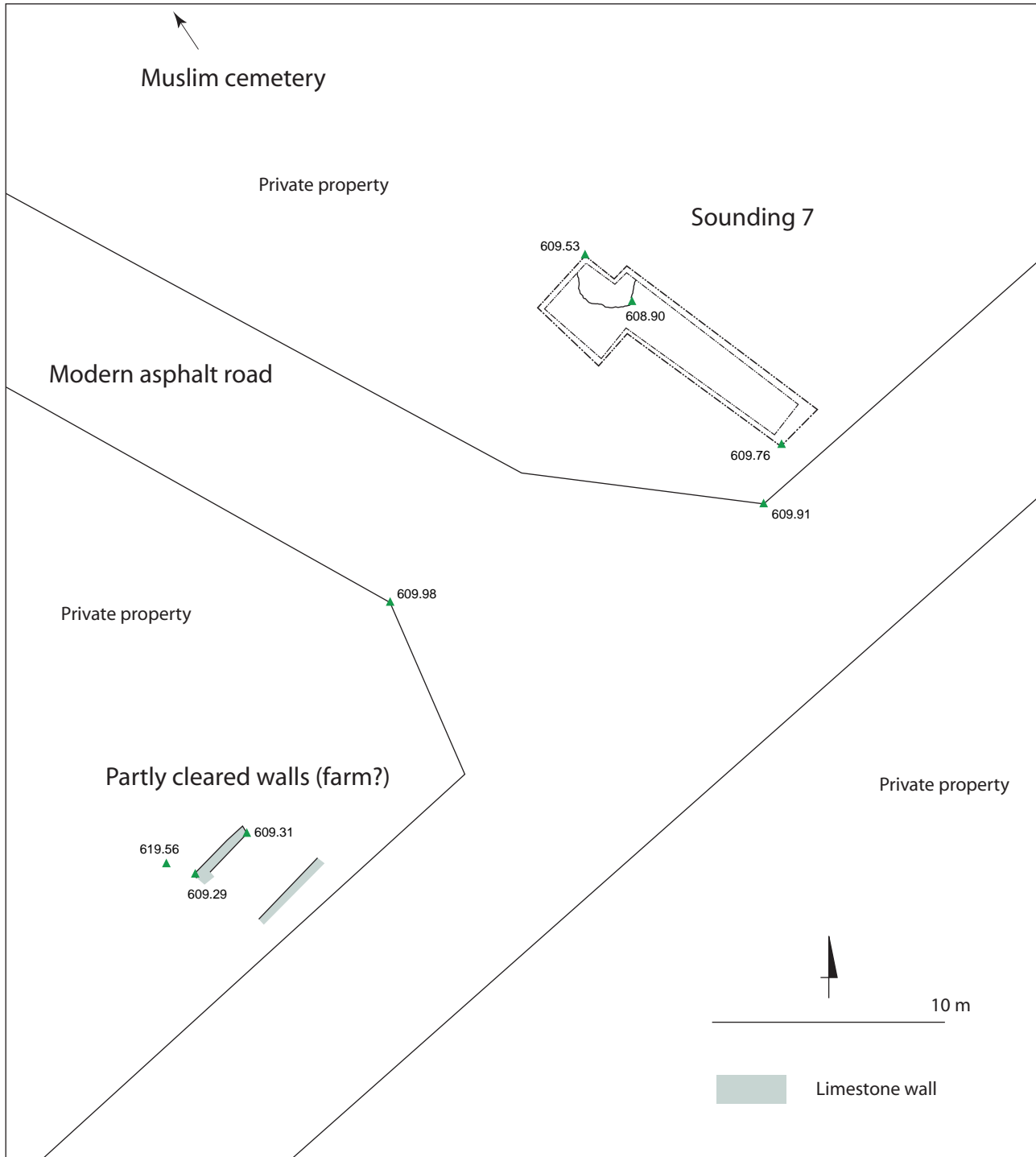


Fig. 1. Plan of sounding 7 and of adjacent walls

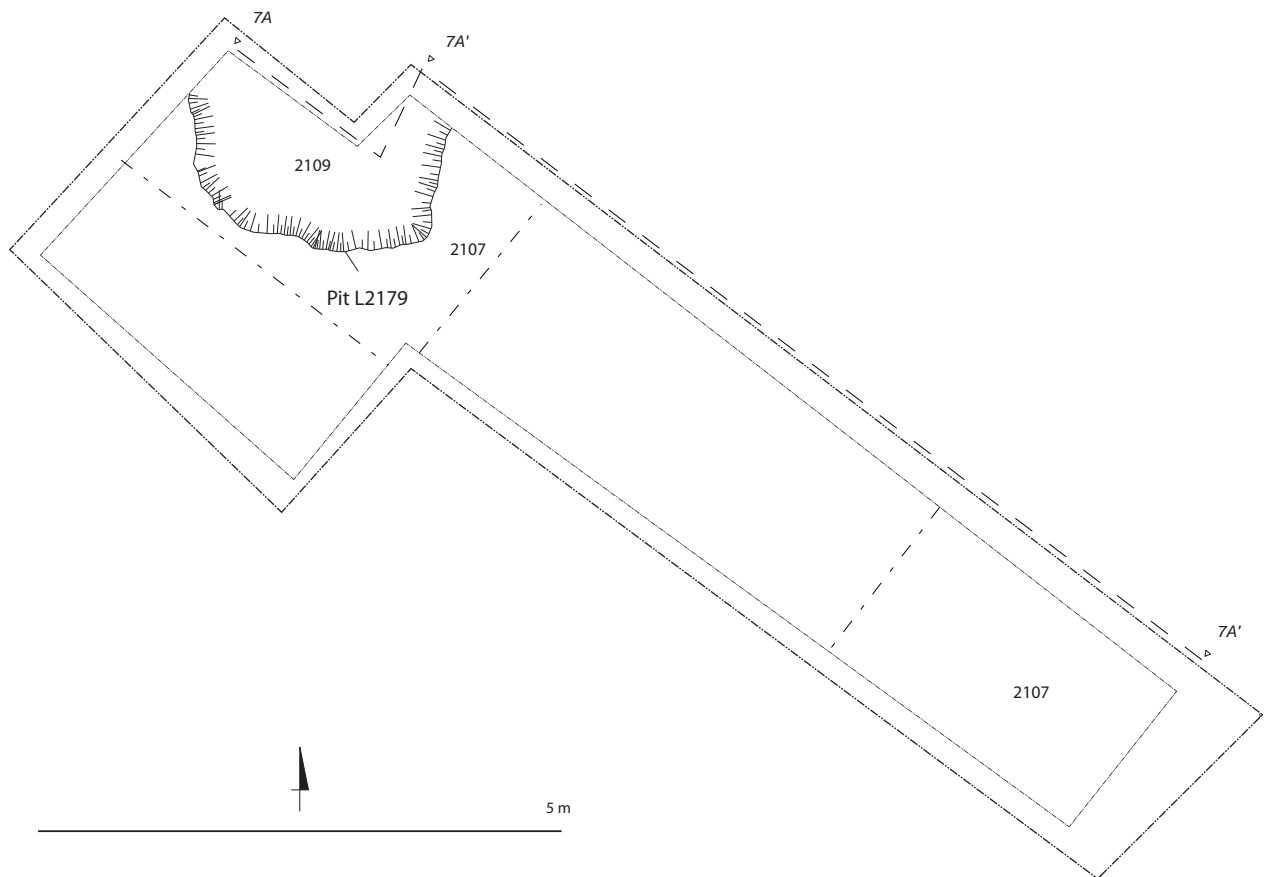


Fig. 2. Plan of Sounding 7



Fig. 3. Workers excavating sounding 7, looking north (DJ2012a0055B)

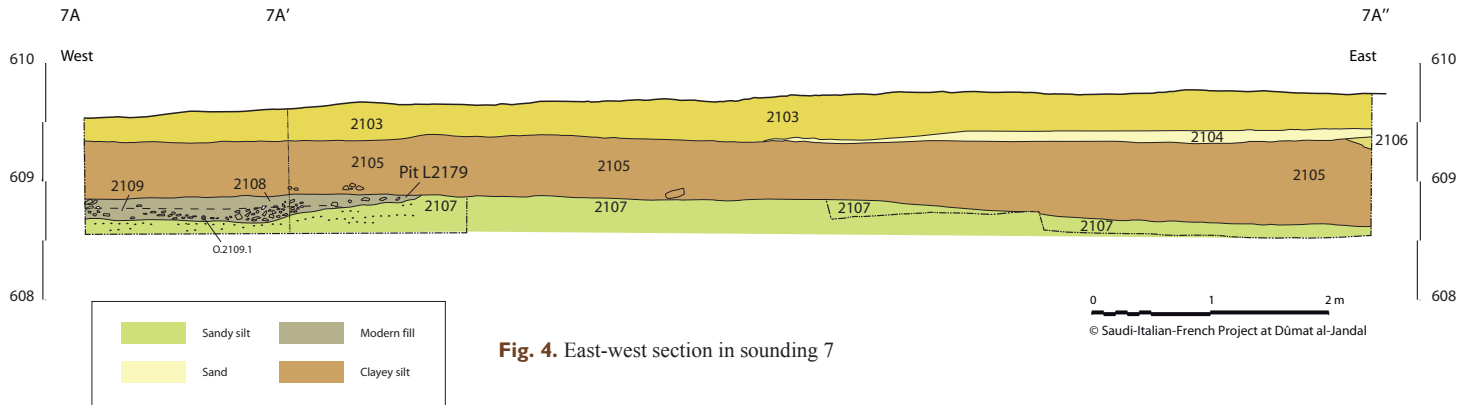


Fig. 4. East-west section in sounding 7



Fig. 5. Clearing of the upper layer in sounding 7 (DJ2012a0059B)



Fig. 6. Appearance of layer 2106 during the excavations (DJ2012a0110B)

part of the trench, and in the western edge by a compact clayey layer of gravel.

The eastern limit of 2106 is moreover parallel to the edge of the north-south road located at a distance of 2.50 m. Perhaps one is here dealing with remains of a track older than the tarring of the road. However, it is more likely that this is its gravel preparation surface. It moreover included recent refuse (cloth).

After the removal of this level, a thick layer was encountered, quite different in nature: US 2105. It was made up of very compact brown soil (i.e. the oasis' fertile soil). Its surface seemed relatively flat, and averaged 609.35 m in elevation (**Fig. 4**). One could observe the presence of ruts perfectly oriented along a north-south axis; these deeply marked the surface of US 105 (**Fig. 7**). Two parallel ruts, separated by a distance of 30 cm, were visible from the sounding's southeast corner. The third rut, also parallel with the two other ones, is located 1.95 m to the west of the first one. The width of the ruts does not exceed 20 cm. They are



Fig. 7. Ruts visible on the surface of 2105 (DJ2012a0106, reframed)

all earlier than the construction of the road, having been covered by deposited fill US 2106 (**Fig. 6**) and sandy layers 2104 and 2104 (**Fig. 4**).

Excavation of this very thick soil layer (2105) was done in three successive arbitrary levels, separating the remains unearthed. The first was 5 cm in thickness and meant that possible interferences and disturbances caused by more recent layers (debris, pieces of plastic...) was reduced in the layers below. In the absence of visible structures, we proceeded to a second deeper picking, 15 cm thick, in layer 2105, and sampled ceramics and bone assemblages. This layer was also found to be void of any archaeological structures. Finally, we made a third picking, reaching bedrock. In total, layer 2105 is 45 cm thick in the western part of the trench and 70 cm in the trench's eastern sector (**Fig. 4**). Above, a brown-greenish layer (2107) shows an even more compact structure and a more clayey or marly texture than US 2105. Its surface is sloped, and elevations range from 608.62 m in the eastern part of the sounding to 608.88 m in its western part.

At a distance of 80 cm from the western edge of the sounding, a different layer appeared at the same level as 2107. US 2108 (**Fig. 8**), also covered by 2105, similarly consisted of compact greenish matter, but, by contrast with 2107, its structure was very stony (pebbles and stones around 5 cm in diameter), with some fragments of masonry mortar in the southern part. Numerous pottery sherds and fragments of bone were collected in this jumble of pebbles and stones (**Fig. 4**).

Following the discovery of this interesting layer at the sounding's western limit, it seemed useful to extend the area under excavation. An additional opening of 3 x 3 m (**Fig. 2**)

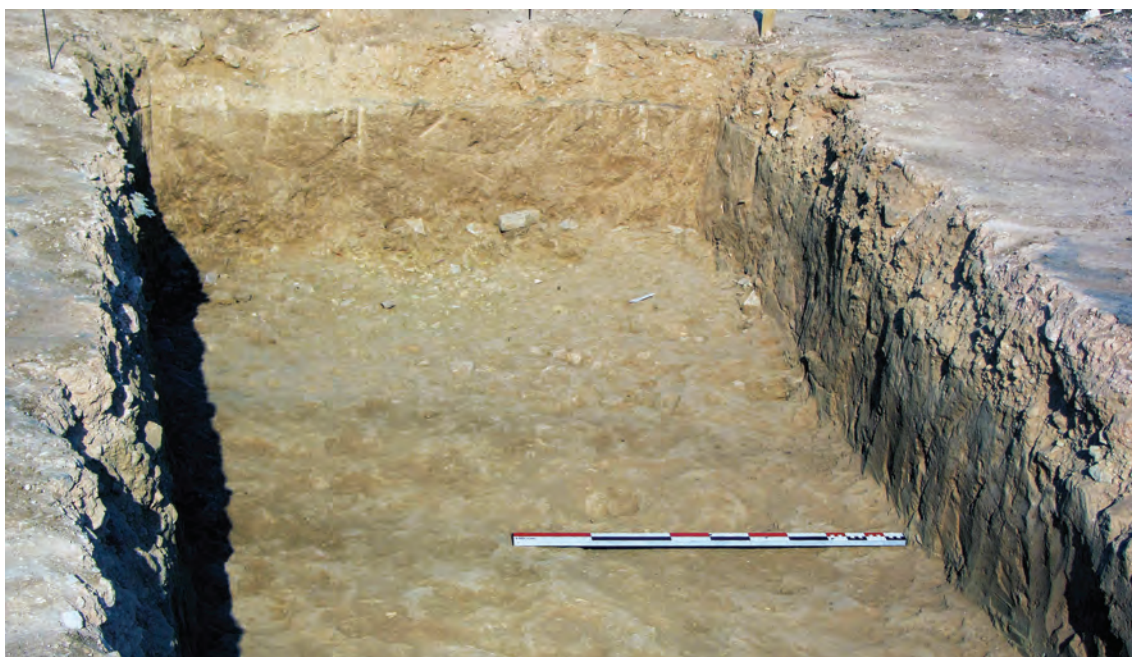


Fig. 8. Layer 2108, looking west (DAJ2012a0508B, reframed)

was dug towards the southwest in order to better grasp the spatial extent of 2108 and the possible origin of the mortar (perhaps from a wall).

After the removal of the uppermost layers in the opening, we were able to observe the presence of a few stones (15 cm in size) and of mortar debris at the base of 2105 (608.88 m) (**Fig. 9**), resting upon lower layers (2107 and 2108). After cleaning, the surface of layer 2108 became clearer and was traced as a spread of stones, with pottery sherds and bone. Then, during excavation, it was proven that 2108 was the upper spread filling of a pit (L2179) dug into layer 2107 (**Fig. 4**). Its main filling was layer 2109, located under 2108. It is even more compact, with a great density of hard limestone strips (**Fig. 10**), and finally it contains very many remains. A small sounding was necessary to outline more precisely the exact contours of pit 2179 in 2107. Once these contours were evident, the edges indicated that the pit spread beyond sounding 7, towards the north (**Fig. 2**), and that its dimensions were larger than 2.50 m from east to west and 2 m from north to south. Its depth did not exceed 23 cm, its basal elevation being 608.65 m..

On a limited surface, pit L2179 yielded abundant archaeological material. Layer 2109 in particular sealed 23.5 kilograms of pottery sherds and many faunal remains, mainly concentrated in the area with the highest density of sandstone small stones and gravel. Isolated objects also originated from this zone:



Fig. 9. Mortar debris at the bottom of 2105



Fig. 10. Pit L2179 in section



Fig. 11. Bronze plaque DJ.11.C.O.2109-1

- Pottery 2109-1, which was a jug with a handle, archaeologically complete, with traces of burning, found at an elevation of 608.70 m.

- Object O.2109-1, a bronze bladelet in the shape of a leaf (dimensions 2.8 x 1.6 x 0.2 cm) (**Fig. 11**).

- O.2109-2, a fragment of small quernstone (?) made of basalt (dimensions 5 x 4.5 x 4 cm).

