

Dadanitic *b-r'y* as referring to a local calendar?

Fokelien Kootstra

Leiden University

f.kootstra@hum.leidenuniv.nl

Abstract

This article will discuss the dating formula in the Dadanitic inscriptions. So far, some of these have been interpreted to refer not only to the reign of the local king (*mlk lhyn*), but also to another political official called *r'y*. The article will discuss the merit of this interpretation based on both the questionable etymology of the term *r'y* and the problematic interpretation of the terms following this word as personal names. Instead, a new interpretation of this formula as a reference to a local calendar will be explored in light of the occurrence of a similar word *r'y* in Safaitic dating formula, and comparison to other ancient methods of time reckoning in the region.

Keywords: Dadanitic, Epigraphy, Ancient calendars, Dating formula, Anwā' system

1. Introduction

Dadanitic is the name of the script used to carve inscriptions attested in and around the ancient oasis of Dadān, modern-day al-'Ulā, in the north-west of the Arabian Peninsula.¹ Just under 2,000 Dadanitic inscriptions are known so far, about 1,500 of which are informal graffiti.² It is generally assumed that these inscriptions were carved between the sixth and first centuries BCE. The exact dating of the inscriptions is problematic, however, and mostly based on outside references to Dadān (see Rohmer and Charloix 2015 for the most recent overview and discussion of the evidence for dating the inscriptions). The dating of the inscriptions is particularly problematic due to their lack of references to known historical dates and events. Some do carry dates, but these refer only to the regnal years of the local kings. These dates can be further specified with a term *r'y*, which is generally interpreted as a reference to a local political official.

- 1 For an extensive discussion of the language and writing tradition of the Dadanitic inscriptions see Kootstra 2019. For a discussion on the development of the term Dadanitic and a short summary of its linguistic features see Macdonald 2000: 32–3; and 2008 respectively.
- 2 The online OCIANA database contains all currently published and some yet unpublished Dadanitic inscriptions, along with inscriptions in other Ancient North Arabian scripts. All cited inscriptions are given with their primary siglum in OCIANA and can be consulted there with all available photographs and bibliographical notes: <http://krcfm.orient.ox.ac.uk/fmi/webd/ociana>.

This paper will discuss this dating formula used in the Dadanitic inscriptions. After a section in which the form and occurrence of the formula is introduced, the current interpretation will be outlined together with some fundamental questions concerning different aspects of this reading. In section 3, the formula will be discussed in relation to similar formulae in Minaic and Sabaic inscriptions. In section 4, a new interpretation of the formula as a local calendar will be proposed. At the end of the article an appendix will present a more detailed discussion of each of the lexical items following the phrase *b-r'y*.

1.1. The formula

Several of the Dadanitic inscriptions are dated to a specific year. In these cases the year is mentioned, followed by a number and the name of the king whose regnal years are being counted:

s'nt X Personal Name (PN) *bn* PN *mlk lhyn*
 “year X PN son of PN king of Liḥyān” (e.g. AH 064)

A more elaborate dating formula is also attested:

s'nt X *b-r'y* Y PN *bn* PN *mlk lhyn*
 “year X during the *r'y* of Y; PN son of PN king of Liḥyān” (e.g. AH 239)

The formula can be further specified by adding a number of days and the preposition *qbl*, which replace the preposition *b-* “at”:³

s'nt X Y *'ym qbl r'y* Z PN *bn* PN *mlk lhyn*
 “year X; Y days before the *r'y* of Z; PN son of PN king of Liḥyān” (JSLih 068 and AH 244)

Variations of the *b-r'y* formula are found in AH 197 and in JSLih 070.⁴ In both these inscriptions we find another preposition: *hlf* “after”. In AH 197 this preposition is followed not by *r'y*, but by the form *t'n*. The word following *t'n* is broken off, but since the rest of the phrase follows the *r'y* formula closely, it is fairly certain this is a variation of the same phrase. It is interesting to note that the preposition *hlf* is never attested in combination with the word *r'y*; instead we find it once before *t'n* and once in what seems to be a shortened, or shorter, dating formula.

AH 197

*s'nt/s²r/w tlt/13/ymn/hlf/t'n/d---*l{'}{b}
 “year thirteen 13 two days following *t'n d...*”.

- 3 Seven days and three days before *r'y* are attested in the inscriptions (AH 244 and JSLih 068, respectively).
- 4 The form *s'nt* also occurs in AH 223 and in JSLih 071. Unfortunately AH 233 is too damaged to be used for comparison. In JSLih 071 *s'nt* does not seem to be part of a dating formula. There is no number indicated to specify the year. It seems to have been used adverbially here instead of “for a year”. Moreover, the entire inscription is un-formulaic, making it unsuitable for comparison.

JSLih 070 seems to contain a shortened form of the formula, in which *r'y/t'n* and the name of the king are omitted. The form *fdg* is not attested following *r'y* or *t'n* so far, although it seems to occur once as a patronymic in AH 251. This may indicate that this is not a direct equivalent to the *r'y* and *t'n* formula.

JSLih 070

s¹nt/s²r//n/wts¹/ 's²r'ym//hlf/fdg

“year twenty nine; ten days following *fdg*”

1.2. The function of dating

In total there are 43 inscriptions that are dated either to the year of inscribing, or to the year and *r'y*. Almost half of them (20) contain the *b-r'y* elaboration. Most of the inscriptions containing a date are more elaborate, with a formal purpose that distinguishes them from graffiti based on their content. Only six of the 43 dated inscriptions can be identified as graffiti (see Table 1).

It is not surprising that formal inscriptions are more likely to contain a date, to support their legal or commemorative function. While some genres of inscription seem to have preferred a specific dating formula, the dating by year and dating by *r'y* and year are relatively evenly distributed across the different genres. The most striking difference seems to be that between dedicatory inscriptions and *zll* inscriptions. The *zll* inscriptions commemorate a local ritual (*h-zll*) performed for the local deity of the oasis, *dgbt*. In terms of formula, they are similar to the dedicatory inscriptions. Currently no convincing interpretation of what the ritual entails is available.⁵ While in dedicatory inscriptions, the preferred dating formula was the elaborate formula containing the specification by *r'y*, the preferred form for the *zll* inscriptions seems to have been the shorter date by the year of the king. This may indicate that while specific dedications were tied to specific moments in the year, or their value was dependent on when the ritual was performed exactly,⁶ the *zll* inscriptions were more independent of the specific moment of their performance. This is further supported by the mentioning of certain seasonal crops in some *zll* inscriptions (e.g. U 058 and U 079bis mention *dl'* “crops of the season of the later rains”⁷). While some inscriptions mention specific seasonal crops, there are also attestations of seasonal crops from different seasons mentioned in one inscription (AH 18 mentions both *dl'* “crops of the season of the later rains” and *hrf* “crops of the season of the

- 5 See Scagliarini (2002: 573–5) for an overview of the interpretations so far. Since there is no satisfactory translation currently available, the term is left untranslated following the translation offered in the OCIANA database.
- 6 The idea that some days are particularly auspicious or inauspicious for certain activities seems to be a common notion in religious and magical practices. Such practices are documented, for example, in the Babylonian hemerological texts. These texts gave general advice on what to do or not do on specific days, such as which were good days to get married (Livingstone 1998: 61), or on more specific religious activities such as which day was best to offer an offering bread to which deity (Livingstone 1998: 60).
- 7 I am following Macdonald's (1992: 3) interpretation of this word in Safaitic as “season of the later rains”.

Table 1. Number of attestations of each dating formula per genre

Genre	Inscriptions dated by <i>r'y</i>	Sigla	Inscriptions dated by <i>s'nt</i>	Sigla	Total
Building	2	Müller 1889: 63–4, no. 8; U 008			2
Dedication	9	AH 219; AH 221; AH 239; AHUD 1; Al-Sa'īd 1420/1999: 3–14, no. 1; JSLih 082; JSLih 083; JSLih 085; Rabeler 001	4	AH 204; AH 206; AH 222; JSLih 063	13
Funerary graffiti	3	JSLih 349; Nasif 1988: 96, pl. CXLIV; Nasif 1988: 96, pl. CXLV	3	JSLih 045; JSLih 075; JSLih 231	3
Legal <i>zll</i>	2	JSLih 068; JSLih 072	1	JSLih 077	3
	1	AH 244	11	AH 013; AH 063; AH 064; AH 081; AH 197; AH 202; AH 216; AH 235; AH 242; Nasif 1988: 99, pl. CLVIII; Private collection 1	12
Non-graffiti	3	AH 224; al-Ḥuraybah 10; Müller 1889: 87, no. 70	1	AH 223	4
Total	20		23		43

first rains”⁸). Therefore, it seems that the writing of the *zll* inscriptions did not always occur at the same time as the harvests referred to. The lack of more specific time references could also mean that the *zll* ritual was always performed at the same time of the year, making additional specification superfluous.⁹ Note that both *zll* and dedicatory inscriptions are attested with both formulae.

1.3. Current interpretation

The dating formula containing *b-r'y* is generally translated as “in year X during the reign/government of PN; of PN son of PN king of Dadān” (e.g. Caskel 1954: 88–9; Farès-Drappeau 2005: 122). The phrase *b-r'y* is taken to refer to the reign of a political official (Farès-Drappeau 2005: 122) or to that of the king, with the term directly following *b-r'y* as an epithet of the king (Caskel 1954: 89).

1.3.1. *b-s'mwy* as *epiphaneia*

Winnett even suggest that *b-s'mwy* in JSLih 054 and JSLih 077 is a variation of the same phrase. He argues that *b-s'mwy* is used in an attempt to express the Hellenistic conception *epiphaneia*: “The word used, for instance, of the accession of the divine Caligula (37–41 AD)”. He concludes that “the *s'mwy* of the king must mean something like his ‘elevation to heavenly status’” i.e. “his deification at his accession”. He saw *b-r'y* as a parallel construction, but translated *r'y* simply as “oversight, reign” (Winnett and Reed 1970: 126). It is difficult to connect the two expressions, however; *bs'mwy* occurs in JSLih 054, following the blessing formula and just before the name of the king, but in damaged context.

JSLih 054 (lines 4–5)

f r d-hm/w ---

bs'mwy/tlmy/bn ---

“and may he please them and --- *bs'mwy tlmy* son of”

It is difficult to tell how much is missing between the blessing formula and *bs'mwy*. Since *d'bs'mwy* occurs in two other inscriptions, following *b-r'y*, *bs'mwy* is probably merely the end of this phrase. The other occurrence of *b-s'mwy* that Winnett refers to (JSLih 077) is also heavily damaged. It cannot be found on the photograph available of the inscription today and is not part of the most recent readings of the inscription (OCIANA and Farès-Drappeau 2005: 169). Therefore, a connection between the two, and certainly an interpretation of *b-s'mwy* as *epiphaneia* seems unlikely.

1.4. A Minaic parallel?

Besides the Dadanitic inscriptions that were found at the oasis of ancient Dadān, a corpus of about 60 monumental Minaic inscriptions have been found there as well. These were probably inscribed there when the Minaeans, whose homeland was in the south of the Arabian Peninsula, established a trading outpost at the

8 I am following Macdonald’s (1992: 3–4) interpretation of this word in Safaitic as “season of the first rains”.

9 I would like to thank an anonymous reviewer for stressing this point in the comments.

oasis. This trading post is considered contemporary with the Lihyanite kingdom referred to in the Dadanitic inscriptions (Winnett and Reed 1970: 117–8).¹⁰ There are several inscriptions that attest to the participation of Minaeans in Dadanitic local rituals (JSLih 049 and AHUD 1) and to the presence of people with some knowledge of both scripts (e.g. JSLih 220). There is even a Minaic legal inscription at Dadān that, despite being heavily damaged, clearly discusses the status of children from a union between a Minaean woman and a Dadānite man.¹¹ These inscriptions show that the two groups interacted with each other at the oasis.

Several of the Minaic inscriptions contain a dating formula in which the year is given both in reference to the king, and to a *kabīr* who was probably a local ruler or official. If the phrase *b-r'y* should indeed be interpreted as a reference to a political official, this phrase could be interpreted as a parallel to the Minaic dating formula. Examples of this dating formula can be found in the DASI corpus 5;¹² it goes roughly:

b-ywmh PN PN *mlk m'nm b-kbr* PN (PN)
 “during the days of PN PN king of Ma‘īn during the kabirate of PN (PN)”

The formula can be elaborated by adding a specific month before the mention of the kabirate. Whenever this is the case, the phrase *ḏ-kbrh* is used rather than *b-kbr* (see M 358 = RES 3697 and M316 = RES 3341). This seems to confirm that *kbr* is a further specification of the year and not a reference to a specific part of the year.

These Minaic inscriptions at Dadān show us that dating by both a king and another political official is not impossible despite the seeming redundancy, and that this practice was likely known in Dadanitic society. It has to be borne in mind, however, that the political situation of the Lihyanite kingdom at the oasis of Dadān was very different from that of the Minaic outpost there. For the Minaeans in Dadān, it would presumably make more sense to date by both the king and the *kbr*, as they were outside the Minaic kingdom proper. This would probably give the *kbr* more prominence in their day-to-day lives than the remote king and seems to be reflected in the different dating practices in Central Minaic as opposed to the inscriptions at Dadān. While the Central Minaic inscriptions from inside the Minaic kingdom are also dated by *kabīrs*, these formulae are different. They often concern the kabirate of the inscriber, who erected the inscription during his own kabirate (e.g. al-Ḥarāshif 3; al-Jawf 04.28; M11). The inscriptions that are dated by the kabirate of someone other than the inscriber never seem to refer to the king in the same dating formula (e.g. M 179; M 28).

10 The Minaic presence at Dedan probably lasted from about the fourth until the first century BCE (Beeston 1979: 8).

11 See Kootstra (2018a) for a complete discussion of the interaction between the Minaic and Dadanitic writing traditions.

12 The formula can be found in the following inscriptions, which are all found at Dadān: M316; M367; M329; M331; M358.

2. *r'y* as a political office

2.1. The etymology of *r'y*

Besides the possible Minaic parallel, the translation “during the reign of” seems to be further motivated by linking the root *r'y*, which has as its basic meaning “to see”, to the notion of ruling, probably inspired by the use of “to oversee” in English and German. There are several issues surrounding this interpretation, however, which merit discussion. Even though “oversee” and “ruling” seem to be closely connected in most European languages (e.g. German *sehen* and *übersehen*; English “to see” and “to oversee”),¹³ this construction is not productive in Semitic languages. The meaning of *r'y* in Semitic languages is related to “seeing” or “having an opinion” (ultimately also related to seeing). Although its usage with the meaning “opinion, judgement” could have been extended to have something to do with ruling or judging, it is not primarily used to express such concepts.

In Sabaic, the root can be used to mean “oracular vision” (Beeston et al. 1982: 113) and by extension also the person who does the “seeing”, like a priest or a soothsayer.¹⁴ In this sense it could be argued that *r'y* refers not to a political, but to a religious, official. In Sabaic and Qatabanic there are inscriptions that contain the phrase “*ywm rs²w* theonym (DN)”.¹⁵ While a *rs²w* is a type of priest, these phrases indicate a period mostly relevant to the inscriber’s name instead of an abstract year and they are translated as “the days in which he was priest of DN” (CSAI). There are several terms for priests or religious officials attested in the Dadanitic context *'fkl* (e.g. JSLih 055; JaL 010 a); *s¹lh* (e.g. U 059; U 044), but there are no attestations of *r'y* in a context where it clearly refers to a person or profession.

2.2. Personal names

A further issue that has been recognized,¹⁶ but never sufficiently explored, is the obscurity of the etymologies of the forms following *b-r'y*. None of these are attested as personal names in the Dadanitic corpus, and none of them have clear etymologies allowing them to be interpreted as epithets.¹⁷

So even though the Minaic dating by a local *kbr* shows that it is not impossible to have a seemingly redundant specification of the year by both a king and a local official, there is no clear reason, based on the etymology of *b-r'y*, to translate this phrase as “during the government of ...”. On top of this, none

13 In fact, “to oversee” even seems only to have come into use in English in the late fourteenth century (the earliest attestation of the agent noun overseer) (<http://www.etymonline.com/index.php> accessed 3/10/2018), excluding the possibility of a loan construction.

14 I would like to thank Alessia Prioretta for pointing out this meaning of the root and the practice of dating by *rs²w* to me.

15 In Sabaic e.g. Ja 2848y; Ja 2848 ad; CIAS 96.41/r4, and in Qatabanic MuB 8.

16 Farès-Drapeau mentions, for example, of both *'bdn* (2005: 166) and *glts¹* (2005: 174) that they do not occur elsewhere in Dadanitic as personal names.

17 In Appendix 1 an overview of all the terms following *r'y* and *'n* is provided with a short discussion of each. Their occurrence as personal names across the epigraphic material of the Arabian Peninsula will be discussed as well as other possible interpretations.

Table 2. Schematic overview of the formula “*s^lnt X b-r’y Y name-of-a-king mlk lhyn*” and its attestations

Terms following <i>r’y</i>	Times attested	Sigla
<i>s^llhⁿ</i>	2	JSLih 068; U 008
<i>q^lbs^lmwy</i>	2	Nasif 1988: 96, pl. CXLIV; Nasif 1988: 96, pl. CXLV
<i>q^ls^llⁿ</i>	3(?) ¹⁸	Müller 1889: 63–4, no. 8; AH 244; AH 221; Al-Ḥuraybah 10
<i>Hr{f}</i>	1	AH 219
<i>’bdn</i>	1	JSLih 072
<i>...n’y</i>	1	JSLih 082
<i>gltqs^l</i>	1	JSLih 083
<i>hmt</i>	1	JSLih 085
<i>hr’</i>	1	al-Sa’īd 1420/2000: 3–14, no.1
<i>h{n}...y</i>	?	Müller 1889: 87, no. 70
<i>’tdn</i>	1	AHUD 1
<damage>	5	Rabeler 001; AH 224; AH 239; JSLih 349

of the forms following *b-r’y* can be readily interpreted as either personal names or epithets, further complicating the interpretation that *r’y* referred to the office of a person (see Table 2).