- O.2109-3, a typically ancient fragment of wall plastering, with a smooth face (dimensions 5.5 x 4.5 x 1 cm).

In the search for further clarification of the function and composition of layer 2107, a sounding was begun to the east of the trench until reaching an elevation of 608.52 m. The structure and composition of this layer became extremely compact and void of any structural remains whatsoever. At the other end of the trench, the same layer was sounded until an elevation of 608.56 m was reached. In this area, the frequent presence of a white fibrous mineral similar to asbestos was recorded, and the material itself was sampled.

In summary, trench SD7 and its extension has enabled the expedition to explore a surface of 25 m² from an archaeological perspective, up to a depth of 1.26 m, in the very heart of the oasis' lowest wadi. Even though pit L2179 was the only archaeological structure

identified, its future study will be very meaningful, since it was sealed by dark fertile soil layer 2105 (**Fig. 2**). This rubbish or refuse pit indicates human activity in antiquity in this sector of the oasis, probably of a domestic nature. It also permits the establishment of the elevations of ancient layers in this same sector, which are to be found at a deeper level than soundings 3 and 8. Moreover, the elements of masonry identified indicate the presence nearby of ancient buildings.

To conclude, it appears that in this sector we are dealing with a succession of flat layers of clayey soil, which themselves seem to indicate the existence of exterior floors, perhaps under cultivation, located not far from domestic occupation.

Sounding 8

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& Samir al-Tawati (SCTA)

Sounding 8 (SD8, **Fig. 1**) was opened on 5th November 2012, ca. 160 m. east of sounding 3 opened in 2010 and 125 m. north of sounding 6 opened in 2013. It is located in the valley, at the bottom of the sandstone outcrop called *Rijm al-Burj*. It is an unoccupied area flanked to the north and south by modern roads, to the east by a farm enclosed by a wall of concrete blocks, and to the west by a bordered area where a building was under construction during excavations (Charloux, Cotty *et al.* this volume: Fig. 1). Several parts of the plot seem to have been disrupted by bulldozers and a large sector in this area is currently used as a dump and much rubble is scattered at that location.



Fig. 1. Sounding 8 during fieldwork

This location was chosen because of the architectural remains emerging from the surface: a long wall protruding above the surface and a jumble of stones. We chose to study this plot not only to determine its nature and the kind of occupation within the enclosure wall, but also to raise questions among the farmers about the necessity of preservation of the archaeological remains in the oasis.

The Surface

The first stage of fieldwork consisted in clearing the area: removal of the scattered plants and the mound of aeolian sand gathered at the base of the vegetation stems, garbage and concrete blocks. The clearing of the emerging structure (M2300) revealed a double faced wall of dry hewn stone which extends in a curve for approximately 14 m (its width varies between 30 and 40 cm) (**Fig. 2**). The eastern extremity of the wall shows a mound of assembled stones lying on their edges and interrupting its extension. On the eastern part of the wall, to the north, two small mounds of stone and sand were visible; initially these seemed to be a jumble of material without any planning (2303-2304). A small sounding on the northern side of the wall was then opened in order to reach its base.¹

The two mounds of stone (2303-2304) lay on sandy earth probably disturbed in modern times. Besides Islamic and Nabataean fine ware pottery sherds and coins (not yet restored and identified), we exposed plastic, modern glass and mammal bones (with flesh remaining on them) indicating that the structure might have been recently disturbed. We suppose that this spread of stones may be a more recent structure disturbed by bulldozers.

1. See below, **Fig. 3** and **Fig. 10**.

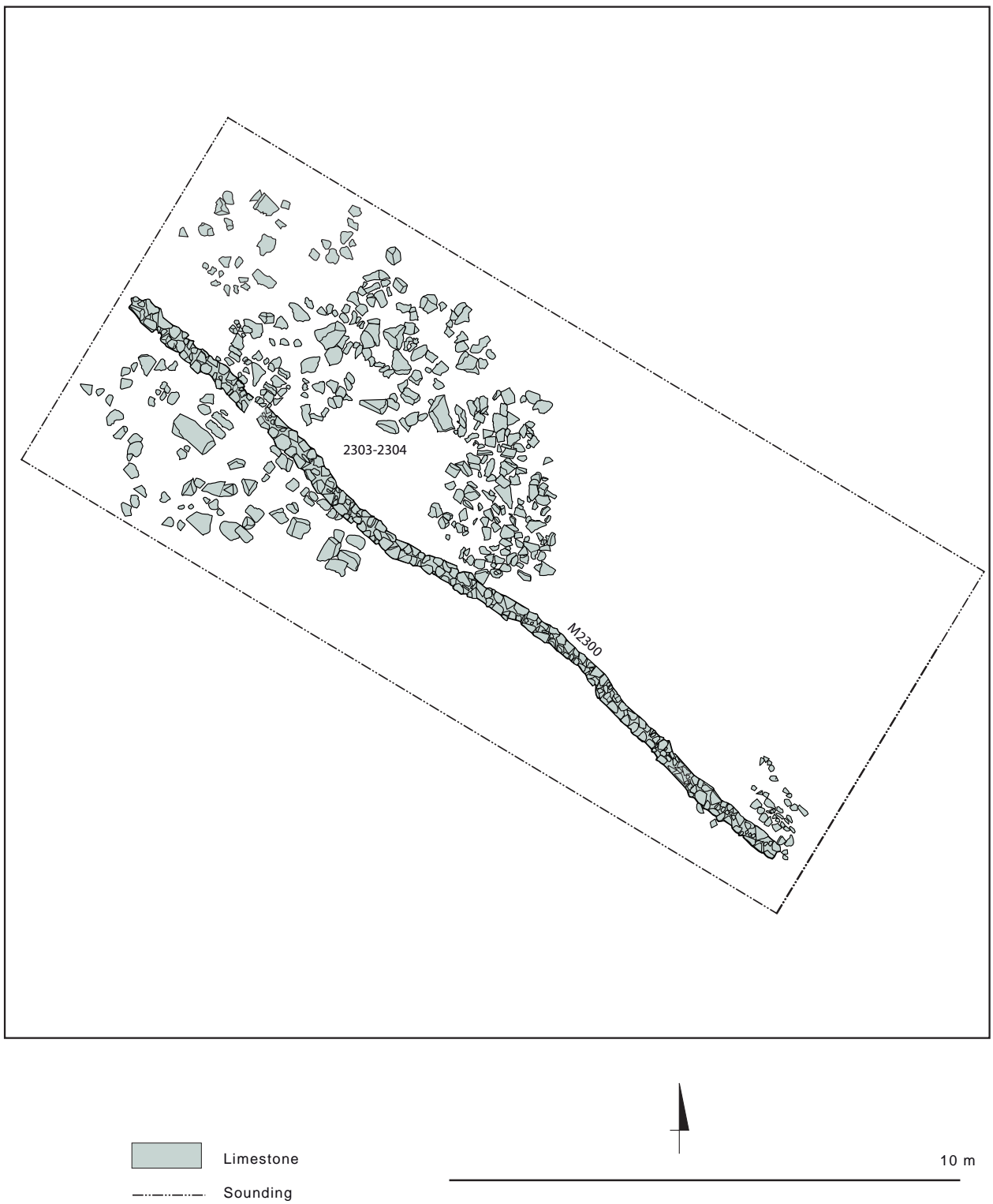


Fig. 2. Plan of sounding 8 (upper level), Sector C

Level 1

The two mounds 2303-2304 lay on soil showing a slope rising slightly northward (2305) (**Fig. 3**). A similar floor (2309) with the same shallow depressions and crackles due to water was noticed on the other side of M2300. Unlike floor 2305, some pottery sherds lay flat on 2309. Indeed the western part of the sounding, south of M2300, revealed the higher density of remains in the area.

In a small sounding, slightly under floor 2309, at 610.61 m above the sea level, we cleared the upper part of M2301, whose northern face seems to abut the sandstone wall M2300 along a length of 2 m. It is made of poor quality bricks which melted all around (of variable size: 20 x 15 x 9 cm and 45 x 15 x 9 cm). Only one course survived, and in some cases just a scatter (bottom elevation: 610.54 m). The melted mud bricks seal some anthropic materials like pottery sherds and a thin rope at 610.47 m.

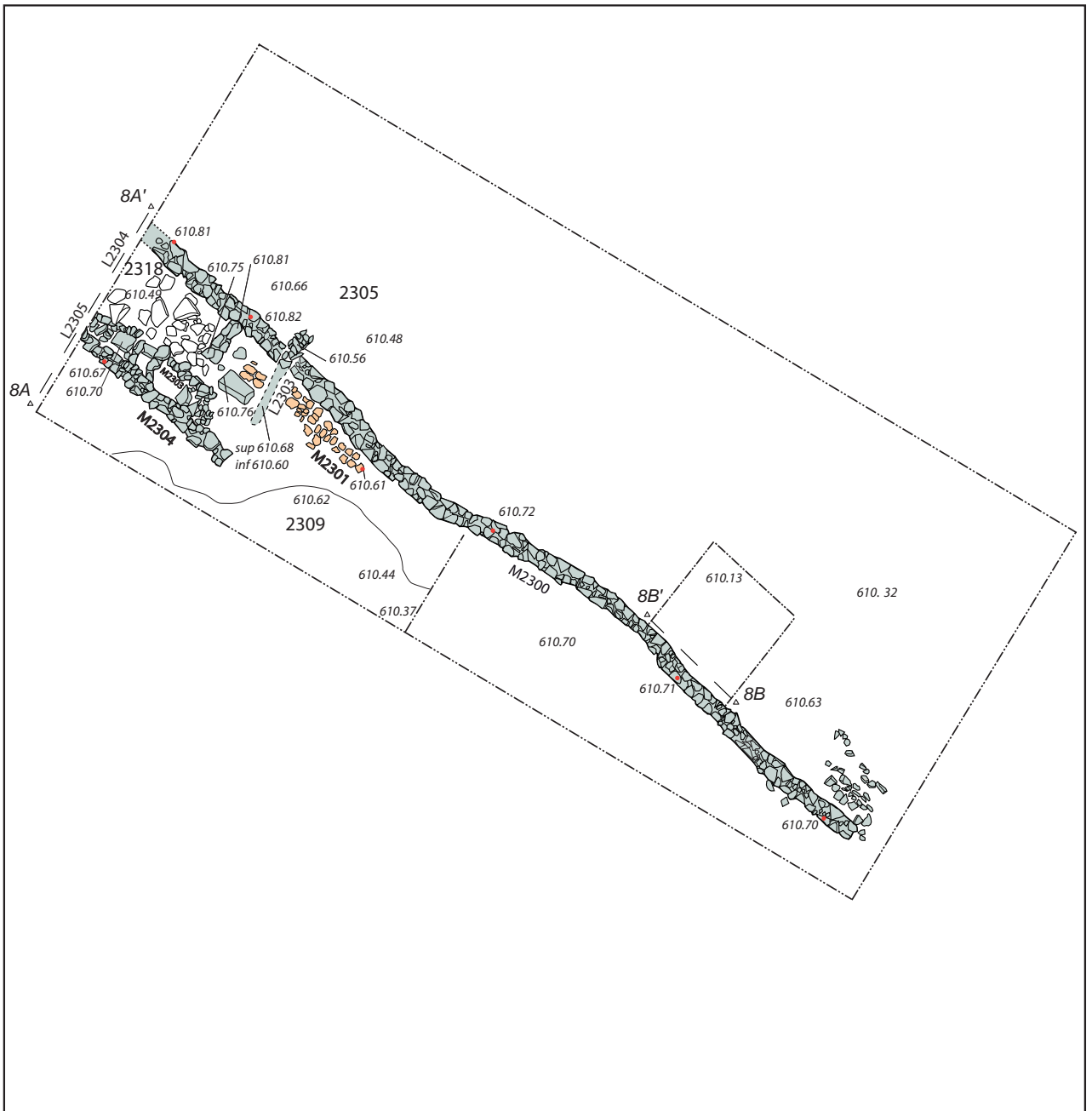
We do not know if the remains of M2300 and M2301 are levelling of higher walls and if there was a large chronological hiatus between the use of those two walls but we should emphasize that the mixed technique of mud brick wall abutting on a sandstone wall was already seen on the western enclosure wall.² Quite obviously the building of M2301 is later than M2300. It is evidence of the reuse of M2300, probably in order to prevent runoff, or maybe to make wall M2300 waterproof and channel the water.

Indeed, a gap in wall M2300 was located where a water channel was found; it is made of small sandstone blocks lain flat and set obliquely (L2303). South of M2300, the water channel is not built of stone but of amassed and laminated silty clay. This section of the channel (top: 610.68/ bottom 610.60 m) was filled with compact melted mud bricks due to water and the proximity of mud brick wall M2301 (**Fig. 4**).

Considering the orientation and the slightly north-south slope of L2303, we suppose this structure was meant to let the water drain through the channel into a so-called garden or field on the eastern part of M2300. Unfortunately only 2 m are preserved and we do not know if there is a section to the north, or if there was a tank flooding the channel. Even where water was drawn from to irrigate the crops is unknown. A large block of sandstone (**Fig. 4**) could have been used to obstruct the water channel.

Under this rough-hewn sandstone block, mud brick wall M2301 and channel L2303, a spreading of ashy and sooty layers have been found (2317-2326-2327-2311-2312-2316) (sampled). There are ashy lenses and sometimes real fireplaces. For example, 2317 is 30

². See Charloux *et al.* 2014 (Sector C, *Dûma 1*).



- Limestone
- Mud-brick
- Sounding



10 m

Fig. 3. Plan of sounding 8, Sector C



Fig. 4. Phase 1 seen from the northwest

cm in diameter and 10 cm in depth; it contains ashes and a large quantity of charcoal, burnt date stones and burnt mud brick fragments (Fig. 5). It is hoped that the sample collected will inform us about the environment of the oasis. These ashy layers and fireplace lay on 2328 – a heterogeneous loose brown sand spread with inclusions of gravel.

To the west lay a poorly built wall (M2302), which forms an angle with M 2300. It is preserved on 2 or 3 courses made of two rows of blocks (Fig. 3). To the south, M2304, a long wall (3.50 m in length and 0.30 in width) parallel with 2300, comprises 3 courses made of two rows of blocks. Its extension seems to stop where the drain L2303 could have passed. M2308, a short wall is perpendicular to M2304 and forms with M2302 a line interrupted by a door/gap. It enclosed paved area L2304 (made of white shelly limestone slabs lain more or less flat. Those slabs are embedded in a very compact clayey floor (2318). We also noticed shallow depressions, maybe due the presence of water. Considering the different angles of the limestone slabs - mainly in the eastern part of L2304 - the area might have been reoccupied by squatters (flat slab: 610.59 / leaning slab: 610.62 610.53). A stone artefact with a hole (also shelly limestone), maybe a re-cut millstone, was used as slab pavement (Fig. 6).

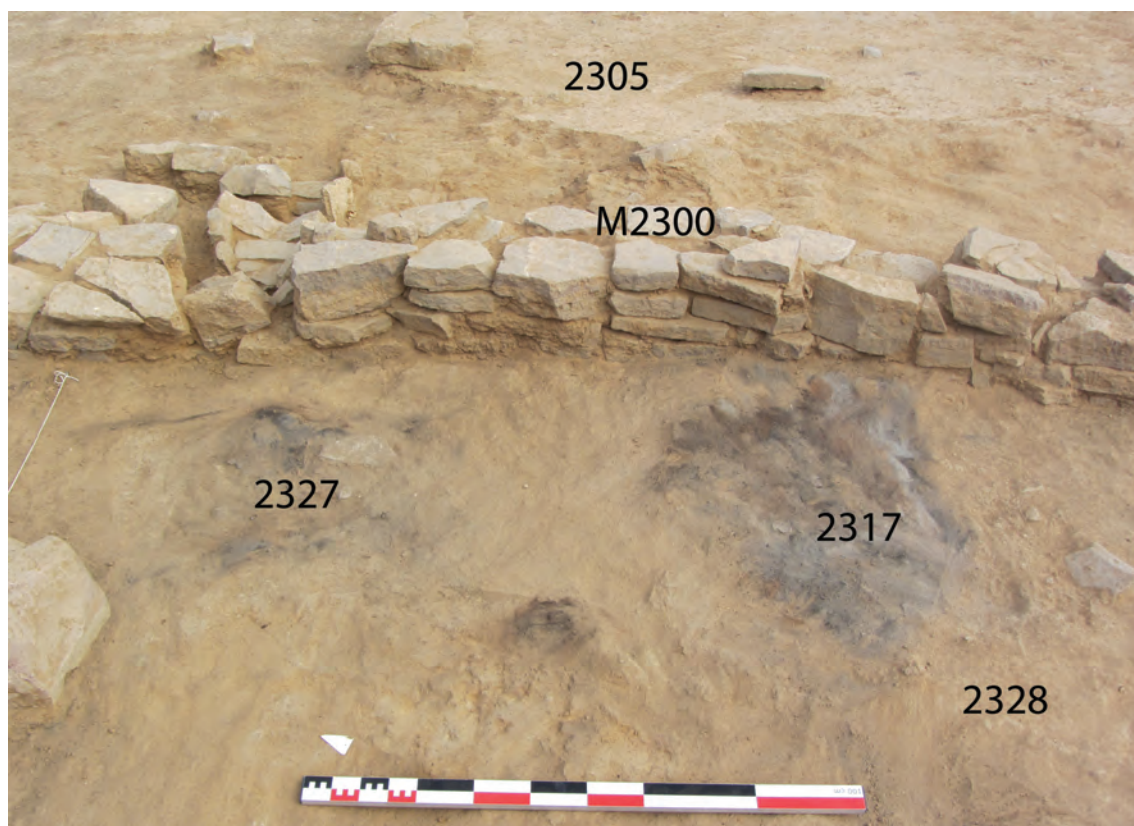


Fig. 5. Fireplaces 2327 and 2317 seen from the west



Fig. 6. Reused millstone in the pavement 2318

Parallel to M2304 are two roughly built walls (M2303-M2307), preserved over three or four courses. M2303-M2307 are separated at a right angle by two short walls (M2305-M2306). Those walls draw the outline of bins, maybe all covered with slabs in the past. At the beginning of the excavation, one covering slab was missing, one was collapsed and another one was still in its initial position. The eastern bin (0.65 x 0.55 m) is filled with greenish silty marl 2330) (sampled). The western one is 0.45 x 0.40 m and was covered by several broken slabs.

L2305 lay on a mound of very compact whitish shale with small nodules of white inclusions (2325, alt.: 610.59). This would show that stability was required by the builder for this structure. The structure's base is situated at 610.39-610.41 m above sea level.

Its interpretation is not yet reliable, but we note that M2300 and the L2305 are bordered by a paved area (L2304). These loci could have been a part of an external building such as a farm. Indeed, the presence of ashy layers outside loci L2304 and L2305, and the ground stone, can let one imagine that agrarian activities were taking place there. Unfortunately, the function of L2305 is still hard to determine, as the structure and walls disappear under the baulk. It could also have been a storage area or a substructure for a stair. Anyway, in the western part of M2300 traces of some structures and anthropic activities were discovered, while there was nothing in the eastern part; obviously the eastern part was a field or garden.

Level 2

The 2331 layer is sterile aeolian sand under floor 2318 in locus L2304. At 610.20 m above sea level, a coin was discovered very close to M2300 in 2331.³ It could yield a *terminus post quem* for the building of this long wall. Under 2331 lies a very compact white silt layer numbered 2329 (**Figs. 7-8**). The western part of wall M2300 is built on this layer at 610.43-610.45 m. There are five courses in this sounding (**Fig. 9**), whereas the eastern part of M2300 had nine courses preserved over a width of 45 cm (**Fig. 10**). It lay without preparation on the 2315 layer (compact brown to black clayey silt with whitish inclusions). The bottom of the first course reached 610.31 m. above sea level. We did not notice any preparation layer or foundation trench in either soundings.

The ashy layers and fireplaces on the northern side of M2300 and east of M2302-2303 lay on 2328 - a heterogeneous loose brown sand with gravel inclusions, approximately 30 cm thick. The lowest level reached during excavation was a whitish compact floor found acci-

³. But registered in 2318.

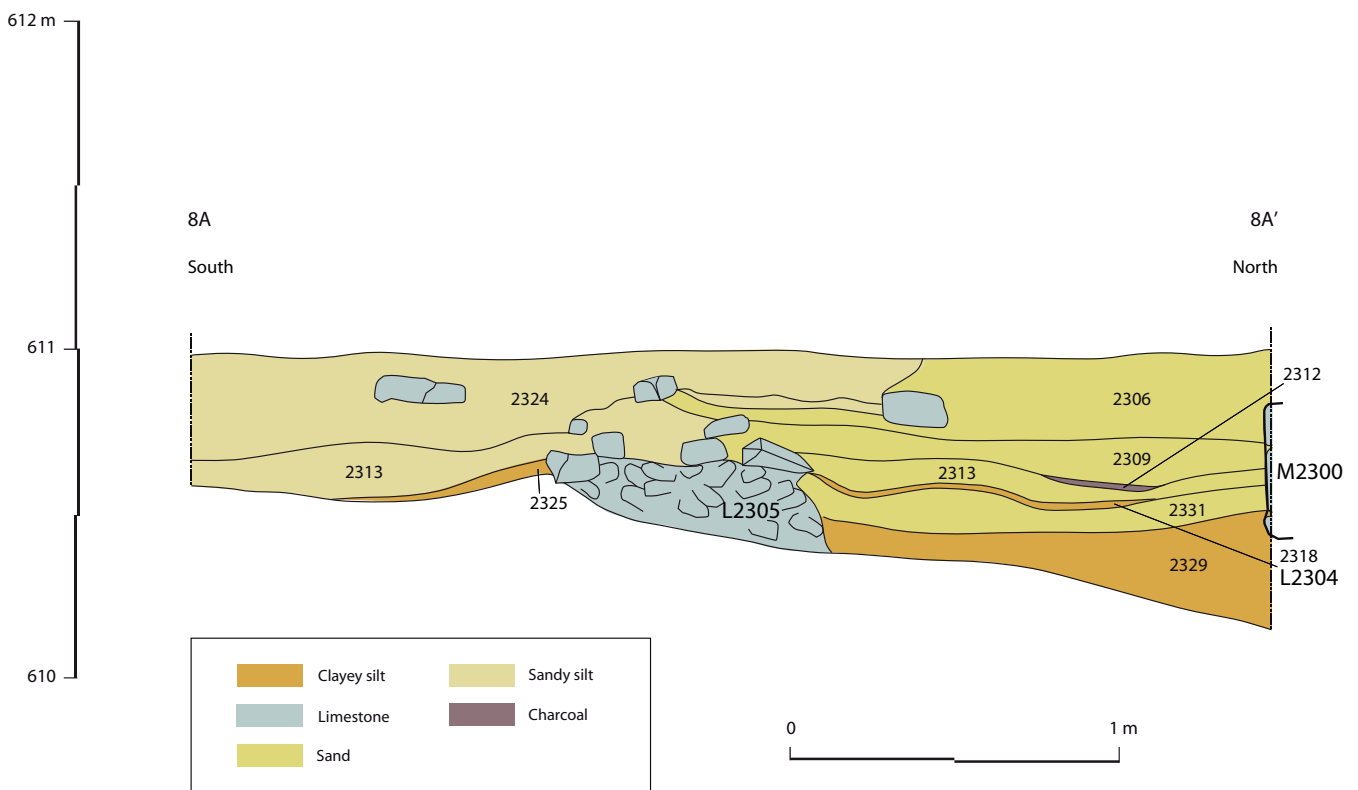


Fig. 7. North section BB', sounding 8

dentally when a worker emptied a foxhole (2320) filled with sterile grey to brown sand at 610.26 m above sea level.

In conclusion, sounding SD8 complements the excavations conducted in 2010 a hundred meters away. These had also revealed garden walls, water distribution systems and even a wall using for damming purposes.⁴ Indeed the depression, enclosed by the fortification wall and where the current gardens still lie, seems to have had the same use in Antiquity. We shall recall that until recently Dûmat al-Jandal was a wetland,⁵ but we still know little about the water supply in ancient times. We can just notice that water distribution of the garden facilities was restricted in order to ease maintenance and rebuilding.

Though the question about the date of the remains unclear, it should be noted that the amount of material collected is not huge, probably due to the fact that, strictly speaking, we are not dealing with residential or even domestic buildings. For the time being, the pottery collected in the undisturbed levels is dated from the late Nabataean to Roman-Byzantine period, but the study in progress will refine the chronology.

⁴. See Charloix *et al.* 2014 (*Dûma I*, Sector C).

⁵. In the 1980s, a lake (at the current location of the *sebkha*) was drained for agricultural land and substituted by an artificial lake.



Fig. 8. Final view, lower level



Fig. 9. Western face of M2300

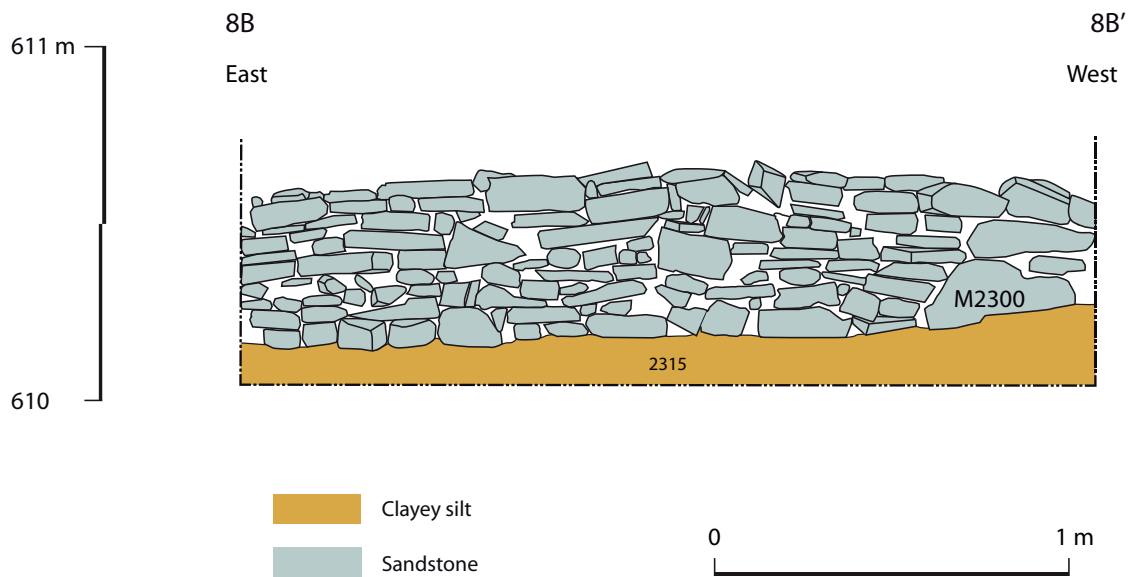


Fig. 10. Eastern face of M2300

Sounding 9

Emmanuel Lanoë (graduate of the EPHE), Majîd Ibrâhîm al-Faqîr (SCTA)
& Dar'an al-Qahtani (SCTA)

Sounding SD9 is located less than 90 m to the south of the northern branch of the enclosure wall, and borders the ecotone between the fertile valley of the oasis and the desert plateau (Charloux, Cotty *et al.* this volume: Fig. 1). This limit is nowadays marked by a recent canal oriented E-W, itself bordered to the north by a beaten earth track, whose construction bisected the enclosure's western branch at the level of SD1 (**Fig. 1**). This part of Dûmat al-Jandal's enclosed area is still unexplored from an archaeological viewpoint, and only a sketchy ground plan of emerging wall sections was available before our research began. Yet large earthworks carried out by a bulldozer (probably to enlarge the present-day path) recently carved into the southern edge of a slight promontory overlooking the valley and recut ancient walls, offer clues of ancient occupation in this presently deserted sector. These huge digging works have fortuitously created an archaeological section about 50 m long that had to be recorded and interpreted, prior to any further intervention.

Our first action was to proceed to the cleaning of this long section with a team of 4-5 workers (**Fig. 2**). Moreover, in order to enlarge our vision of the neighbouring environment, we also weeded and cleared the small plateau located on the promontory that overlooks the area excavated by machines.

Mechanical digging has cut considerably into archaeological levels as well as into bedrock, and this cut provided information on the site's general topography. The latter is heavily influenced by the shape of the limestone rock substratum (US 2400), which itself follows an ascending, undulating, curve of approximately 6.15%, from 608.02 m to the west (point 0 of the section) until 609.40 m at 22.40 m on the section's axis. Its upper level then stabilizes and becomes almost horizontal over a length of 17 m, until it begins to decline and to fall again in stages, until an elevation of 608.96 m is reached at 51 m from the datum (0 on the calibrated axis).

Mechanical excavation also permitted an overview of aspects of local geology. The rock substratum is a very porous reddish to pinkish limestone (?), with numerous vertical fissures. The presence in the mass of rock of strata of iron oxides, of a little calcite, as well as the

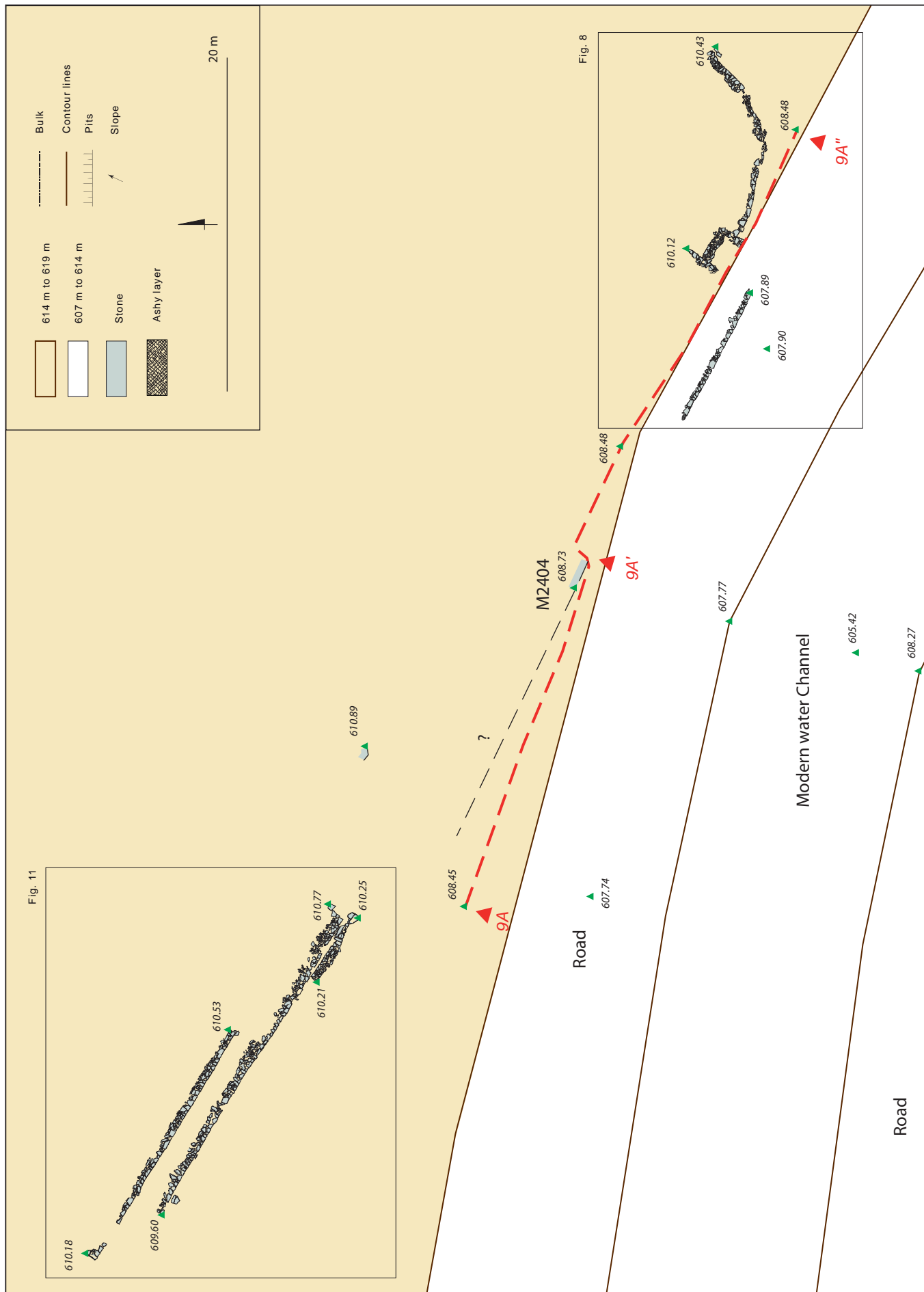


Fig. 1. Plan of the sector concerned by the study (SD9)



Fig. 2. View of the topography of Sounding 9 and of the long section, towards the east.

inclusion of blocks of much more compact angular sandstone, probably indicate a cementation process (or “sandstonification”) of displaced materials, perhaps due to the dynamics of colluviation. The rock surface has a tendency to erode easily and to crumble until it becomes sandy once more.

This geological layer is then either preserved right up to its natural summit, or cut by archaeological structures.