3. The formula revisited

3.1. Syntax and form

Previous investigations into the formula have focused mostly on the lexical items it contains and their cultural significance, however, the grammatical structure seems slightly awkward as well, and forms a good starting point for a comparison to other dating formulae in the Arabian inscriptions. In Dadanitic, *s^lnt* is always followed by a cardinal number “in year 2/3/etc. (of) king X”, even though one might expect an ordinal one: *“in the 2nd/3rd etc. year of the reign of king X”. It is not uncommon to count the units of a dating formula with cardinal numbers, however: compare, for example, Sabaic *b-ywm t̄mnym* (C 601/18) or Syriac *yawmo da-t̄loto* (John 11.1) (Beeston 1956: 4). However, both these constructions differ from the Dadanitic form. In the Sabaic formula *ywm* stands in construct with the numeral, while in Syriac the numeral is introduced with a relative pronoun. In Sabaic it is formally apparent that the form *ywm* is in construct state from the lack of mimation (Stein 2011: 1051). In Dadanitic, we would expect the numeral to have a definite article if the two were in construct. Moreover, if *s^lnt* indicates the year of the king, one would expect the year to stand in construct with the king, whereas in the Dadanitic inscriptions, “*b-r’y X*” can appear in between. The key to interpreting both these issues seems to be interpreting the phrase as a formula “year/specific part of the year/era”.

18 *q^ls^llⁿ* occurs twice following *r’y* (Müller 1889: 63–4, no. 8 and AH 244), the third occurrence is in broken context (AH 221).

Note that the Dadanitic formula is also different from the Sabaic system which is “day/month/year”.¹⁹

Neither is the form of the formula the same as Minaic, in which the year seems to stand in construct with the king, followed by the specification of the month and the *kbr*. Further comparison of the two formulae seems to confirm that Dadanitic *r'y* is not the equivalent of Minaic *kbr*. As mentioned above, there are etymological problems in interpreting *b-r'y* as “during the reign” as a parallel to Minaic *b-kbr* “during the *kabirate*”, and while the dating by a *kbr* can be specified by adding a month, the only attested specification of the Dadanitic *r'y* formula is by a few days before or after *r'y* or *t'n* X. This suggests that while Minaic *kbr* refers to a longer period of time (probably a year), Dadanitic *r'y* and *t'n* refer to a specific moment instead.

3.2. *r'y* and *t'n* in other corpora

Even though it is difficult to connect any of the forms following *r'y* to other known calendar systems, both *r'y* and *t'n* are attested in Safaitic inscriptions. Al-Jallad (2014: 217) demonstrated that *r'y* refers to the heliacal or acronical rising²⁰ of the constellations of the zodiac. He recognized the use of the signs of the zodiac in the Safaitic inscriptions after linking two inscriptions that included an identical list of three unknown elements that were read as place names (C 4985; KRS 169), to an inscription that listed the three seasons “winter” *s²ty*, “the season of the later rains” *dt'*, and the “dry season” *qyz* (SIJ 1008) (Al-Jallad 2014: 214–6), suggesting that the terms were better understood as some indication of the seasons, rather than place names. He then identified the same three elements independently in inscriptions, sometimes together with the phrases *b-r'y* or *b-ks¹*, which led to the identification of nine other forms that were used in similar formulae.

C 1338

l hml b{n} [n]s²bt bn ktm w r[']y h- 'bl b- r'y dkr bq{l}

“By *hml* {son of} {*ns²bt*} son of *ktm* and he [pastured] the camels during the rising of Aquarius on fresh {herbage}.”²¹

C 523

l 'lh bn b'hh bn trb w wrd h- nmrt b-ks¹ mlh

“By *'lh* son of *b'hh* son of *trb* and he went to water at Namārah during the cosmical setting/full moon of Aquarius.”²²

19 The only exception to this is AH 219, which reads *b-r'y hr{ff} s¹nt hms¹ ntn*, and possibly JSLih 349 which reads *b-r'y*... , which shows us that the phrase was started with *b-r'y* instead of *s¹nt*, but since it is broken after *b-r'y* there is no way to tell whether *s¹nt* followed, or was left out.

20 The heliacal rising occurs when a star rises just before sunrise. The moment a star rises while the sun sets is called its acronical rising.

21 Translation following Al-Jallad (2015: 233).

22 Translation following Al-Jallad (2015: 230).

Al-Jallad managed to link all twelve attested forms to the different signs of the zodiac, based on both their etymology and the activities and seasonal circumstances described in the inscriptions, which all correspond to the moment of the rising of the signs mentioned (Al-Jallad 2014: 228). In part II of this article (Al-Jallad 2016), he examines the cultural context of the dating formula in more depth. In this article Al-Jallad adds that the Safaitic system was most likely a mixed system, in which the constellations of the zodiac were integrated into a local practical star calendar or *parapegma*²³ (Al-Jallad 2016: 89–90), similar to the *anwā'* system discussed by Varisco (1991: 23).

Al-Jallad proposes connecting *r'y* to a term used by Babylonian astronomers *IGI = ittanmar* “to rise heliacally”, from *amārum* “to see”. This forms a nice parallel to *r'y* in Safaitic, which simply came to mean “the rising (of an asterism)” (Al-Jallad 2014: 217). In Part I of his article Al-Jallad interpreted the form *ks^l* as a reference “to the full moon when it occupies the constellation/sign with which it is in construct”, which can be linked to Hebrew *kīsē* and Syriac *kesā* both meaning “full moon” (HALOT #4329) (Al-Jallad 2014: 217). After pointing to the likely relation between the “Arabian zodiac” and an older system of local marker stars, however, he also discusses the possibility of regarding *ks^l* as a reference to the setting of an asterism. Unfortunately there is no direct evidence in the Safaitic inscriptions to decide what *ks^l* referred to exactly.²⁴ Making a distinction between the two is especially complicated as the setting of an asterism coincides with the period in which the full moon occupies that constellation (Al-Jallad 2016: 94). There is one attestation of a Safaitic inscription in which *ks^l* seems to be substituted with *ī'n*.²⁵

The form *ī'n* also occurs once in Minaic in a dating formula:

M 293A (lines 7–8)

b-šltn bn bt l-gzz dn fthn ywmnt fthn w-młbthn s'dt ī'n d-ṭrt d-kbrh hwf l d-wkl qdmn kbr-s^l

“In the legal appeal within what has been proclaimed for the enforcement of this judicial decision: date of the judicial decision and promulgation is on the sixth of the last decade of *d-ṭrt* during the kabirate of *hwf l d-wkl* his first kabirate.”²⁶

- 23 In the narrowest sense, a *parapegma* is an instrument to help keep track of the phases of observable stars throughout the year, usually to help make predictions about the weather and the seasons (Lehoux 2007: 12). The first attestation of such a device is from the third century BCE from the Ceramicus district in Athens (Lehoux 2007: 22). The term is also often used in a more general sense to refer to calendars of astronomical and meteorological events (e.g. Anastasiou et al. 2013: 173), in which sense it is also used here and in Al-Jallad's (2016) article.
- 24 The cultural importance of the full moon throughout ancient Near Eastern societies, however, might point to a reference to the full moon. Note, however, CAr. *kus'un* “the hinder, or latter part of anything” (Lane: 2608c), which could be connected to the “end” of the path of the asterism across the sky and its setting at dawn (Al-Jallad 2016: 94).
- 25 The inscription was photographed during the 2015 OCIANA survey in Jordan, p.c. Ahmad Al-Jallad. There are other examples of alternative dating formula in the Safaitic inscriptions, e.g. the use of *b-qmr* “during the full moon” or “during the month” (Al-Jallad 2016: 95).
- 26 Translation following CSAI, from DASI website.

The interpretation of *t'n* as “last decade of the month” in reference to the last ten days of the month was first proposed by Beeston (1956: 7). He connects *t'n* to CAr. *ta'ana fi s-sinn* “he was advanced in age”. The basic meaning of the root is “to pierce, enter or penetrate”, however, which is not directly related to the end of something. If we try to relate this form to the phases of the moon or the stars, on the other hand, whether something “enters” or “exits” all depends on perspective: does the moon or an asterism exit the phase in which we can see it, or does it enter the phase of its cycle in which it is obscured from us? In this way the etymology of *t'n* cannot solve the issue. The strongest argument for interpreting *t'n* as the name of a decade or phase of the month is its position in the dating formula. Compare for example, the Sabaic formula in which the days of the month were divided into three “decades” (Beeston 1956: 4–8; Stein 2005).