At its summit, the section is covered by a very clayey, silty and compact earth layer (US 2401), which sometimes reaches 1.17 m in thickness, and is made up by recent deposits of spoil and rubbish (plastic refuse), the latter probably related to the digging or cleaning of the nearby canal. This layer seals another one, made of light yellow sand (US 2402), which itself covers the desert plateau. This sand layer, intermixed with blocks of degraded and decomposed sandstone, is at times more than 60 cm thick if one measures it from its base (i.e. at the point of contact with the eroded surface of the rock, US 2400). The sand is perhaps a product of the erosion of the upper mantle of rock, but could also come from an aeolian deposit, as well as from colluvial material and gully erosion in its upper part, which is generally quite stony. This sandy mass almost everywhere seals archaeological levels and these are identified in the section.



Fig. 3. The long section of sounding 9 and the detail of the western part

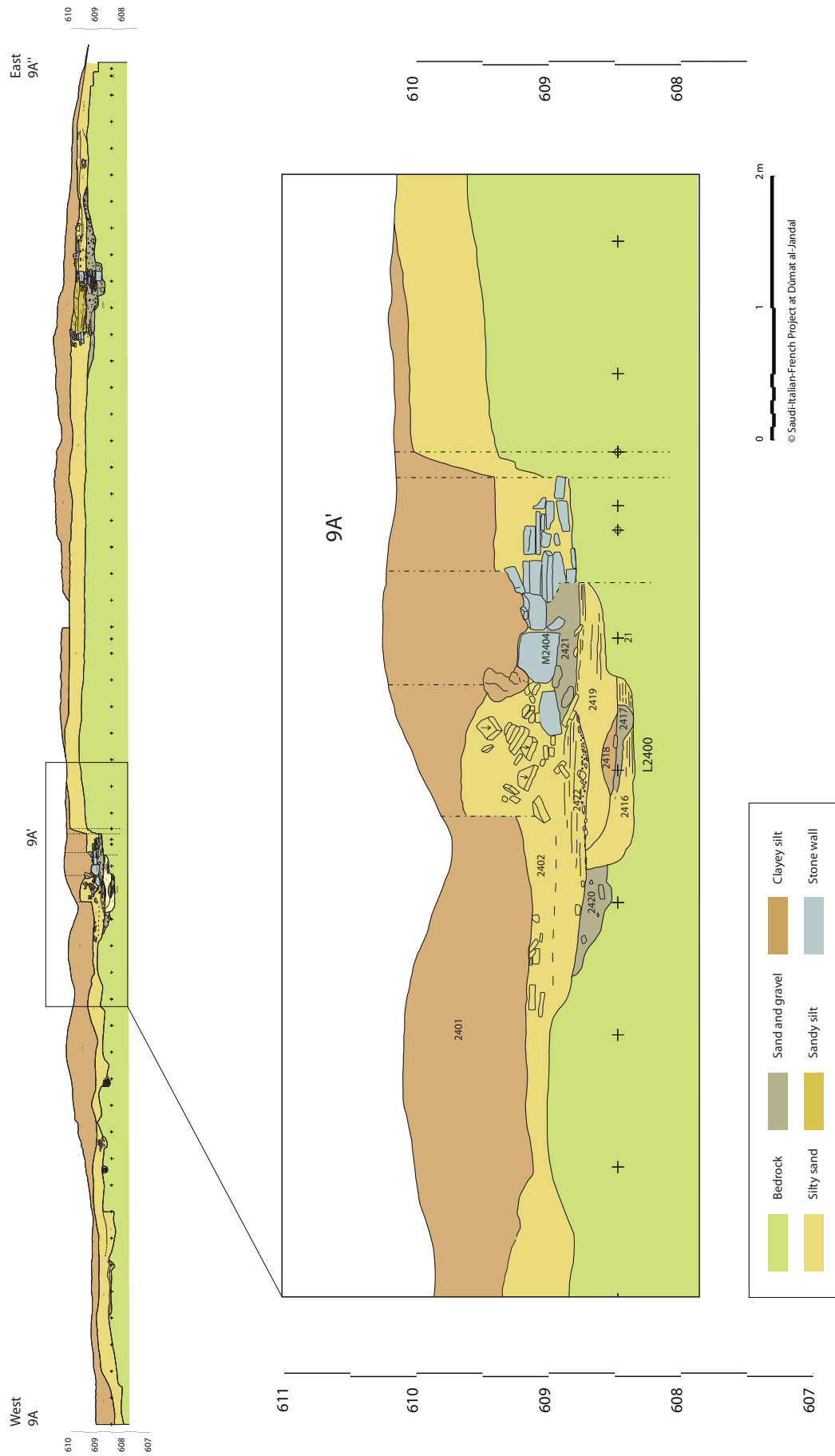


Fig. 3b. The long section of sounding 9 and the detail of the central part

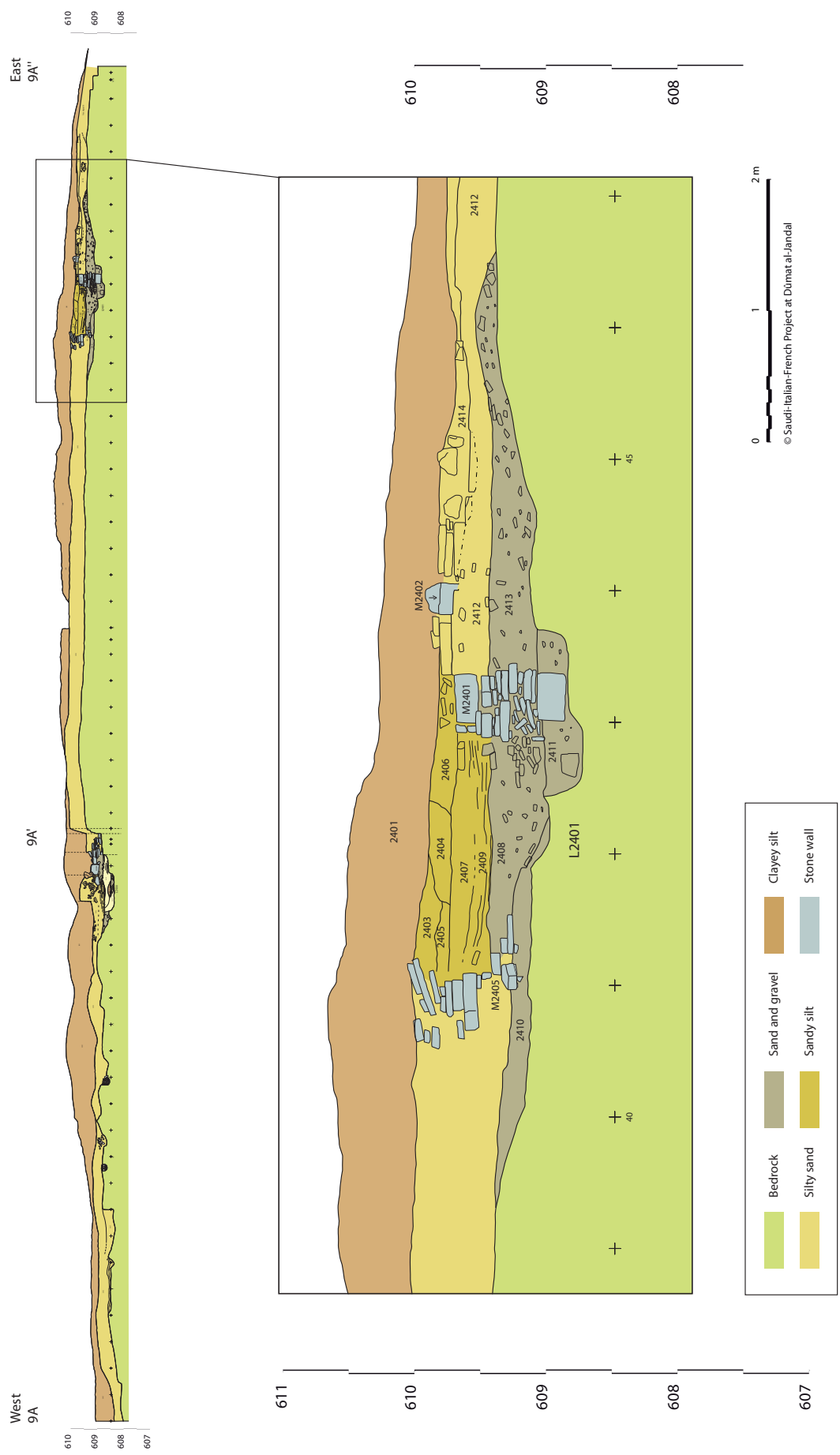


Fig. 3c. The long section of sounding 9 and the detail of the eastern part

In the section, archaeological clues identified in the westernmost part, starting 4 m from the graduated axis, lie in a slight hollowing with quite a flat bottom. It is at most 0.15 m deep and 2.15 m wide at its summit. This cavity is filled with fine sand containing some rare stones (US 2426) (**Figs. 3a-4**). This fill is then undercut in its eastern part by a small V-shaped pit (or a little ditch), which is 18 cm deep and hardly 45 cm wide at its summit. The last was filled with sand and small bits of sandstone gravel (US 2425). The entire set is sealed by a crumbly layer of brown-greenish sandy silt – US 2424 – perhaps the remains of a floor at an elevation of 608.50 m.

This thin structure is directly bordered to the east by a more marked cavity approximately 1.80 m long, whose limit forms a step in the rock 0.4 m deep. This depression is filled by US 2427: sand loaded with sandstone gravel, leading one to imagine possible colluvium from decomposed and crumbling rock. Though quite scanty, the stratigraphy seems to indicate that this episode occurred later than the formation of the group of layers already described.

Then, between the 8 m and 18 m points, the summit of the substratum shows a very uneven relief fluctuating between elevations of 608.57 m and 609 m, and only two curious pockets of small boulders 3 m from each other appear to fill small rounded cavities of about 30 cm. In the present state of research in the field, their anthropic character is not proven.

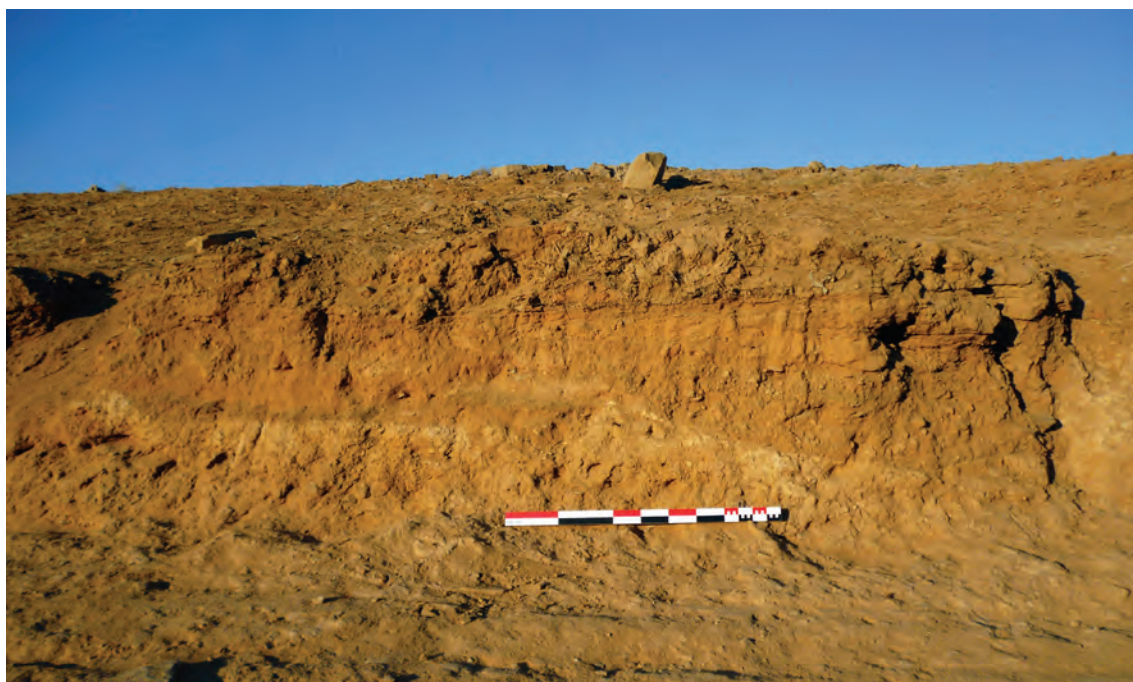


Fig. 4. Western part of the sounding 9 section



Fig. 5. Central part of sounding 9

Beyond 18 m, an area of human occupation is clearly identifiable. It is first of all characterized by a succession of hollows and infillings (**Figs. 3b, 5**).

The first hollow seems to correspond with a cavity in the rock filled by a layer of gravel and of slightly silty compact sand (US 2420), whose western edge is at an elevation of 608.82 m; the cavity then sinks in irregular fashion by 30 cm, and rises slightly further, before being cut by a new excavated hollow.

The latter reveals a more complex fill and was recorded as pit L2400. This pit appears to have been open for quite a long period; it could be identified because of the nature of its first level of infill. Layer 2416, apart from some gravel lying at its base, seems in effect to be a deposit of aeolian sand, as attested by the fineness of its grains and the succession of very thin strata observed in the field. It is then slightly cut in its middle as far as the pit's base (at an elevation of 608.35 m), something which is shown by a different infilling of small gravel (US 2417). Directly above it is superimposed a compact layer of brown silt (length: 61 cm, height: 11 cm), appearing in the section in the shape of a lens (US 2418). The top of previous levels is then gradually filled to the elevation of 608.76 m by aeolian sand (US 2419) which spreads to the east, beyond 21.42 m from the datum on the calibrated axis. This is where a new hollow was dug; it was shallower and cut into, as from 18.12 m from the datum, the edge of the rock and partially the top of layers 2420, 2416 and 2419. The concave and very indurated surface

created was no doubt trodden on, and a bedding of gravel was spread on the bottom. It was succeeded by an infill of highly laminated fine sand that could be the result of aeolian deposits or of a succession of floor remains over a depth of 20 cm (US 2422), since the division here with thick upper sandy layer 2402 is difficult to establish.

A little further to the east, at a point along the axis located 22.21 m from the datum, the bulldozer excavated deeper into the rock substratum, pushing back the section towards the north by 1.45 m. This cut into a stone wall at a straight angle (M2404). Its orientation was northwest / southeast, and its southern facing is also visible at the angle where the section was pushed back (**Fig. 6**). At this level, it stands at a height of 50 cm and is preserved over the same width, with courses of hard sandstone slightly inclined towards the south. This inclination is no doubt linked to the pressure exerted by the gullies on its northern flank. Incidentally, some blocks of the southern facing tipped over the section very heavily. One of the blocks, belonging to the upper courses, partly rests on a layer of silt intermixed with sand and stone (15 cm in width): US 2421. This layer is in contact with the southern facing and appears more or less at the foundation level of M2404 (at an elevation of 608.78 m). It is still difficult to state whether the remains of wall M2404 are at foundation level or if they are the remains of several courses. Moreover, its extension towards the southeast is lost. However, a sounding carried out at the end of the season confirmed that the wall ran towards the northwest (16 m from the section's axis), but this part of the structure is less preserved (**Fig. 1**). Excavation in the future will enable us to complete our knowledge of this feature.

Beyond the segment of M2404 at 22.20 m, the section did not reveal any features for a distance of 17 m towards the east. Beyond that area where the sandy and apparently virgin sandy layer 2402 appears to rest directly upon bedrock (at a maximum elevation of 608.59 m), one finds once more a sector with a high concentration of archaeological remains (**Figs. 3c, 7-8**).

In effect, between 39.30 m and 45.90 m, the bedrock – until then level at an elevation of 609.38 m – reveals a long cavity whose sides are very flared. Moving from the west, one sees its bottom becoming level at an elevation of 609.11 m over a length of 1.80, before dropping once more by another 15 cm. A compact sandy layer with small stones from a degraded substratum (US 2410) rested on this surface. At a point 42.43 m from the calibrated axis a very marked cavity can be observed, 1.26 m wide and up to 28 cm in depth. Its function as a foundation trench is secure, judging from the infilled material (sand and small stones: US 2411), in which was embedded a large block of sandstone of 36 x 22 cm. The last was used as a foundation for a wall substructure (M2401), bisected by the section. The foundation is a little more than 30 cm in height, with a narrow base but becoming wider, reaching 57 cm

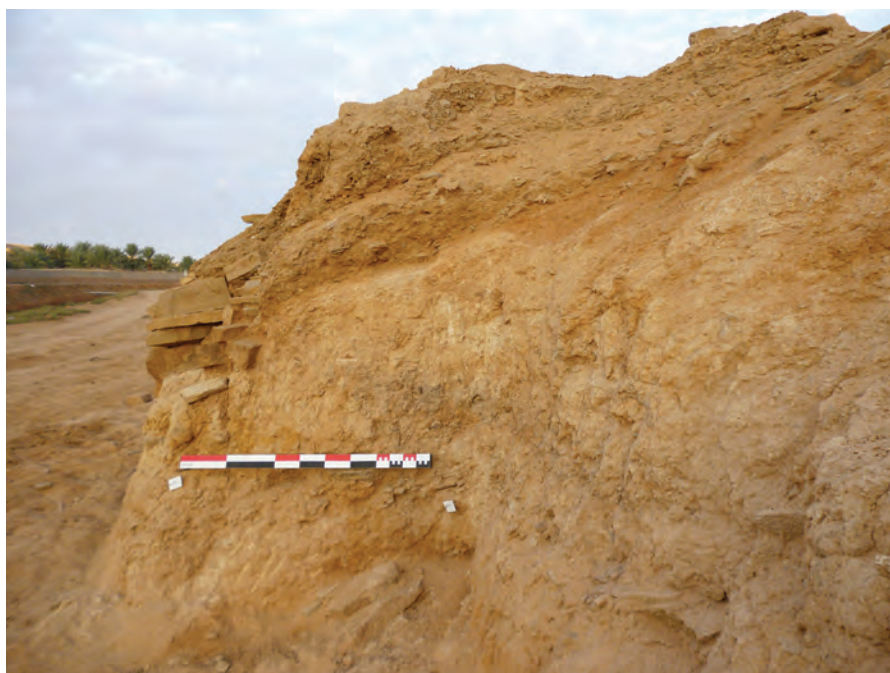


Fig. 6. Discontinuity in the section of sounding 9, view towards the northwest



Fig. 7. Eastern sector of the section of sounding 9

in some places. Despite its irregular aspect (size of the stones used, variations in width), this foundation was very stable thanks to a thick infill of sand and sandstone pebbles laid at the same moment (numbered US 2408 to the west and 2413 to the east).

Apart from this function, the way its summit was made reflects that the feature was meant to create a level area compensating for the slope of the substratum and catching up with the top of the rock to the east. Likewise, to the west of the foundation, infill 2408 was made stable at an elevation of approximately 609.42 m, thus sealing the eastern part of layer 2410. It finally abutted the massive feature M2405; this curious piling up of sandstone slabs placed at the centre of 2410 is 57 cm wide at its base and narrows to only one stone at the top, whose surface corresponds to that of 2408. It thus seems conclusive that the builders attempted to create a floor bordered by two parallel walls. First of all, to the east, wall M2401, which rests on the previously described massive foundation, is 47 cm wide at 609.40 m and is preserved in the section over a height of approximately 30 cm. On the other hand, the existence of a construction using blocks of various sizes, set above M2405, but slight offset to the west, has been observed. Only its eastern face is aligned. The space bordered by the two walls described is 1.80 m wide and seems to have been used, at least in part, as a basement. In effect, M2403 bordering it to the west has all the appearances of a terracing wall used to retain the sand to the west. A succession of layers of laminated aspect (recorded as 2409) then rests on the top of pebble floor 2408. It seems an accumulation of fine floors and aeolian sand deposits 30 cm in thickness, on which rested US 2407, comparable in nature and whose summit marked the end of the feature (at an elevation of 609.72 m). The layers then resting at the surface are most likely the result of a process of destruction or abandonment. US 2406 is a layer of sand and silt mixed with stones and boulders resulting from deliberate demolition, resting on the razed top of M2401. US 2404, its western neighbour, appears to be a 16 cm thick pocket of decomposed silt (from the erosion of mud bricks?). At its contact, a sandy-silty deposit of 10 cm is inserted right up to the eastern edge of the upper disturbed courses of M2403. Finally, a sandy deposit at the top covers the latter entirely (US 2403).

Outside the previously described space, against the eastern facing of wall M2401, a thick layer of sandy silt (US 2412) can here be noticed; it reaches 30 cm (**Figs. 3 & 7**). That it came into contact with a wall located about 40 cm behind/inside the section is noteworthy. This wall is connected at right angle with M2401, and it follows the section's extension towards the east. This wall M2402 has the peculiarity of following a curve, in fact a more or less quarter circle with a radius of 6 to 7 m (**Fig. 8**). The beginning of this wall was cleared for approximately 7 m to the northeast of the section. There it is resting on the top of bedrock, and is preserved over only two courses, at an elevation of 610.57 m. It shows a unique facing to the east, which is almost rectilinear, made of large, well-arranged blocks, which precede

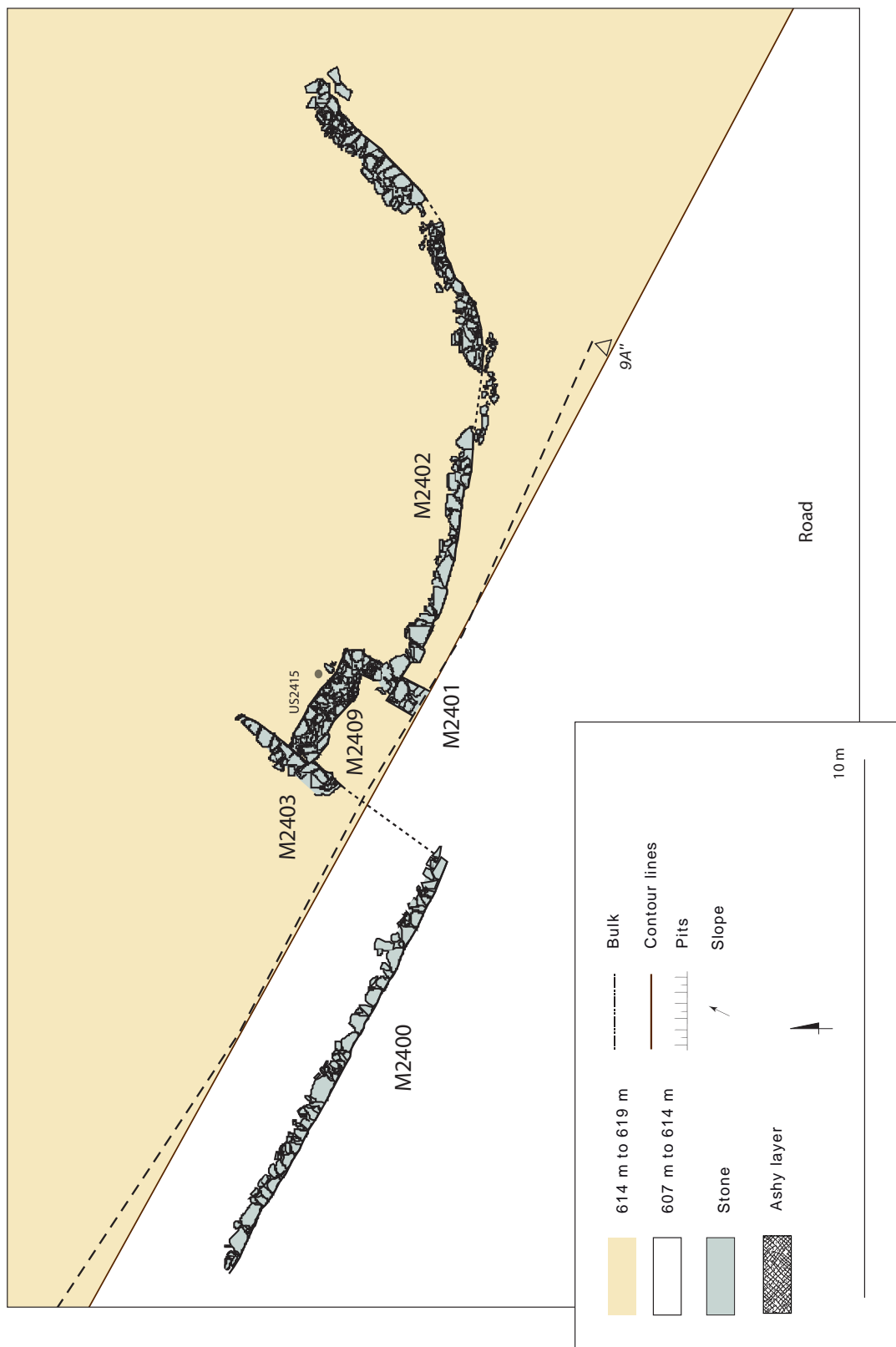


Fig. 8. Plan of the eastern part of sounding 9



Fig. 9. Structure L2401, seen from the north

a blocking device at the rear, itself resting against the edge of the bedrock. It thus reveals all the aspects of a terracing wall 60 cm in depth. However, at a distance of 3 m to the south, its appearance is quite different. The quality of construction and the regularity of its courses are far inferior, which leads to the question of possible restoration. This is all the more likely, since 5 m to the west, the quality of construction once more becomes comparable to that of the wall's point of departure, right up to its junction with M2401 where it is preserved over at least three courses, at an elevation of about 609.80m.

The clearing of the upper infill and rubble has permitted following M2401, oriented on a northeast / southwest axis, over a length of 1.64 m from the section (**Fig. 8**). The wall is preserved to an elevation of 610 m and makes a right angle with a wall 60 cm thick, which shows two bonded faces with a fill of rubble in between. This wall M2409 joins perpendicularly the eastern face of terracing wall M2403, located 1.88 m to the west of M2401. M2402 extends in principle towards the northeast.

The entire set of walls M2401, M2403 and M2409 belong to one small rectangular construction (L2401, to which curving wall M2402 is connected). Its complete plan is still unknown, since to the north its possible extension has not been excavated and, to the south,



Fig. 10. Wall M2400, looking towards the northwest.

it has been destroyed by trenches dug by a bulldozer. To the north of M2409 (at 609.95m), the existence of a brown layer 2415, of compact sandy silt, recalls a floor with an ashy spot (hearth?), on the surface of which a sample of burnt bone was collected (**Fig. 9**).

In all likelihood structure L2401 continued towards the south, perhaps right up to the level of wall M2400, parallel to M2409 and located at a distance of 3 m. In effect, the axes of M2400 and M2403 could have initially formed a right angle (**Fig. 8**), but this is nothing more than a hypothetical reconstruction.

As a matter of fact, although deeply cut into by a bulldozer, the southern edge of the small rocky outcrop underlying the remains can be conjectured. In effect, at about 2 m to the south of the section, during the cleaning carried out at the bottom of the mechanical excavation, the base of a wall oriented northwest / southeast (M2400), preserved over one or two courses, was unearthed below the 608 m elevation, i.e. its foundation was a metre lower than that of other walls (**Fig. 10**). Its construction required the carving of a gap that is easily perceptible in the rock. The wall is at most 0.40 m thick, but is nevertheless not preserved over its entire length, which possibly exceeded present-day 8.72 m, since the gap clearly extends

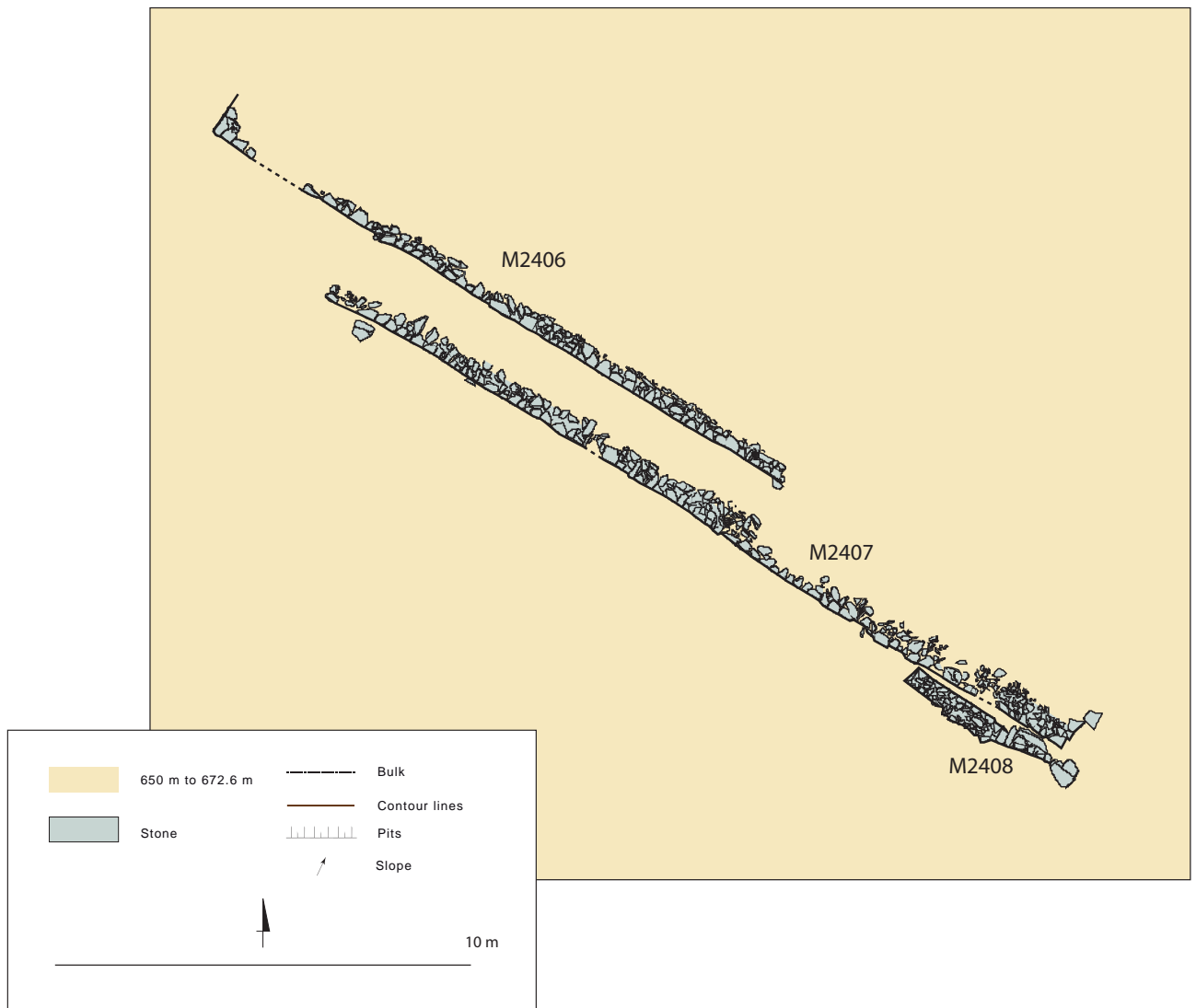


Fig. 11. Plan of the western part of sounding 9

towards the west (it is visible for at least 3 m), although the stones have been ripped out. Towards the southeast, however, it may not have continued beyond its actual limit, since no trace survives. Although its top courses were obliterated by the bulldozer's digging, it is very likely that it formed a facing whose interior rubble infill was disposed against the southern edge of the small promontory dominating the valley. Finally, at its base, a level, dark, silty floor with a patch of purple gravel appears at the point of contact with the wall's southern facing, at an elevation of about 607.70m; this will require future exploration and excavation. It constitutes the lowest identified point of sounding 9.

The survey of the desert sector nearby led to the surface discovery of three walls located at about 10 m to the northwest of the section's datum point (0 on the calibrated line) (**Figs. 1, 11-12**).

The wall located the furthest to the north, M2406, was cleared and recorded over a length of more than 16 m (with an interruption of 1.42 m). Three superimposed courses are preserved, and the wall ends with a very well constructed corner. This wall had only one face, to the south, with a rubble blocking infill propped up against it. The feature measures at most 50 cm in width. One is dealing with a terrace wall, whose orientation is comparable to M2400 and M2409, and which follows the natural ground slope. The wall's summit is at 610.60m to the east and 610.20m to the west.

At a distance of approximately 1 m from M2406, some 60 cm lower, there was a second parallel wall (M2407) built in identical fashion. It is preserved over a length of some 20m, but its extremities as they appear are offset with respect to those of M2406. On the eastern side, an angle seems to be created by the setting of the blocks and the interruption of the wall.

Finally, at its eastern extremity, a section of wall M2408 was identified over a length of some 4 m. A large block (60 x 60 m) marked its eastern edge, but whether this large piece of stone belonged to the wall is still unclear. The construction of M2408 is quite irregular. Its eastern part is made up of a piling of blocks for a length of a metre with, at the top, an oblong slab 90 cm long that is practically set against the facing of wall M2407. This curious disposition suggests a possible stair. The extension towards the west for a length of 3 m is that of a damaged wall, possessing a facing on both sides of a central infilled core of rubble and whose extremity appears to have been pulled out. It is still difficult to establish with any measure of certainty the chronology of these two juxtaposed constructions, even though the obsolescence of M2408 as a terracing wall may be surmised. Wall M2407 could have followed chronologically and is better preserved.