Ja 653 (lines 9–10)

ywm 'rb'm d-fqhy wrh d-mlyt

“The fourth day of the second decade of the month *d-mlyt*.”²⁷

It should be noted, however, that Beeston (1956) does not mention any other Minaic terms for the decades of the month, and that the terms used in Sabaic to indicate them (*fr'*, *fqhy*, and *'gby*) are not attested in Manaic²⁸ in the environment of a dating formula (DASI). Given the isolated attestation of *t'n* in Minaic, it is difficult to be certain of its exact meaning.

To sum up, *b-r'y* does not seem to be a reference to a local official. The etymology of the term and its usage, which is restricted to dating formulae, do not support such an interpretation. Moreover, none of the forms following the phrase *b-r'y* are elsewhere attested as personal names or epithets in the Dadanitic corpus. Based on the occurrence of the term *r'y* in Safaitic and *t'n* in Safaitic and Minaic, it seems plausible that the Dadanitic dating formula was based on a system using the observable rising and setting of celestial bodies to keep track of time.

4. A Dadanitic calendar

The fact that years are counted suggests that there was a definite and known beginning and ending of the year, which probably means that a relatively accurate system of keeping time was in place. Other cultures that do not keep time by a calendar usually date to local events. For example the Safaitic inscriptions use dating formulae such as the following to refer to a specific year.²⁹

ZeWa 1

... *s'nt trq mk mlk nbṭ tlt'n m't qtl 'l rm* ...

“The year *mk* king of the Nabataeans smote thirty cavalry units, warriors of the Romans.”

27 Translated following Stein (2005: 279).

28 The form *fqhy* is attested once in Minaic (M 81A+B) but in uncertain context.

29 Note that the Safaitic inscriptions that refer to the constellations of the zodiac only use these to refer to the season or part of the year in which the activity described in the inscription occurred. They do not mention the specific year in which this happened.

WH3792.1

... *s'nt ḥrb g{s²}m 'l tmd*

“The year {*gs²m*} and the people of Ṭamūd made war.”³⁰

In addition to that, the inscriptions that mention “X days before *r'y* Y” (JSLih 068 and possibly AH 244) suggest that the occurrence of *r'y* (and possibly *t'n*) were predictable. Despite the apparent predictability of *r'y*, there are no attestations of days counted within *r'y* or *t'n*. This suggests that *b-r'y* refers to a specific moment or day, instead of a longer period of time, such as a month.³¹ If we are looking at an actual calendar, which would have kept track of all the days of the year, one would expect to find at least occasional references to specific days of the month (as in Sabaic for example (Beeston 1956; Stein 2005)). Alternatively this could mean that there was a system of counting days in place, which may be compared to the lunar interpretation³² of the Roman *ides*³³ for example. This theory proposes that the days of the month were counted as the number of days *before* the *nona* (the ninth day before the *ides*), the *ides* (the full moon), and the next *kalenda* (the first day of the next month).³⁴ In this way all the days of the month could be accounted for while using a specific moment as an anchor from which to count the days.

Taken together, this suggests that the time reckoning system attested in the Dadanitic inscriptions was a systemized (hence predictable) mode of time reckoning, probably based on the movement of celestial bodies. This could mean that it was a ritual calendar for which not all days of the year would have been relevant, which would explain why most inscriptions only refer to the moment of *r'y* or *t'n*. Unfortunately, there are several obstacles that prevent an exact identification of the system. As discussed above, the etymologies of the terms following *b-r'y* and *b-t'n* are unclear. This means they cannot be directly linked to any known system of time reckoning, like the *anwā'* system, or the constellations of the zodiac.

On top of this, there are no Dadanitic inscriptions in which reference to seasonal conditions or activities is made, making it difficult to test any proposed correlation between any of the “dates” and actual periods of the year. As mentioned above, some *zll* inscriptions mention seasonal crops (e.g. U 058 and U 079bis mention *dt'* “crops of the season of the later rains”), but there are also attestations of seasonal crops from different seasons mentioned within the same inscription (AH 018 mentions both *dt'* “crops of the season of the later rains” and *hrf* “crops of the season of the first rains”). Therefore, it is impossible to link the moment of the writing of an inscription directly to the crops or season

30 Translations following Al-Jallad 2015.

31 I would like to thank Michael Macdonald for first stressing the significance of this feature to me.

32 I would like to thank an anonymous referee for pointing out that this definition of the Roman *ides* is only a theory about their lunar origins.

33 I would like to thank Benjamin Suchard for bringing this way of counting the days to my attention.

34 In the article “The western calendar and calendar reforms” under “The Julian calendar” <https://www.britannica.com/science/calendar/The-Western-calendar-and-calendar-reforms#ref313543>, accessed 2/10/2018.

mentioned in it. Moreover, there is only one inscription which mentions a *zll* and has a relevant dating formula, but it does not mention any specific crops (AH 244).

Since the etymologies of the forms in the dating formula have not proven to be useful in determining what kind of calendar is attested in the Dadanitic inscriptions, the following section will focus on different modes of timekeeping in the region, to help shed some light on the possible system behind the Dadanitic formula.

4.1. Lunar calendar

Most societies in the ancient Near East had a luni-solar calendar. They kept track of the months by watching the phases of the moon, but used intercalation to keep the year in sync with the seasons. The Babylonian calendars were already luni-solar (Stern 2012: 71). Later we find similar systems in ancient Greece (Stern 2012: 25)³⁵ and the Levant (Stern 2012: 71). If the Dadanitic were a lunar calendar as well,³⁶ it would seem likely that one of the two attested terms referred to the new moon, and one to the full moon, as they are the most recognizable phases of the lunar cycle. On top of this, the full moon had special significance in many religious activities in the region. Several Jewish festivals, such as Passover (van der Toorn, Becking, and van der Hors 1999: 590) and Sukkoth are celebrated during the full moon (Ulfgard 1998: 194); the Phoenicians celebrated new and full moon festivals (Wright 2007: 177);³⁷ similar festivals were also customary in Ptolemaic Egypt (Stern 2012: 144) and generally across Mesopotamia. This would make a practical or cultic calendar, indicating two moments of a cycle, with no reference to the full moon unlikely.

In this case *r'y* could refer to the appearance of the new moon, in parallel to its usage in Safaitic (the rising or appearance of an asterism) (Al-Jallad 2014, 2016) and its etymology (“to appear” from “to see”). Based on its etymology, *t'n* could then be argued to work with a meaning “end of the month/lunar cycle” or “last decade of the month” as proposed by Beeston (1956: 7), based on its meaning “to enter (the phase in which it is invisible)”. This meaning is a little awkward however. If *t'n* indicated the new moon, the etymology would work better as the period in which the visible moon will start to enter the sky again, but in that case it would no longer align with its proposed Minaic usage indicating the last decade of the month.

Based on its occurrence in Safaitic, *t'n* seems to be used as an alternative form of more common *ks'*, which can either be connected to the full moon, or the setting of an asterism (Al-Jallad 2016: 94). It is unclear how the root *t'n* would be related to the full moon etymologically. In Aramaic, *t'n* can mean “to lift up and

35 The only Greek calendar which was not lunar was the prytanic calendar, which was peculiar to Athens. It was also known as the bouletic calendar. It measured the terms of the prytanies (the prytanies were the leaders of each of the “tribes” represented in the boule). There were ten such terms in a year. In the third/second centuries BCE this number was increased to 12 prytanies per year (Stern 2012: 47).

36 There is no evidence for intercalation in the Dadanitic inscriptions.

37 See, for example, the mention of new and full moon festivals in KAI 43.

Table 3. Phases of the moon and the attested days in the inscriptions with *r'y* (light grey) and *t'n* (dark grey) indicating the new and full moon

				
New moon	1 st quarter	Full moon	last quarter	New moon
+/- day 1-7	+/- day 8 -14	+/- day 9 -21	+/- day 22-28	day 1
<i>r'y</i>		<i>t'n</i>		<i>r'y</i>
		13 days following <i>t'n</i> (AH 197)		7 days before <i>r'y</i> (AH 244) 3 days before <i>r'y</i> (JSLih 068)
<i>t'n</i>		<i>r'y</i>		<i>t'n</i>
13 days following <i>t'n</i> (AH 197)		7 days before <i>r'y</i> (AH 244) 3 days before <i>r'y</i> (JSLih 068)		

carry a burden, to become pregnant; to put a burden on something/someone”.³⁸ Such a meaning would go well with an interpretation of *t'n* as referring to the full moon. However, Aramaic *t'n* comes from **z'n* (compare e.g. CAR. *za'un* “a camel used for work and for bearing burdens” (Lane: 1911c)).