Fig. 11. Western part of sounding 9, looking north-east

Research carried out in 2012 on SD9 led only to preliminary observations. They nevertheless brought to light new aspects of the occupation of the western sector of Dûmat al-Jandal in Antiquity: it is archaeologically proven that the inhabitants of the oasis attempted to rearrange and model the natural terrain by making the best of topography, so as to settle on the desert flanks framing the fertile valley. The natural promontory is marked both by a wall which follows its curve (M2402) – it is also cut into by walls and low terrace walls which sometimes even retain levels of imported silty earth - and by a small quadrangular building. At the base of the promontory, a floor whose nature remains to be determined (a building, an installation for circulation purposes....) is of paramount interest for future research.

The continuation of archaeological investigation in this area appears justified for several reasons: the fragile aspect of preserved remains (they are under threat of obliteration), the need to complete and interpret the plan of ancient installations, and also the establishment of relative and absolute chronologies.

Survey of a Muslim Cemetery in Sector C

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& Emmanuel Lanoë (Graduate from EPHE)

A cemetery appeared during a survey in the central part of the valley, less than 10 m north of sounding 7 (**Fig. 1**). 27 graves were preserved when we arrived: these were rapidly destroyed by mechanical tools (around November 4th-16th) when the landowner decided to level the area and build a fence.

The cemetery extends over an area of *c.* 530 m² and is surrounded by crossroads with some traffic and by a garden enclosed by high concrete wall (to the north and the east). There is great likelihood that it originally extended beyond its current limits.



Fig. 1. The cemetery seen from the west. To the right, workers cleaning the surface of sounding 7



Fig. 2. Plan of the surveyed tombs. Detail of L2150 tomb (plan & section)



Fig. 3. Grave L2167

The survey consisted of topographical mapping of the area and drawing of a section of a grave already destroyed by bulldozers (L2150) (**Fig. 2**). The graves are simply made up of low mounds covered by flat stones, are east-west in orientation, and look towards the rising sun behind the *Rijm al-Burj*.

There were no steles or recognizable blocks to use as clues for identification (**Fig. 3**), although two graves contained a stele which was erected in the past (**Figs. 4-5**). We have to bear in mind a *hadīth* about “the leveling of the grave with the ground”,¹ which recommends that the grave should not be distinguished by any signs or any superstructure; this is a rule particularly observed in Wahhabi precepts.

It is impossible to date this cemetery² since the small amount of pottery sherds collected on the surface and in the excavated grave may relate to the different occupation periods of the area.³

1. Muslim b. al-Ḥajjāj al-Qushairī n.d.: 3:61; Abū ‘Abd al-Rahmān Aḥmad al-Nasā’ī 1894: 1:285; Abū ‘Abd Allāh Muḥammad al-Tirmidhī 1875: 1:195; ‘Abd Allāh b. Muḥammad Ibn Abī Shaiba 1979: 3:341 f.

2. Indeed, during the 2010 survey as much as nine Islamic cemeteries had been already noticed in the oasis.

3. Study is currently in process.



Fig. 4. Grave L2156 with still erect stele (?)



Fig. 5. Grave L2152 with still erect stele (?)

3D Data-acquisition Campaign: Dûmat al-Jandal 2012

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(Università degli Studi di Napoli "L'Orientale")

During the field investigations conducted between September–October 2012, as part of the activities of the Saudi-Italian-French archaeological project, a small intervention leading to the gathering of 3D documentation of the “western enclosure”, was carried out in the Sector C, Unit 3 (**Table 1**).¹

The outer face of the walls of Unit 3 have been investigated and surveyed partially in 1986 by a Saudi Arabian team;² at later stage, on request of the local Authorities, the intervention has been enlarged to the interior face.³ The work carried out in 2010 by the Saudis, Italians and French focused on the cleaning of the walls, partially covered by sand, and on the analysis of the different masonries of this part of the enclosure wall. During this campaign, the team surveyed the walls using different approaches and equipment: the *Structure from Motion* technique, corrected by targets measured by a total station, was applied to the plan of the sounding 1, while a differential GPS was used to survey the whole of Sector C.⁴

The campaign carried out in 2012 was designed according to a well-consolidated plan already tested in other archaeological areas.⁵ The survey was performed to document the walls' state of conservation and to measure with a high degree of accuracy the monument for a subsequent restoration project. As previous maps were available in digital format, the CAD files were used to plan the 3D survey in the field. The 3D data-acquisition was realized with a phase-shift Laser Scanner during the period between 28th September - 4th October.⁶

1. Charloux, al-Traad *et al.* 2012: fig. 73. The survey was performed by Andrea D'Andrea and Rosario Valentini of the Centre for Interdepartmental Service for Archaeology of University of Naples "L'Orientale".

2. Charloux, al-Traad *et al.* 2012: 150, fig. 5.

3. Charloux, al-Traad *et al.* 2012: 224-238.

4. Charloux, al-Traad *et al.* 2012: 154.

5. D'Andrea 2011: 193-218.

6. The instrument used, the scanner 3D Imager 5003, is made by the German company Zoller & Frohlich (www.zf-laser.com) and was developed for short and medium range applications (minimal distance between 40 cm and 53,5 m). It guarantees an elevated acquisition resolution (max. 36.000×15.000 pixels: horizontal per vertical) with a speed of 500.000 pixels per second. Three profiles

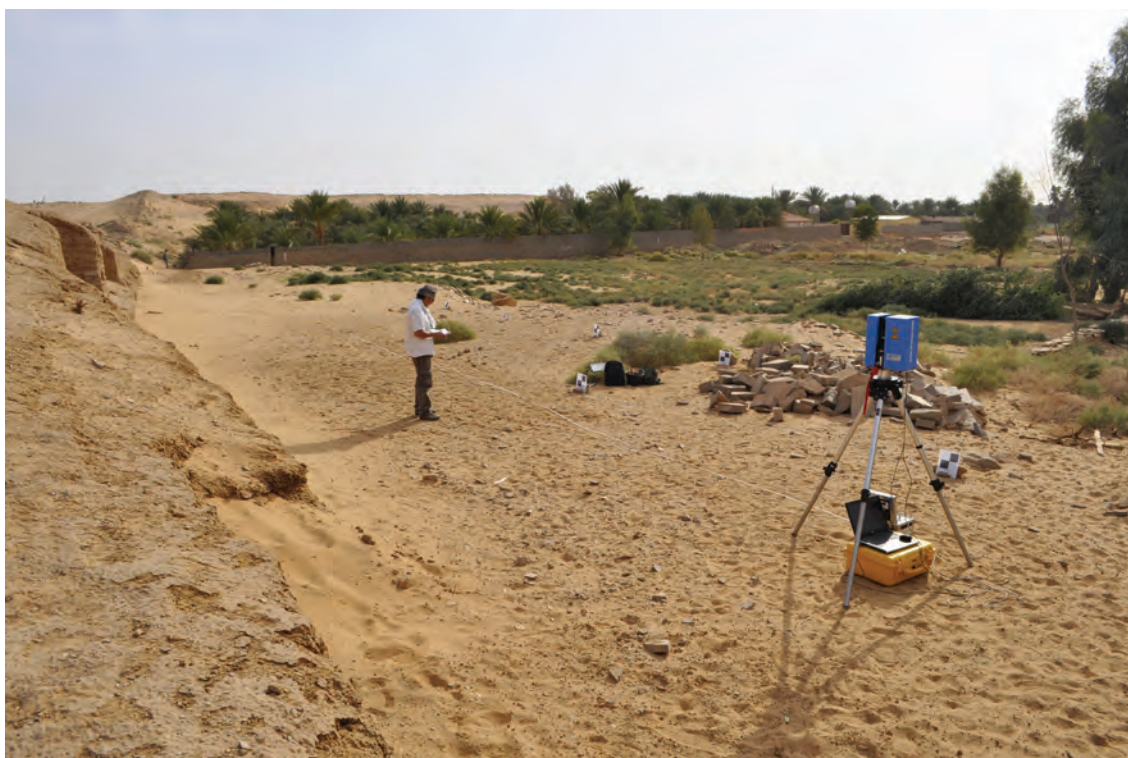


Fig. 1. Planning of the 3D data-acquisition for the interior side of the walls; for the alignment of the shots, the flat targets are located behind the shot line of the laser scanner

The intervention focused on a track of about 85m of the western side of the ancient walls located between the fence of the archaeological area to the south and the walls of a modern house to the north.⁷ The survey wasn't extended to SD1 located in the middle part of the Unit 3, as the area was covered by sand. To align the shots, many flat targets were located around the walls to guarantee accurate registration of the contiguous scans in the post-processing phase (**Fig. 1**). As the walls were geo-referenced with a differential GPS, the final model was superimposed to the CAD files in order to check accuracy and compatibility and to verify the possible gap existing between the two surveys performed with different technologies and methodologies. In order to produce a photorealistic rendering, many photographs of the walls were taken. Finally the post-processing phase was performed in Italy.⁸

can be selected (Superhigh, High and Medium) at a distance of 10m. The minimal margin of reading of High resolution is of 6 mm, while for the Superhigh it is double. Considering the area and the distance from the laser scanner to the object, the acquisition profile chosen for the survey was medium, with a sub-centimetre resolution at a distance of 10 m.

7. Charloux, al-Traad *et al.* 2012: fig. 73.

8. The post-processing and extraction phase of features of the walls was carried out by Giancarlo Iannone.

A management system was set up to archive all acquired information and guarantee a good level of accessibility to the archive (shots, target positioning, measurements), as well as to ensure the accuracy of the subsequent alignment and registration phase. A numbering system for the shots, the targets and the photographs has been defined in order to allow a more precise phase of roto-translation of the shots and the final patchwork of the images and shots. The intervention required in total four days on field and about one month of data processing.

3D Data-acquisition

The survey started from the walls' exterior face (**Fig. 2**). Twelve shots were taken to capture this face, starting from the northern up to the southern side at the limit of the enclosed area where the archaeological area's fence stands. The distance chosen between the scanner and the walls was around 8m, with the exception of the shot of point 6, where it was taken close to the walls to improve the view of walls partially covered by sand. The connection with the walls' other face was done by positioning 3 targets on the metal of the fence (**Fig. 3**); these targets were acquired in contiguous scans from the two different sides of the walls (**Fig. 4**).

For the interior face of the walls, nine shots were carried out by starting from the limit of the archaeological area up to the vertex of the modern house's fence (**Fig. 2**). The distance chosen between the scanner and the walls was between 4 and 6m; at shooting point 4 the scanner was close to the walls in order to highlight the staircase built of mud bricks. The first shot was carried out on the top of walls in order to allow the connection with the shots of the West-Side (**Fig. 5**). The shots 10 and 11 were taken from the top of the walls, at the limit of the northern part of the surveyed walls linked to the staircase to the northern tower (**Fig. 6**). The last scan was carried out to check the accuracy of the whole survey (**Fig. 7**).

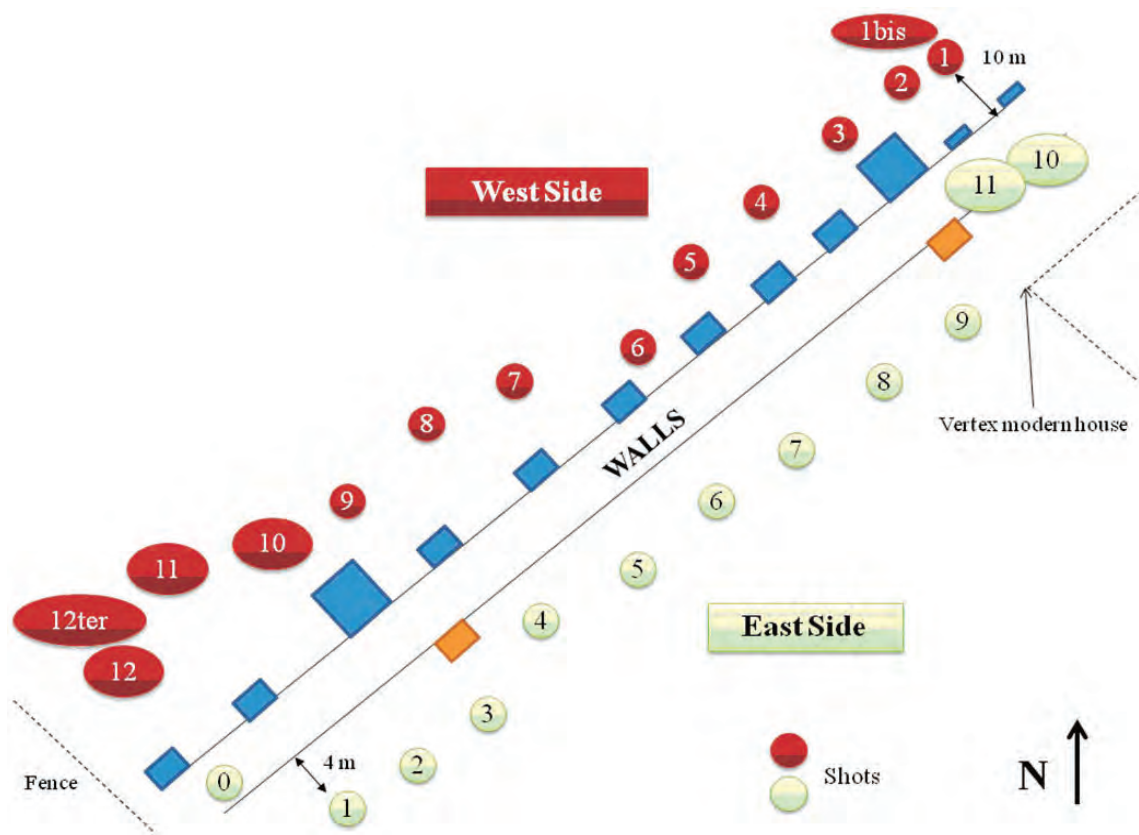


Fig. 2. Schematic table of the shots of the both sides of the walls. In orange the staircases (east side). In blue the strongholds and the buttresses (west side). Drawing not in scale



Fig. 3. Shot n. 12. The flat target placed on the fence of the archaeological area



Fig. 4. Shot n. 0. The device has been placed on the wall to assure the links of the two shot lines of the walls



Fig. 5. First shot of the interior side. The shot acquires the flat targets located on the fence of the archaeological area



Fig. 6. Shot n. 10. The device has been placed on the wall to take the internal side of the staircase



Fig. 7. Shot n. 11. The point-cloud registers the flat targets placed on the outer part of the walls

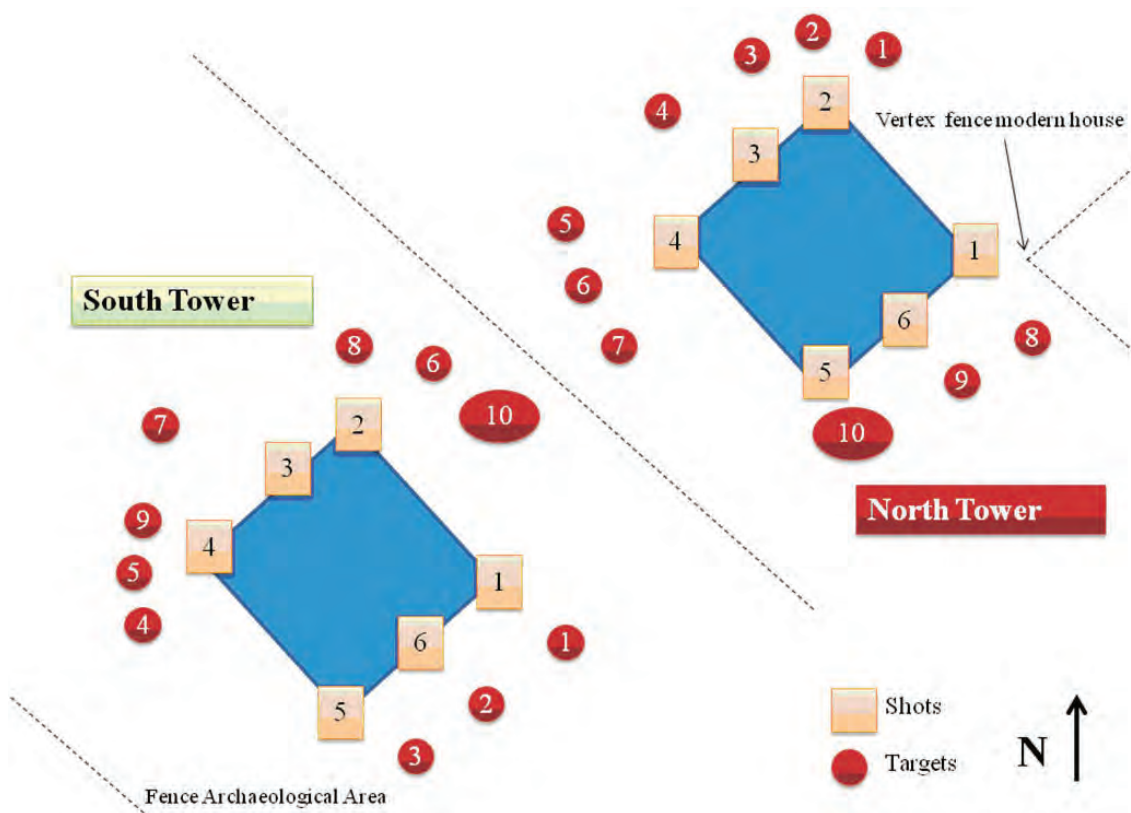


Fig. 8. Schematic table of the shots of the two strongholds. Drawing not in scale



Fig. 9. The laser scanner was placed on the top of the tower to acquire the internal part of the stronghold

For the two strongholds twelve shots were taken in all, six for each structure, by positioning the laser scanner on top of the tower along the walls (**Fig. 8**). In this way it was possible to also capture the interior of the strongholds (**Fig. 9**). Ten flat targets, set around the towers, were used for the alignments.