In Dadanitic **z* is quite often written with *t*, however, suggesting that the two merged in (some forms of the) spoken language (see Kootstra 2018b for a full discussion).³⁹ While this could explain how **z'n* ended up in Dadanitic as *t'n*, this sound change does not seem to have operated in Safaitic and Minaic. However, if *t'n* originally referred to the cosmical or acronical setting of a constellation this would have coincided with its full moon. The fact that these two events occur at the same time, could explain how a possible original meaning of “to set”, referring to an asterism, came to refer to the full moon being in a certain asterism, either through development of the system itself or when it was adopted from neighbouring societies.

Combining the attested days before *r'y* and following *t'n* into a lunar cycle with the full and new moon indicated is somewhat problematic, however, as the days mentioned in the inscriptions overlap in the different phases they are supposed to indicate. In other words, 13 days following *t'n* would, in such a system, be the same as one day before *r'y* (see Table 3). So unless there were different terms to refer to the same period of the month, this system does not work with the attested forms.

For a lunar system to work with the days specified in the inscriptions, we need one of the two terms to refer to the first or last quarter. Even though

38 <http://cal.huc.edu/> Comprehensive Aramaic Lexicon (accessed 26/7/2018).

39 Note that while in the article only two attestations of *ll* for *zll* are mentioned, closer inspection of the photographs reveals there are 25 attestations of this spelling (e.g. AH 009.1; AH 015; AH 109; AH 163; al-¹Udayb 001; U 037.1; U 038; U 048).

Table 4. Phases of the moon and the attested days in the inscriptions with *r'y* (light grey) and *f'n* (dark grey) indicating the new or full moon and one of the quarters

				
New moon	1 st quarter	Full moon	last quarter	New moon
+/- day 1-7	+/- day 8 -14	+/- day 9 -21	+/- day 22-28	day 1
<i>r'y</i>	<i>f'n</i>			<i>r'y</i>
	13 days following <i>f'n</i> (AH 197)			7 days before <i>r'y</i> (AH 244) 3 days before <i>r'y</i> (JSLih 068)
		<i>r'y</i>	<i>f'n</i>	
		7 days before <i>r'y</i> (AH 244) 3 days before <i>r'y</i> (JSLih 068)	13 days following <i>f'n</i> (AH 197)	
<i>f'n</i>			<i>r'y</i>	<i>f'n</i>
13 days following <i>f'n</i> (AH 197)			7 days before <i>r'y</i> (AH 244) 3 days before <i>r'y</i> (JSLih 068)	
	<i>r'y</i>	<i>f'n</i>		
	7 days before <i>r'y</i> (AH 244) 3 days before <i>r'y</i> (JSLih 068)	13 days following <i>f'n</i> (AH 197)		

this would create a system that does not overlap and could potentially name all days of the month, it is unclear why a system would develop that referred to the days of the lunar cycle only through either the full or the new moon and one of the two quarters (see Table 4).

If the Dadanitic system was indeed a lunar calendar, possibly solely noting certain phases of the moon that were of cultic significance, the forms following *b-r'y* and *b-f'n* should be interpreted as local month names. Possibly similar to the month names in Sabaic, which derive from different sources: some are connected to festivals or deities, such as *d-nswr* and *d-srr* (after the ritual indicated by the verb *hšr*), while others relate to seasonal or agricultural activities *d-df'* “the month of spring”, and several of which the origin remains obscure (Beeston 1956: 15–7).⁴⁰ This could explain why not all the terms following *r'y* are readily interpretable in Dadanitic either. It is clear, however, that trying to fit the Dadanitic dating formula to a lunar system requires some special pleading.

40 The month name *mn'y* could, for example, be taken as a participle from the root *yn'* “to ripen” in such a context as a reference to the month in which fruits or other agricultural produce would ripen. Since month names can derive from different sources, however, it is difficult to construct a comprehensive framework in which to fit all the “month names” without it turning into a mere exercise of creativity.

4.2. Zodiac

Since the basic terms of the Dadanitic formula, $r'y$ and $t'n$ also occur in the Safaitic zodiac, one might expect to find the underlying system to be similar as well. However, as Al-Jallad (2014) demonstrated, each of the Safaitic forms can confidently be connected to one of the well-known constellations of the zodiac.⁴¹ The Dadanitic forms, on the other hand, cannot be fitted into this system. Even though one might argue for a connection between some of the Dadanitic forms and the signs of the zodiac,⁴² it seems impossible to connect all of the attested forms to the zodiac systematically.

In the second part of his article, Al-Jallad argues that the Safaitic zodiac is probably a hybrid system, using newly adopted zodiac signs in the framework of an older practical star calendar (Al-Jallad 2016: 88). Practical star calendars in which a certain seasonal or agricultural event would be connected to the rising or setting of a star or asterism were widely used from Mesopotamia to the south of the Arabian Peninsula. Varisco (1993) found several of these ancient local star calendars which have later been moulded into the lunar mansions system (Varisco 1993: 121–3) and a 365-day solar calendar (Varisco 1993: 126) by later Islamic scholars. Similar *parapegmata* are known, for example, from ancient Greece, in which astronomical events would be listed in connection to certain meteorological events (Stern 2012: 57–8). These types of star calendars were a practical tool for people who were dependent on the weather and the seasons, without requiring a complex understanding of the movement of the celestial bodies, since simple repeated observation would be enough to be able to link the movement of the stars to local seasonal weather patterns (Varisco 1993: 121).

Given the attestation of both $r'y$ and $t'n$ in the Safaitic inscriptions, and even the attestation of $t'n$ in Minaic, these probably all stem from one system of time reckoning. Given their usage in Safaitic, the origin of this system was most likely a practical star calendar. Assuming a practical calendar to be at the base of this is further supported by the widespread usage of such systems in the ancient Near East. The reason we probably only see remnants of this system, sometimes adapted to other systems as in Yemen (Varisco 1993) and the Safaitic inscriptions (Al-Jallad 2016), is probably due to the fact that they are not very practical for administrative purposes, due to their lack of specificity and uniformity. The fact that there seems to have been a close connection between the agricultural cycle and religious practice at Dadān may have contributed to the adoption of this, in essence, practical calendar for religious purposes,

41 For a complete discussion of the names of the zodiac signs in the Safaitic inscriptions see Al-Jallad (2014: 218–28; and 2016: 91–4) for a more detailed discussion of names of the Arabian zodiac in their cultural context.

42 For example, if one would parse $glqsl$ as “gallat qaws” as proposed by Caskel (1954: 91), one could try to connect qsl to CAr. *al-qaws* “the sign of Sagittarius” (Lane: 2575a). The form would still be problematic however, qsl would need to be interpreted as a proper noun and therefore definite, to form a genitive construction with *gl* (possibly ‘might’).

which led to it being written down – contrary to the fate of most similar calendars.⁴³

If the Dadanitic dating formula represented a star calendar, *r'y* probably referred to the rising of a star or asterism, while *ṭ'n* referred to its setting. Assuming that the Dadanitic system reflects a local *parapegma* could also explain why the forms following *r'y* and *ṭ'n* do not seem to correspond to any of the known time-keeping systems in the region, as they would represent the local names of locally relevant stars or asterisms. Moreover, assuming a practical calendar could help explain why we do not encounter a “full” calendar at Dadān, counting all the days of the year, since a practical calendar would only need to indicate the start of a general period of agricultural significance, or in a cultic guise it would only need to indicate the specific festival days of the year.

5. Conclusion

Based on the incompatibility of the forms following *r'y* with personal names, the difficult connection between the root *r'y* and the meaning “ruling”, and the occurrence of an alternative form of the formula including *ṭ'n*, it seems clear that the Dadanitic dating formula did not refer to a local ruler. The recent recognition that *r'y* and *ṭ'n* in Safaitic refer to a calendar based on the movement of the stars (Al-Jallad 2014; 2016) and the use of *ṭ'n* in Minaic in similar time reckoning context seems to suggest that we are looking at an ancient dating system that lies at the basis of all three. After comparing the Dadanitic inscriptions to comparable dating systems in the ancient Near East, it seems that the Dadanitic inscriptions most likely reflect either a lunar calendar or a local star calendar. Given the strong parallels between the terms used in the Safaitic inscriptions and the Dadanitic ones, and the fact that until now only two phases of the moon would be accounted for in the Dadanitic inscriptions, there seem to be fewer problems with identifying the Dadanitic dating formula as a calendar based on the rising and setting of locally relevant asterisms. The fact that an identification of the terms following *r'y* and *ṭ'n* with known month or star names remains problematic may be understood if we consider the Dadanitic dating system as a practical star calendar based on the local names of locally relevant stars.

Appendix 1: The terms following *r'y*

In this section the terms following *r'y* and *ṭ'n* will be discussed individually in order to explore if and how their etymology may contribute to our understanding of their function. Both their occurrence as personal names and possible

43 As mentioned above, an important genre of dedicatory texts in Dadanitic concerns the *zll* ritual for the main deity of the oasis, *dḡbt*. The *zll* ritual has previously been connected to a fertility ritual (Beeston 1974: 173), since many of these inscriptions mention different kinds of crops, such as palm trees (e.g. U 038), spring crops (al-‘Uḡdayb 132; JSLih 077) or autumn crops (e.g. U 041; U 059). At the moment, it is not entirely clear however, whether the crops mentioned are the things being offered, or whether the dedicants are asking to be blessed with these crops.

connections to asterisms will be discussed. Note that while some of the terms may be connected to certain asterisms, in order to argue conclusively that these terms were part of any of the ancient star calendars known to us, all terms should fit within that system, which currently seems impossible. Connecting just a few of them is not enough to make such analogies. The following should therefore be understood as an initial exploration that might be helpful to put the terms in perspective.

s^llhn

The form *s^llhn* does not occur as a personal name in the Dadanitic corpus, but it does in Ḥaḍramitic⁴⁴ and in Qatabanic,⁴⁵ in the latter mostly as the name or patronymic of a king (e.g. CIAS F 58/s4/49.10 no. 3 and CIAS F 58/s 4/49.10 no. 2). In Sabaic it occurs 38 times, mostly in variations of the phrase *bytn s^llhn*, which is translated as “the palace *s^llhn*” (CSAI). Even though this phrase seems to refer to an actual building in some cases, e.g. ...*l-wfy bytn s^llhn w-hgrn m[r]yb* (CIH 373) “for the safety of the palace *s^llhn* and the village *mryb*” (CSAI), in other inscriptions an interpretation “house, or family” seems to be more appropriate (Beeston et al. 1982: 34); e.g. *l-s^llmm w^lhnm w-l-ḥs²k bytnhn s^llhn w-rydn* “to seek peace and fraternity and to join the two families Salḥīn and Raydān”.⁴⁶

This is the only term that can be connected directly to an asterism. Lane reports *ḏū as-silāḥ* as an alternative name for Arcturus in Arabic (Lane: 1402c), which is the brightest star in the constellation of Boötes. The suffix *-n* may represent the ASA definite article,⁴⁷ in which case it was probably borrowed as a whole. Alternatively a connection may be sought between the meaning “weapon” (CAr. *Sulḥān* (Lane: 1402c)) and the constellation Aries. In this sense it may be compared to Safaitic *tbr* “soldier” or Babylonian *Nedu* (Al-Jallad 2014: 227).⁴⁸

ḏ^lbs^lmwy

This form is not attested as a PN in Dadanitic or in ASA (DASI, accessed 3/10/2018). It seems to be a compound name, which could possibly be parsed *ḏ^lb s^lmwy* “of the sky father” or *ḏ^lb s^lmwy* “sky wolf”.

The Wolf (UR.BAR.RA (Hunger and Pingree 1989: 18)) is one of the stars mentioned in the Babylonian star catalogue MUL.APIN. It refers to the star Alpha Trianguli, which was part of the constellation called the Plough (MUL.APIN (Hunger and Pingree 1989: 18)). The rising of this constellation

44 The name occurs three times in Ḥaḍramitic: KR 2; KR 3; RES 2687.

45 The name occurs seven times in Qatabanic e.g. RES 3888; CIAS F 59/s4/49.11 no. 1; CIAS F 59/s4/49.10 no. 6.

46 CSAI translated “palaces” instead of “families”, otherwise the translation is followed.

47 I would like to thank an anonymous referee for pointing this out to me.

48 Lane also reports the meaning “bow without a string” for *silāḥ* (Lane: 1402c). It seems unlikely, however, that the image of an archer that is connected to Sagittarius (Al-Jallad 2014: 227) would be indicated by the word for an incomplete bow.

marked the starting of the spring ploughing in February in Mesopotamia (Rogers 1998: 16).

's'l'n

's'l'n is attested once as a personal name in Safaitic (WH 1018) (Harding 1971: 324). It is not attested in ASA (DASI, accessed 3/10/2018) or in the Dadanitic corpus as a personal name.

The etymology of this form is rather unclear. In Sabaic *'s'l'* is found with the meaning “coins” (Beeston et al. 1982: 125). In this case the suffix *-n* could be interpreted as the Sabaic definite article.

Another explanation could possibly be found in the “plant or tree” named *sala'* (CAr.) (Lane: 1406c). Lane reports “a practice which was observed in the Time of Ignorance, when the people were afflicted with drought, or barrenness of the earth; which was the *hanging the [kind of tree, or plant called] sala' with the [spices of swallow-worth called] 'ušar to wild bull and then sending them down from the mountains, having kindled fire in the sala' and 'ušar, seeking thereby to obtain rain by the flame of fire, which was linked to the gleaming of lightning*” (Lane: 1406c). Even though Lane reports a stem-II *salla'a* for the verb signifying this custom, the Dadanitic form could be understood as the nominal form of a causative verb. In this case, however, it would be problematic to explain the suffix *-n* as the ASA definite article, since none of the ASA languages employed an *'af'al* form of the causative verb.⁴⁹ While such a ritual may be connected to a certain part of the year and from there to a calendar, there is no other mention in the Dadanitic inscriptions of such a ritual.

hrm

The form *hrm* is attested three times as a tribal name in (central) Minaic⁵⁰ and four times in Sabaic;⁵¹ as a personal name in Qatabanic⁵² and Sabaic⁵³ and it occurs once as a toponym in Sabaic⁵⁴ (Haram 49)(DASI, accessed, 3/10/2018).

It may be possible to connect this form to the root $\sqrt{\text{RMY}}$ and interpret this form as /ha-ramī/ “the lancer/archer”.⁵⁵ This would form a nice parallel with *rmy*, which was identified as Sagittarius by Al-Jallad (2014: 227). Note that the only other form that could possibly be connected to the zodiac so far is *s'l'hn*, which would have to be linked to Sagittarius as well.

49 The Sabaic C-stem takes an *h-* prefix, and the non-Sabaic ASA languages use an *s'l'-* prefixed C-stem form (Stein 2011: 1059).

50 B.05.D.O./12; Haram 2; Haram 20. B.05.D.O./12 only says *dhrm*, it is uncertain if *hrm* is really a tribal name here (DASI, accessed 3/10/2018).

51 Haram 6; Haram 7; RES 3945; CIH 332. CIH 332 is distinguished as a lineage name in the DASI database, it has *d* in front of it. (DASI, accessed 3/10/2018).

52 RES 3902 no. 55 = CSAII, 814; CIAS T 62; Ghul-YU 51 (DASI).

53 GL 1522 (DASI) (Höfner and Solá Solé 1961).

54 Haram 49 (DASI).

55 Dadanitic is generally considered to have employed three *matres lectiones*; *-h*, *-w* and *-y* (Drewes 1985: 167–8, followed by Farès-Drappeau 2005: 62–3). Even though there seems to be clear evidence for the use of *-h* for *-ā* and *-w* for *-ū*, the evidence for the use of *-y* for *-ī* or *-ē* in Dadanitic is less convincing (Macdonald 2008: 186).

In addition to this it would structurally set this form apart from most of the others, since it would mean interpreting *h-* as a definite article in this form. Note that the only other form which may contain a definite article can also be interpreted as an occupational noun (see *hr'*).

'*bdn*

'*bdn* occurs as a personal name in Qatabanic⁵⁶ and Sabaic;⁵⁷ it is attested as a lineage name in Qatabanic⁵⁸ and as a tribal name in Sabaic.⁵⁹ It occurs in two Sabaic texts⁶⁰ as a toponym. The name also occurs in Safaitic.⁶¹

In the inscription '*bdn* is directly followed by *hn's'*. While it may look like the two are in construct and *hn's'* is part of the "month/period name" in the dating formula, it is probably a short hand to refer to a specific king. The name *hn's'* only occurs once as a personal name in a lineage given at the beginning of an inscription (U 090). In all other cases it is either found as a personal name or patronymic specified as *mlk lhyn* "king of Liḥyān" as part of a dating formula, or (in some broken inscriptions) near the end of the inscription where one would expect to find a dating formula.⁶² There are three inscriptions in which the name directly follows a dating formula including the one in which it follows '*bdn* (AH 224; JSLih 072 and D 159). Given the other occurrences of the name *hn's'* it seems safe to suggest that here it was also added to indicate the era (see section 3.1 Syntax and form) and not as part of the "month/period name".

'*bdn* could be '*ubdān* (broken plural form), or have a suffixed plural or dual. It could be interpreted as "followers" in an attempt to connect it to the star *al-dabarān* "the Follower" of the Pleiades (Allen 1963: 383) which later became identified with the lunar station *dabarān* (Varisco 1993: 123).⁶³ However, as with the few forms that may be connected to the zodiac, there does not seem to be a systematic way to connect all forms to such marker stars or lunar stations.