Photographic campaign

After the end of the survey, an accurate photographic campaign for both parts of the walls was conducted with the aim of registering the position of targets and subsequently creating the textures needed for a more photorealistic three-dimensional model. In order to obtain the best possible resolution for the images required by the restoration project, many different photos were taken by changing the distance from the walls and the angle of view.

A first strip from north to south was carried out setting the camera at the distance of 3-5m away from the structure, at a perpendicular angle, taking shots every 3-4m; a second strip, from north to south setting up the camera further from the walls (7-10m), with shots every 8-10m. The last one, from south to north, was carried out in order to allow the stitching of different contiguous photographs and gain a more accurate overlapping between the photographs and the point clouds. In this case, the shooting point chosen for the camera corresponded to the laser-scanned one. From this point, five shots were made at a distance of 4-5m, but not in perpendicular positioning (except the 3rd shot), in order to cover a wider portion of the walls compared with the first strip. For the shot of the final part of the eastern face, the camera's shooting point was set on the top of the walls for a better documentation of the mud-brick staircase.

In order to correctly register the strongholds, some shooting points were done from about 50cm (scan 3), 1m (scans 2 and 9) and 2-3m (scan 10) back from the line of the shooting points chosen for the acquisition of the point clouds made by the laser scanner.

With the *Hugin* open-source software,⁹ the photos taken in the third strip were automatically processed to obtain small panoramas. In order to check the distortion due to angular view, groups of three and five photographs (discarding those at extremities), were processed separately. The final results were then compared (**Figs. 10-11**). The parameters chosen for the processing were: no loss of content, 300 DPI, TIFF format, cylindrical or equirectangular projection.

⁹ <http://hugin.sourceforge.net/>.



Fig. 10. 180° panorama obtained by a strip of 3 photos



Fig. 11. 180° panorama obtained by a strip of 5 photos



Fig. 12. Post-processing and rendering of shots 1-3 (outer side)

Post-Processing¹⁰

The shots were processed according to a well consolidated methodology. Each shot was cleaned and filtered automatically in order to reduce possible noise produced by the instrument and by environmental conditions (reflection due to the sun, sand and fine dust). Thanks to the flat targets recognized in contiguous shots, the point clouds were aligned and registered with a high level of accuracy (less than 1 cm in total). Then the single shots were converted into solid surfaces or a mesh and simplified by eliminating duplicate points. All the aligned and registered shots were merged to obtain different virtual views of surveyed walls (**Fig. 12**). Finally the photos were mounted on the various scans creating textured meshes (**Figs. 13-14**). From the final model (**Fig. 15**) some graphical information was extracted in the form of plans (**Figs. 16-17**) and sections (**Figs. 18-19-20**).¹¹ These maps document the monument's state of conservation before the restoration project and present a good starting point for further investigations. By means of a manual digitization onscreen process, the most relevant archaeological features of the enclosures have been vectorized tracing, as polygons, the lines of each block of the walls (**Figs. 21-22**). Finally the extracted plans were superimposed on the previous survey, so as to geo-reference the model and to check the compatibility among the different methodologies used for the implementation of the surveys. **Figure 23** shows the results of the overlapping.

Conclusions

The 3D model of a portion of the “western enclosure” could in the future have different objectives and innovative applications, among other things for touristic purposes and management of the al-Jawf region's heritage. On the one hand, the three-dimensional survey is a scientific document of an important area of ancient Dûmat al-Jandal. Accuracy of reconstruction allows to extract relevant geometrical data about the monument's features; the measurements obtained from sections and plans can be efficiently used for scientific documentation of the enclosure or for state-of-the-art monitoring of artefacts. The comparison of multiple 3D data acquisition campaigns, made in different periods, could provide information about possible deterioration of the blocks and about indispensable further intervention for restauration. On the other hand, the model could be used for giving value to the archaeological monuments

¹⁰. For the post-processing phase the following were used: Reconstructor software (a commercial program developed by Gexcel: <http://www.gexcel.it/en/software>) and Meshlab (an open software developed by ISTI-CNR of PISA: <http://meshlab.sourceforge.net/>).

¹¹. For the fig. 20 see also Charloux, al-Traad *et al.* 2012: 151, Fig. 5; 221, Fig. 74, n. 14.



Figs. 13-14. Photos and 3D model of the northern stronghold

of the region, through a virtual reconstruction of the enclosures and their surroundings; sustainable management (?) of the site could be also ensured with mobile applications, which reuse the 3D model and the reconstructions of the walls in specific apps.

The work done on the “western enclosure” can be considered as a first case-study which can be easily extended to other important archaeological or historical areas of site of Dûmat al-Jandal: the Mârid castle, the ‘Umar mosque and the recent archaeological stratigraphical excavation conducted in the castle area (Sector A). Any further 3D data acquisition campaigns, focused on these monuments, could aim at documenting in a scientific way all the site’s archaeological structures and providing a basis for possible restoration and heritage management projects. The test carried out in a small portion of the archaeological area shows that this innovative methodological approach for a 3D survey of the monuments is quick, reliable and reusable for multiple purposes.

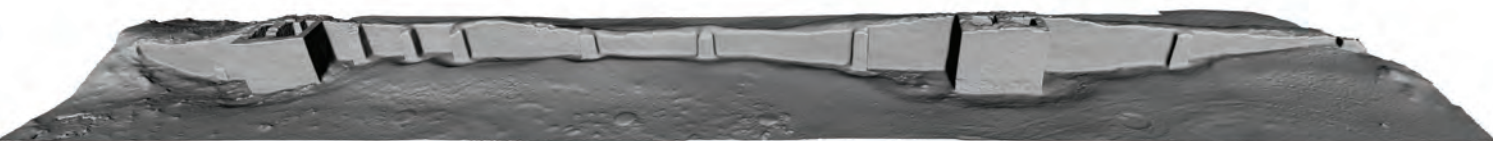
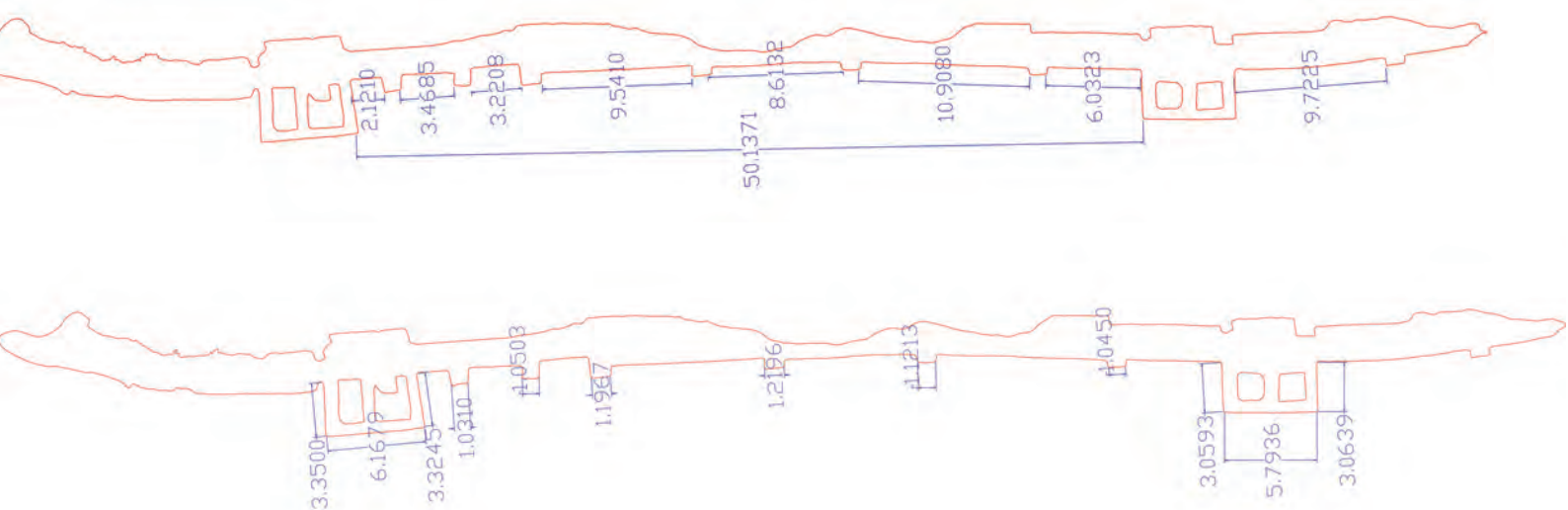
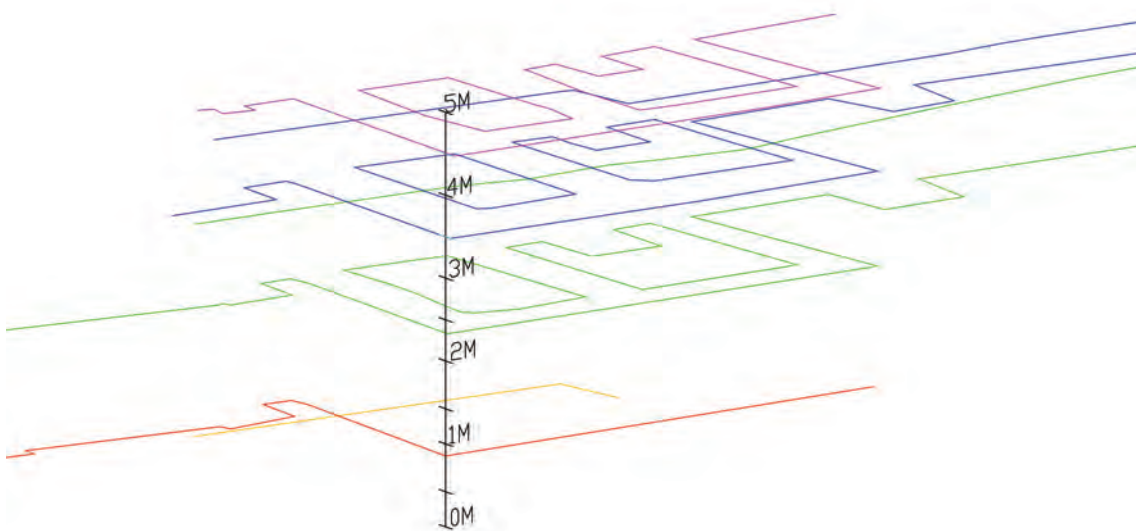


Fig. 15. 3D model of the outer side of the walls



Figs. 16-17. Plans of the walls with the measurement of the spacing among the buttress and the strongholds



Figs. 18-19. Extraction of plans of the northern stronghold at different depths

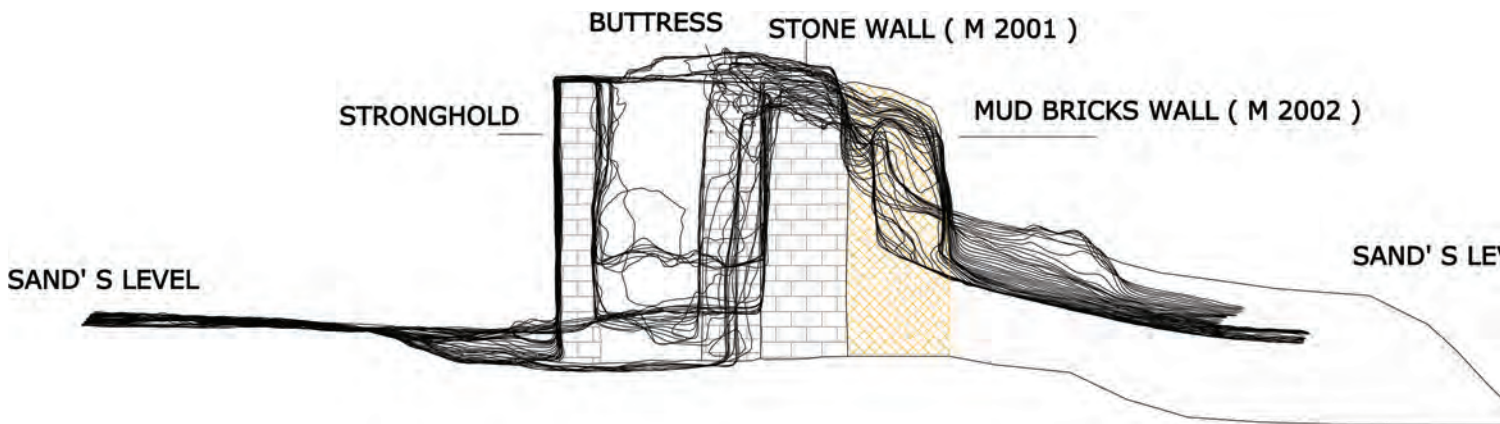
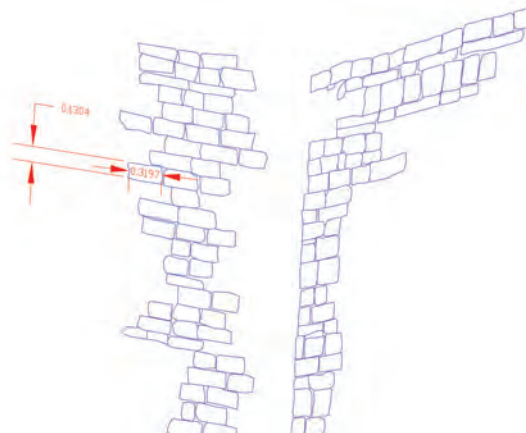


Fig. 20. Extraction of the section crossing the Walls M2001 (outer stone wall), M2002 (inner mud-brick wall) and the northern stronghold



Figs. 21-22. Manual digitization onscreen. In blue the vectorized blocks

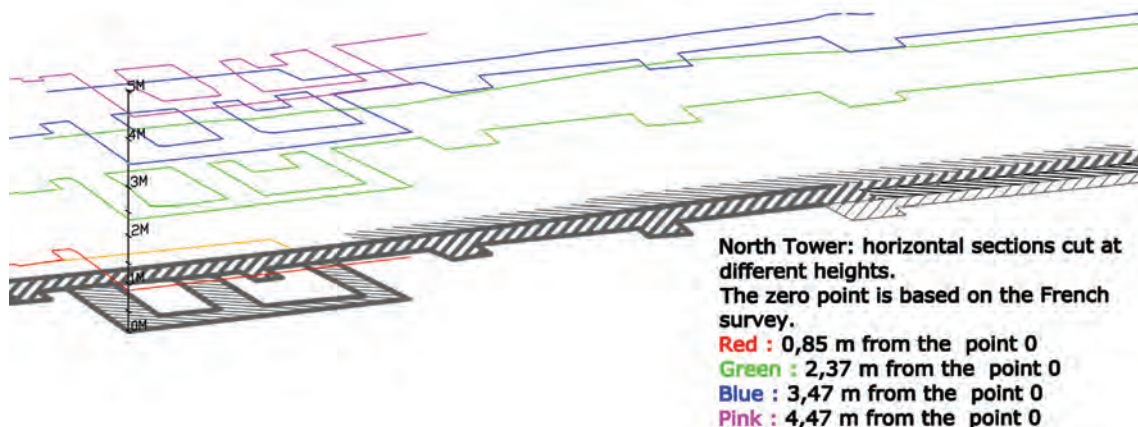


Fig. 23. Comparison between the previous survey (hatching) and the plans (in different colour corresponding to different depth. See Fig. 19) obtained by the post-processing of the point clouds