...*n'y*

This form was restored as [*m*]*n'y* in OCIANA. However, the first letter following the word divider is open at the bottom, while the *m* in the previous line is

56 BM 141587 (DASI).

57 RES 4763 (DASI).

58 ATM 890; CIAS S 56/p 2/95. 11 no. 2 (DASI).

59 RES 3945; Ist 7608 bis (DASI).

60 CIAS 39.11/o 3 no. 3; 'Abadān 1 (DASI).

61 e.g. C 1624; KRS 665; WH 1518 (OCIANA).

62 Specified as *mlk lhyn*: AH 202; AH 204; AH 222; AH 225; AH 226; AH 239; AH 224; JSLih 075; JSLih 082; Nasif 1988: 99, pl. CLVII; al-Ḥuraybah 10. It is attested once as a PN specified by what seems to be *mlk{t} lhyn* even though *hn's'* is mentioned as *bn s²hr* "son of *S²hr*", the beginning and end of each line of the inscription are lost, however, so the context is unsure. In AH 221 the name is found at the very end of the damaged inscription, making it likely that it was part of a dating formula which is always found at the end of an inscription.

63 The Pleiades feature prominently in many astral dating systems (e.g. Varisco 1993: 125; Rogers 1998: 19).

closed, making this an unlikely reading. *mn'y* only occurs as a lineage name⁶⁴ in Sabaic.

Since the word is broken it becomes impossible to speculate about its possible etymology.

glts¹

glts¹ does not occur in ASA (DASI).

The form looks like it might be a compound form with the deity *qaws¹*, as was proposed by Caskel (1954: 91). If we interpret *qs¹* as “bow” it could also be taken as a reference to the bow of Sagittarius. The image of a man with a bow is very old, it has been recorded on a boundary stone as early as the second millennium BCE (Rogers 1998: 27).⁶⁵ Or even to BAN “the bow”, identified as the asterism S.CMa (and part of Puppis) from the Babylonian star list MUL.APIN (Rogers 1998: 19).

The first part of the form *gl* may then be related to CAr. *jalal* “a great or formidable thing” *jillah* “great” or (Lane: 437bc). In construct with the name of the deity this could give a meaning “greatness of Qaws”. Note, however, that there is no evidence in the inscriptions that *Qaws¹* was worshipped in Dadān.

hmt

hmt does not occur in ASA (DASI). *hmt* does not seem to appear in ANA as a PN either (Harding 1971: 228).

The form *hmt* may be connected to *haymat* “tent” and the constellation *al-'ahbiyah* “the tents” (Gpze and Aquarii together). It is unclear, however, why this name would be calqued and not taken over with the same root.

hr'

This form is attested as C-stem verb of *r'y* in Sabaic,⁶⁶ translated as “he let them pasture” (CSAI). *r'* does not occur in ASA (DASI). There does not seem to be a PN *hr'* in ANA either (Harding 1971: 613).

This form may be interpreted as coming from the root $\sqrt{R'Y}$, which could render an interpretation “the shepherd”, with a definite article similar to *hrm* if that is from \sqrt{RMY} . This could be compared to the Babylonian name for Orion “the loyal shepherd of heaven” (SIBA.ZI.AN.NA *Shitaddalu*) (Rogers 1998: 16).

Acknowledgements

I would like to thank Professor Al-Jallad and Dr Macdonald for extensively discussing this idea with me when it was still in its initial stages. My gratitude goes to Professor de Blois for corresponding with me on the elusive “month names” in the Dadanitic inscriptions. Finally I would like to thank everyone who has commented on this paper in various stages of its writing, most notably: Dr

64 CIH 40 (DASI).

65 Even though the name Nedu, meaning “soldier”, has also been recorded for this constellation in Babylonian sources (Rogers 1998: 26–7).

66 Gr 98 (DASI).

Edward Hayes, Dr Benjamin Suchard, Dr Simone Mauri, Professor Maarten Kossmann and Professor Petra Sijpesteijn. All errors are of course my own. The research for this article was funded by the NWO grants in the humanities, Grant/Award no. PGW 14–43.

Sigla and abbreviations

AH	Dadanitic inscriptions in Abū l-Ḥasan (1997)
AHUD	Dadanitic inscription in Minaic script published in Abū l-Ḥasan (2005)
ATM	Deposit number in the 'Ataq Museum, available on DASI
al-'Uḏayb	Dadanitic inscriptions published in OCIANA
al-Ḥuraybah	Dadanitic inscriptions published in al-Theeb (2013)
al-Ḥarāshif	Inscriptions from al-Ḥarāshif, published in Robin (1992)
al-Jawf	Ancient South Arabian inscriptions published in Arbach and Schiettecatte (2006)
Al-Sa'īd 1420/ 1999	Dadanitic inscriptions published in al-Sa'īd (1420/1999)
'Abadān	South Arabian inscriptions published in Robin and Gajda (1994)
BM	Qatabanic inscriptions published in Bron (2006)
C	Inscriptions published in Ryckmans (1950)
CIAS	Ancient South Arabian inscriptions published in Beeston, Pirenne and Robin (1977)
CIH	Corpus inscriptionum semiticarum pars quarta inscriptions Ḥimyariticas et Sabaeas continenst. I–III, Paris 1889–1929
CSAI	Corpus of South Arabian Inscriptions, part of DASI
DASI	Digital Archive for the Study of pre-Islamic Arabian Inscriptions. Available at http://dasi.cnr.it/
Ghul-YU	South Arabian inscriptions published in Hayajneh (2000)
Gr	Ancient South Arabian inscriptions published in Grjaznevič (1978)
Haram	Ancient South Arabian inscriptions published in Robin (1992)
Ist	Deposit number in the Ancient Orient Museum in Istanbul, available on DASI
Ja	Ancient South Arabian inscriptions published in Jamme (1963)
JaL	Inscriptions published in Jamme (1968)
JSLih	Inscriptions called Liḥyanite published in Jaussen and Savignac (1909–12)
KAI	Canaanite and Aramaic Inscriptions published in Donner and Röllig (1968)

KR	Ancient South Arabian inscriptions published in Avanzini (2008).
KRS	Inscriptions recorded by Geraldine King on the Basalt Desert Rescue Survey in north-eastern Jordan in 1989 and published in OCIANA
Lane	Arabic–English dictionary by Lane (1863)
M	Minaic inscriptions in Garbini and Capuzzi (1974) and available in DASI
MuB	Qatabanic inscriptions published in Avanzini et al. (1994)
Müller 1889	Inscriptions published in Müller (1889)
Nasif 1988	Dadanitic inscriptions published in Nasif (1988)
OCIANA	Online Corpus of the Inscriptions of Ancient North Arabia. Available at: http://krcfm.orient.ox.ac.uk/fmi/webd/ociana
Private collection	Dadanitic inscriptions from a private collection published in OCIANA
Rabeler	Dadanitic inscription published in Scagliarini (2002)
RES	Répertoire d'épigraphie sémitique. (8 volumes). Paris: Imprimerie nationale, 1900–1968
SIJ	Safaitic inscriptions in Winnett (1957)
U	Dadanitic inscriptions from al-'Uḏayb published in Sima (1999)
WH	Safaitic inscriptions published in Winnett and Harding (1978)
ZeWa	Zeinaddin, F. 2002. Unpublished Safaitic inscriptions on fax in Al-Jallad 2015

Bibliography

- Abū l-Ḥasan, H.A.D. 1997. *Qirā'ah li-kitābāt liḥyāniyyah min jabal 'Ikma bi-miṭṭaqat al-'Ulā*. Riyadh: Maktabat al-malik fahd al-waṭaniyyah.
- Abū l-Ḥasan, H.A.D. 2005. "Analysis of a new Minaean inscription from Al-'Ulā", *Adumātu* 12, 29–38.
- Al-Jallad, A. 2014. "An ancient Arabian zodiac. The constellations in the Safaitic inscriptions, Part I", *Arabian Archaeology and Epigraphy* 25, 214–30.
- Al-Jallad, A. 2015. *An Outline of the Grammar of the Safaitic Inscriptions*. (Studies in Semitic Languages and Linguistics 80.) Leiden: Brill.
- Al-Jallad, A. 2016. "An ancient Arabian zodiac: the constellations in the Safaitic inscriptions, Part II", *Arabian Archaeology and Epigraphy* 27, 84–106.
- Allen, R.H. 1963. *Star Names: Their Lore and Meaning*. New York: Dover Publications.
- Al-Sa'īd, S.F. 1420/1999. "Nuqūš Liḥyāniyyah Ġayr Manšūrah Min Al-Maḥaf Al-Waṭanī Al-Ḥiyāḍ – Al-Mamlakah Al-'arabiyyah Al-Sa'ūdiyyah", *Našrah Baḥṭhiyyah* 14/1, 3–14.
- Al-Theeb, S.A. 2013. *Al-Ḥuraybah (Dadān) 'āšimat Mamlakatay Dadān Wa-Liḥyān. Al-Taqrīr Al-'Ulā Li-l-Mawṣim Al-Tāmin 2011m*. (Silsilat Al-Dirāsāt Al-Aṭariyyah Al-Maydāniyyah 1.) Riyadh: Iṣḍārāt al-ḡamī'ah al-su'ūdiyyah l-l-dirāsāt al-aṭariyyah.