Site	Dûmat al-Jandal (Saudi Arabia), Sector C, Unit 3
Coordinates	UTM 37N 581444, 3300173
Period	27 September – 6 October 2012
Archeological Mission	Saudi-Italian-French Archeological Project
Directors	Dr. Guillaume Charloux & Dr. Romolo Loreto
Objectives	3D survey of about 85 meters of the western part of the ancient walls. The survey wasn't extended to the French excavation located in the middle part of the Unit 3 of the walls (SD1).
Equipment	Laser scanner Zoller & Frolich Imager 5003
Acquisition profile	Medium. Shot 360°
Alignment system	Flat targets fixed along a parallel line to the wall but positioned beyond the point of shot of the scanner to avoid damaging the reading of the artefact. For the West side 18 targets were employed, while for East 17 one. 3 targets were placed on the fence of the archaeological area to link the two sides. For the same reason more 3 targets were added to link the first and the last shot.
Scan acquisition duration	8 hours
Total shots	38
Processing and Post-processing Softwares	Reconstructor, Meshlab, Autocad
Digital Camera	Nikon D90 with Nikon AF-S DX Zoom-Nikkon 18-55mm f/3.5 - 5.6G ED. Automatic shot
Post-Processing photos	Hugin software for 180° panoramas
Photo acquisition duration	2 hours
Survey performed by	Andrea D'Andrea, Rosario Valentini
Post-processing performed by	Giancarlo Iannone
Report author	Andrea D'Andrea
Contributors	Rosario Valentini, Giancarlo Iannone

Table 1. Summary data-sheet of the survey

References

Abbreviations for periodicals

AAE *Arabian Archaeology and Epigraphy*

ADAJ *Annual of the Department of Antiquities of Jordan*

AION *Annali dell'Istituto Orientale di Napoli*

BASOR *Bulletin of the American Schools of Oriental Research*

DaM *Damaszener Mitteilungen*

JNES *Journal of Near Eastern Studies*

JSS *Journal of Semitic Studies*

PSAS *Proceedings of the Seminar for Arabian Studies*

RB *Revue Biblique*

Sitography

<http://hugin.sourceforge.net/>

<http://www.gexcel.it/en/software>

<http://meshlab.sourceforge.net/>

Please note that sigla are located at the end of each paper

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٢. الحفريات

تركزت أعمال التنقيب عام ٢٠١٢ في قطاع A على خندق ١، التي تم توسيعه في اتجاه الجنوب، وتوسيع سطح الحفيرة إلى ٢٥ × ١٨ م. كان الهدف خلال الموسم ٢٠١٢ الوصول إلى الهياكل المتصلة ببناء A، البناء الضخم النبطي المحدد في ٢٠١٠. وفي الوقت نفسه تركز موسم ٢٠١٢ على أوائل العصر الإسلامي من خلال إعادة استيطان المبنى A. ركز النشاط ٢٠١٢ على مرحلة ما قبل الاسلام المستوى المؤرخ مبدئيا إلى الفترة النبطية. قدمت الحفريات بيانات جديدة سواء على الأنباط بناء A وعلى الهياكل السابقة التي تم تحديدها بعد السبر (S٤) افتتح في القسم رقم ٩، درست الغرفة الرئيسية الجنوبية من المبنى A. الفخار والبقايا الحيوانية من قبل متخصصين (سيميون ومانشو).

استمرت الحفيرة في موسم ٢٠١٢، وذلك بفضل افتتاح أربعة مقاطع سبر جديدة في الجزء السفلي للقطاع (SD٦، ٧، ٨، ٩)، وذلك الحفريات في القطاع C (القطاع دومة الجندل الغربية) - الذي بدأ في عام ٢٠١٠ اودلك لفهم أفضل لمساحة مطوقة بالجدار الضميمة القديم، وبالتالي لشرح وظيفتها (انظر شارلو، كوتي وآخرون). واستمر البحث في عام ٢٠١٢ على النتوء الصخري من البرج، حيث تم تنظيف الهيكل الواسع عرف بأنه تريكيليوم في العام السابق (SD٤) (انظر شارلو، توماس وآخرون). ولم نغفل خلال هذا الموسم الأنشطة التي تقوم بها البعثة من أجل الحفاظ على البقايا القديمة لدومة الجندل. قرر الفريق بفتح حفيرة في SD١، SD٣، SD٨ وSD٧ فتم ازالة الرمال والتربة بواسطة جرافة، وذلك من أجل الحفاظ على الهياكل القديمة المكتشفة في عامي ٢٠١٠ و ٢٠١٢. ففي موسم ٢٠١٢، علاوة على ذلك، قدمت فرصا جديدة للانحراط مع حماية المنطقة الغربية: تم تقديم عرض في علم الآثار والاثنولوجيا في متحف الجوف في ٢١ نوفمبر ٢٠١٢، جنبا إلى جنب مع المشاركين في ندوة مؤسسة السديري بشأن حماية التراث السعودي، وفي ٢٨ نوفمبر ٢٠١٢، قدمت البعثة الأنشطة لمعالي أحمد الشيخ، وكيل إمارة الجوف، الذي رحب بفكرة حماية المواقع وبدعمها من المؤسسات المحلية. خلال حملة ميدانية (٢٩ سبتمبر - ٤ أكتوبر) لرسم المخطط المعماري المنظم للهياكل تم تنفيذ حفيرة في (القطاع C) وذلك من أجل الحصول على وثائق ٣D قبل مشروع ترميم الجدار، الذي بني من الحجر والطوب اللبن. وتم تصوير لايزر مع مرحلة التحول بواسطة جهاز ٥٠٠٣. وركز على المسار نحو ٨٥ مترا بواسطة مساحة الصور D٣. فتم أخذ صور للجدران قبل المشروع (انظر اندريا وفالنتيني).

تلعب تقنيات المسح دورا قياديا في اكتساب المعرفة حول التراث الثقافي للحصول على البيانات المستخدمة لوصف ملامح هندسية وخصوصيات المعالم التاريخية، والتي في حد ذاتها تسمح بحفظها وحمايتها. خلال موسم ٢٠١٢ في دومة الجندل، تم اختبار تقنيات جديدة في مجال المسح التصويري الرقمي (انظر أيضا أندريا). وقد تم اختيار نظام مساحة الصور ٣D: فهذا هو نظام تقنية المسح التصويري القائم على لاقتناء نقطة سحابة و٣D نموذج التكوين المستمدة من معالجة الصور الرقمية. تسمح هذه التقنية بالحصول على السحب من نقطة (XYZ إحداثيات) بمعلومات RGB وهندستها على مستويات مختلفة من التعقيد، من خلال تجهيز عدد من الصور التي اتخذت مع مجموعة محدودة من القيود، وذلك بفضل استخدام معدات بسيطة والاستحواذ من خلال الخوارزمية (ZScan، من خلال MENCİ البرمجيات) مطابقة الصورة. وكان الهدف من هذا الموسم إعادة بدقة للموقع الأثري بأكمله للحصول على نموذج ٣D من كل بقايا وتخطيط جميع التداخلات بهدف الترميم.

نشاطات المشروع

تم تنفيذ موسم ٢٠١٢ ضمن المشروع الأثري السعودي-الإيطالي-الفرنسي المشترك في دومة الجندل بين ٢٠ سبتمبر و ٢٠ نوفمبر. ركز الموسم الرابع على استمرار الأنشطة التي بدأت في مواسم ٢٠٠٩-٢٠١١، وأيضاً على تحليلات منهجية جديدة للموقع الأثري وضواحيه. كما تم البحث حول تحديد النشوء البيئي والجيولوجي للواحة من أجل فهم أفضل للتسلسل الزمني للموقع، عن طريق الحفريات الواسعة، دون إغفال استخدام العديد من الأساليب التقنية الحديثة وتدريب كوادر لها، ولكن أيضاً فوق كل ذلك تم التركيز على الحفاظ على الآثار القديمة والإسلامية المحلية التي هي في خطر الاندثار.

١. المسح الأثري

من خلال دراسة نظام الري القديم في منطقة شرق دومة الجندل يمكننا اقتراح رسم خط طرق القوافل القديمة من موقع أدوماتو القديم إلى أشور (انظر مساهمة ماركولونجو). فالتحليلات الجغرافية للتضاريس التي أجريت في نطاق دراسة الصور الجوية وصور الأقمار الصناعية يمكننا تتبع مختلف مجاري المياه القديمة في الشرق، وأيضاً اثنين من طرق التجارة الرئيسية مروراً بواحة كبرى من «عرعر» (انظر مساهمة ماركولونجو). من أجل فهم مصادر المياه على نطاق واحة دومة الجندل، أجريت دراسة من قبل فريق من الاتحاد الفرنسي لاستكشاف الكهوف (انظر مساهمة كوربون، وتوماس تيسستا). تم استكشاف أربعة وعشرين بئراً مع المياه خلال موسم ٢٠١٢، وأعماقها تتراوح ما بين ١٢ و ٢٨ م. واكتشف أيضاً حوالي عشرة آبار بلا ماء. داخل ثلاثة آبار منها تم العثور على قنوات وفتحات في الصخور على عمق ١٥ متراً. أطولها يتجاوز ١٥٠ متر. على رأس هذه القنوات سجلت عدة حفر للتسلق، ولكن هذه كلها قد أغلقت. بفضل المسح الأثري حول دومة الجندل زادت معرفتنا حول الاستيطان في الواحة والسياق التاريخي الإقليمي (انظر مساهمة عربش وآخرون). تمت إضافة تسعة مواقع جديدة إلى القائمة التي أنشئت في الفترة ٢٠١٠-٢٠١١ (أي ما مجموعه ٣٩ المواقع الأثرية ومواقع النقوش)، وكلاهما إلى الشرق من الواحة، في جبل الزليات، على الطريق المؤدية إلى وادي سرحان، وإلى الشمال في جبل حماميات واحد من المواقع الصخرية من فترات العصر الحجري الحديث أو الكلاسيكي، مع رسومات صخرية آدمية فضلاً عن جماله، ورسوم الوعول والثيران، الخ، وأحياناً ذات أبعاد كبيرة، عدا عن النقوش الثمودية والنبطية والعربية التي مكتوبة الجدران من قبل المارة قديماً. تولى البروفسور فريدريك إمبير خلال الموسم البحث عن النقوش العربية في الفترة الإسلامية المبكرة. في موازاة ذلك، تم المسح المنهجي للواحة، والجمع بين شبكة من «الساحات» (٣٠٠ × ٢٠٠ م) التي تحتوي على البيانات التي تقدمها أدوات GPS، سواء التفاضلية اليدوية وتريمبل، وكذلك قاعدة البيانات المترابطة (الصور، ومواقع، الإحداثيات GPS، وما إلى ذلك)، أدلى جنباً إلى جنب مع مسح أثري في المنطقة.

المشاركون في موسم ٢٠١٢

رئاسة المشروع : الدكتور جيوم شارلو والدكتور رومولو لوريتو. وقد شارك باحثون في عدة اختصاصات في الموسم ٢٠١٢ :

الجانب السعودي

- أحمد القعيد، مدير متحف الجوف
- عبد المجيد المرشد، نائب مدير متحف الجوف
- تامر الملكي، باحث آثار وتاريخ
- موسى القرني، باحث آثار وتاريخ
- حمود العرجان، مساعد فني
- مجيد الفقير، باحث آثار
- درعان القحطاني، باحث آثار
- سميت التواتي، باحث آثار

الجانب الايطالي

- الدكتور رومولو لوريتو (باحث آثار، جامعة نابولي «الشرقية»)
- الدكتور أندريا ماركولونجو (مهندس معماري، المركز الوطني للبحث العلمي)
- الأستاذ الدكتور برونو ماركولونجو (باحث جيولوجية الآثار، المركز الوطني للبحث العلمي، معهد الجيولوجيا التطبيقية)
- الأستاذ أندريا دو أندريا (مهندس معماري جامعة نابولي «الشرقية»)
- الأستاذ روزاريو فالانتيني (مهندس معماري، جامعة نابولي «الشرقية»)

الجانب الفرنسي

- الدكتور منير عربش (باحث نقوش، المركز الوطني للبحث العلمي بباريس)
- الدكتور جيوم شارلو (باحث آثار، المركز الوطني للبحث العلمي بباريس)
- الأستاذة ماريان كوتي (باحثة آثار، متحف اللوفر، قسم آثار الشرق)
- الأستاذ بول كوربون (خبير أنفاق، جامعة مرسيليا)
- البروفسور فريديريك أمبير (خبير نقوش عربية، جامعة مرسيليا)
- الأستاذ ايمانويل لانوييه (خبير آثار، بلدية ريزيه، فرنسا)
- الأستاذ مارتان ماكسون (باحث آثار، جامعة جنيف)
- الدكتور ارفيه مونشو (باحث آثار حيوانات، لايكس ريسميد، جامعة السوربون الرابعة)
- الأستاذ فونتان موريل (طوبوغرافي)
- البروفسور كريستيان روبان (مؤرخ، المركز الوطني للبحث العلمي بباريس)
- الدكتور بيير سيمون (باحث آثار وفخار، المركز الوطني للبحث العلمي بباريس)
- الأستاذ أوليفيا تيستا (خبير كهوف، جمعية خبراء الانفاق، فرنسا)
- الدكتورة اريان توما (باحثة آثار، متحف اللوفر، قسم آثار الشرق)
- الأستاذ ماتيو توما (خبير كهوف، جمعية خبراء الانفاق، فرنسا)

شكر و عرفان

نقدم الشكر والعرفان لجميع المؤسسات التالية والزلاء في المملكة العربية السعودية وفي إيطاليا وفرنسا لاهتمامهم ودعمهم اللامحدود لأنشطة البعثة لموسم ٢٠١٢ :

المملكة العربية السعودية

- اللجنة العليا للسياحة والآثار، بشكل خاص صاحب السمو الملكي الأمير سلطان بن عبد العزيز آل سعود، رئيس الهيئة العامة للسياحة والآثار، والأستاذ الدكتور علي إبراهيم الغبان، نائب رئيس الهيئة العامة للسياحة والآثار، والأستاذ جمال عمر، مدير عام البحث والدراسات في الهيئة.
- فرع الهيئة العامة للسياحة والآثار في منطقة الجوف، بشكل خاص الأستاذ حسين خليفة، مدير فرع الآثار في الجوف
- متحف الجوف للآثار والتراث الشعبي، بشكل خاص الأستاذ أحمد القعيد، مدير المتحف

الجمهورية الفرنسية

- وزارة الخارجية، بشكل خاص الأستاذ جان ميشيل-كاسباريان والسيدة كاترين ديلوبيل
- سفارة فرنسا في المملكة العربية السعودية، بشكل خاص معالي السفير برتران بيزانسو والأستاذ جان لويس لافييه والأستاذ بيير فانسان في قسم التعاون والنشاط الثقافي
- المركز الوطني للبحث العلمي (مركز الشرق والمتوسط)، بشكل خاص آلان مانجول مندوب فرع باريس، جان كلود شينيه وفرانسواز بريكيل شاتونيه، وبرنامج لباكس رمسيد وقسم العالم السامي وماري فيرونك ديامانت ومجالي بيكون.
- مجموعة إيرباص (EADS فرنسا) وبشكل خاص جاك بورجوا لدعمه الكبير لبرامج ٢٠١٢ واهتمامه بمشاريعنا العلمية .

الجمهورية الإيطالية

- وزارة الخارجية الإيطالية
- جامعة نابولي «الشرقية»، قسم الدراسات الآسيوية، الأفريقية وحوض المتوسط
- مركز خدمات معاهد الآثار
- سفارة إيطاليا في الرياض وبشكل خاص معالي السفير فالانتينو سيمونيتي

باريس - الرياض
التنسيق والإخراج : جيوم شارلو
اللجنة السعودية للسياحة والآثار، ٢٠١٥
ص.ب ٦٦٦٨٠، الرياض ١١٥٨٦
المملكة العربية السعودية



الهيئة العامة للسياحة و الآثار - سلسلة دراسات أثرية محكمة

دومة ٣

تقرير الموسم ١٤٣٣ هـ / ٢٠١٢ م
البعثة الأثرية السعودية-الإيطالية-الفرنسية
في دومة الجندل في المملكة العربية السعودية

بإشراف
د. جيوم شارلو و د. رومولو لوريتو

بمشاركة
عبد الهادي خليف الطراد، أحمد عتيق القعيد، عبد المجيد ناصر المرشد،
ثامر عوض المالكي، موسى الجبرني، أندريا ماركولونجو، برونو ماركولونجو، درعان مسفر
القحطاني، حمود محمد العرجان، قونتان موريل،
د. منير عربش، أرفيه مونشو، ليلي نعمة، مارك مونشي،
د. كريستيان روبان و د. بيير سيميون