- Anastasiou, M., J.H. Seiradakis, J. Evans, S. Drougou and K. Efstathiou. 2013. "The astronomical events of the Parapegma of the Antikythera mechanism", *Journal of the History of Astronomy* 44/2, 173–97.
- Arbach, M. and J. Schiettecatte. 2006. *Catalogue des Pièces Archéologiques et Épigraphiques du Jawf au Musée National de Şan'ā'. Şan'ā' National Museum. Şana'ā: Centre français d'archéologie et de sciences sociales de Şan'ā'.*
- Avanzini, A. (ed.) 2008. *A Port in Arabia between Rome and the Indian Ocean (3rd c. BC–5th c. AD) Khor Rori Reports 2. (Arabia Antica 5.)* Rome: "L'Erma" di Bretschneider.
- Avanzini, A., M. Bāfaqīh, A. Bāṭāyī' and C.J. Robin. 1994. "Materiali per Il Corpus Qatabanico", *Raydān* 6, 17–36.
- Beeston, A.F.L. 1956. *Epigraphic South Arabian Calendars and Dating*. London: Luzac.
- Beeston, A.F.L. 1974. "Book review of Stiehl (1971)", *Proceedings of the Seminar for Arabian Studies* 4, 172–3.
- Beeston, A.F.L. 1979. "Some observations on Greek and Latin data relating to South Arabia", *Bulletin of the School of Oriental and African Studies* 42/1, 7–12.
- Beeston, A.F.L., Mahmoud A. Ghul, Walter W. Müller and Jacques Ryckmans. 1982. *Sabaic Dictionary (English–French–Arabic)*. Louvain-la-Neuve: Éditions Peeters.
- Beeston, A.F.L., J. Pirenne and C.J. Robin. 1977. *Corpus des Inscriptions et Antiquités Sud-Arabes*. 2 vols. Louvain: Peeters.
- Bron, F. 2006. "Nouvelles antiquités qatabanites du British Museum", *Arabian Archaeology and Epigraphy* 17, 190–200.
- Caskel, W. 1954. *Lihyan und Lihyanisch*. Cologne: Westdeutscher Verlag.
- Donner, H. and W. Röllig. 1968. *Kanaanäische und Aramäische Inschriften*. 2 vols. Wiesbaden: Harrassowitz.
- Drewes, A.J. 1985. "The phonemes of Lihyanite", in *Mélanges Linguistiques Offerts à Maxime Rodinson par Ses Élèves, Ses Collègues et Ses Amis*, ed. C.J. Robin, 165–73. Paris: Librairie orientaliste Paul Geuthner, S.A.
- Farès-Drappeau, S. 2005. *Dédan et Liḥyān iḥyānet Lieau, Arabes aux confins des pouvoirs Perse et Hellénistique (Ive-IIe s. avant l'ère Chrétienne)*. Lyon: Maison de l'Orient et de la Méditerranée.
- Garbini, G. and A. Capuzzi. 1974. *Iscrizioni Minee*. Vol. Iscrizioni sudarabiche 1. (Publicazioni Del Seminario de Semitica, Ricerche 10.) Naples: Istituto Orientale di Napoli.
- Grjaznevič, P.A. 1978. *Materiali Ekspedicii P.A. Grjaznevičia 1966–1967 Gg. Južnaja Aravija*. (Pamjiatniki Drevney Istorii i Kultury 1.) Moscow: Glavnaja redakcija vostočnoj literatury.
- Harding, G. Lankester. 1971. *An Index Concordance of Pre-Islamic Arabian Names and Inscriptions*. Toronto and Buffalo: University of Toronto Press.
- Hayajneh, H. 2000. "Altsüdarabisches aus dem Nachlass Mahmud Al-Ghul", *Arabian Archaeology and Epigraphy* 11/2, 237–51.
- Höfner, Maria and Josep M. Solá Solé. 1961. *Inschriften aus dem Gebiet zwischen Mārib und dem Gōf. Sammlung Eduard Glaser*. 2. (Sitzungsberichte der Österreichische Akademie der Wissenschaften. Philosophisch-historische Klasse, 238/3.) Vienna: H. Böhlau Nachf., Kommissionsverlag der Österreichischen Akademie der Wissenschaften in Wien.
- Hunger, H. and D. Pingree. 1989. *MUL.APIN; an Astronomical Compendium in Cuneiform*. (Archiv für Orientforschung 24.) Horn, Austria: Verlag Ferdinand Berger and Söhne Gesellschaft M.B.H.

- Jamme, A. 1963. *The Al-'Uqlah Texts*. (Documentation Sud-Arabe 3.) Washington: Catholic University of America Press.
- Jamme, A. 1968. *Minaean Inscriptions Published as Lihyanite*. Washington, D.C.: privately produced.
- Jaussen, A. and R. Savignac. 1909–1912. *Mission archéologique en Arabie*. 5 vols. Paris.
- Kootstra, F. 2018a. “Scribal practices in contact: two Minaic/Dadanitic mixed texts”, (*Supplement to the Proceedings of the Seminar for Arabian Studies*). *Languages, Scripts and their Uses in Ancient North Arabia: Papers from the Special Session of the Seminar for Arabian Studies Held on 5 August 2017*. Oxford: Archaeopress.
- Kootstra, F. 2018b. “Z and ṭ in the Dadanitic inscriptions”, in A. al-Jallad and L. Nehmé (eds), *To the Madbar and Back Again: Studies in the Languages, Archaeology, and Cultures of Arabia Dedicated to Michael C.A. Macdonald, 202–17*. (Studies in Semitic Languages and Linguistics.) Leiden: Brill.
- Kootstra, F. 2019. “The writing culture of ancient Dadān: a description and quantitative analysis of linguistic variation”, PhD thesis, Leiden University.
- Lane, E.W. 1863. *An Arabic–English Lexicon*. London: Williams & Norgate.
- Lehoux, D. 2007. *Astronomy, Weather, and Calendars in the Ancient World*. Cambridge: Cambridge University Press.
- Livingstone, A. 1998. “The use of magic in the Assyrian and Babylonian hemerologies and menologies”, in *Magic in the Ancient Near East*, 59–67. (Studi Epigrafici e Linguistici Sul Vicino Oriente Antico.) Verona: Essedue Edizioni.
- Macdonald, M.C.A. 1992. “The seasons and transhumance in the Safaitic inscriptions”, *Journal of the Royal Asiatic Society of Great Britain & Ireland* 2/1, 1–11.
- Macdonald, M.C.A. 2000. “Reflections on the linguistic map of pre-Islamic Arabia”, *Arabian Archaeology and Epigraphy* 11, 28–79.
- Macdonald, M.C.A. 2008. “Ancient North Arabian”, in R.D. Woodard (ed.), *The Ancient Languages of Syria-Palestine and Arabia*. Cambridge: Cambridge University Press, 179–224.
- Müller, D.H. 1889. *Epigraphische Denkmäler aus Arabien nach Abklatschen und Copien des Herrn Professor Dr. Julius Euting in Strassburg*. Vienna.
- Nasif, Abdallah. 1988. *An Historical and Archaeological Survey with Special Reference to Its Irrigation System*. Riyadh.
- Robin, C.J. 1992. *Inabba', Haram, al-Kāfir, Kamna et al-Ḥarāshif. Fasc. A: Les documents. Fasc. B: Les planches. Inventaire des inscriptions Sudarabiques*. Vol. 1. Paris/Rome: De Boccard/Herder.
- Robin, C.J. and I. Gajda. 1994. “L’inscription du Wādī ‘Abadān”, *Raydān* 6, 113–37.
- Rogers, J.H. 1998. “Origins of the ancient constellations: I. The Mesopotamian traditions”, *Journal of the British Astronomical Association* 108, 9–28.
- Rohmer, J. and G. Charloux. 2015. “From Liḥyān to the Nabataeans: Dating the end of the Iron Age in north-west Arabia”, *Proceedings of the Seminar for Arabian Studies* 45, 297–320.
- Ryckmans, G. 1950. *Corpus Semiticarum Pars V*. Paris: Imprimerie nationale.
- Scagliarini, F. 2002. “Le Antichità Lihyanite di J. Rabeler e i Re Di Liḥyān”, *Studi Epigrafici e Linguistici sul Vicino Oriente Antico* 19, 121–30.
- Sima, A. 1999. *Die Lihyanischen Inschriften von Al-'Uḏayb (Saudi Arabien)*. (Epigraphische Forschungen auf der Arabischen Halbinsel 1.) Rahden: Verlag Marie Leidorf.

- Stein, P. 2005. "Once again, the division of the month in Ancient South Arabia", *Proceedings of the Seminar for Arabian Studies* 35, 279–86.
- Stein, P. 2011. "Ancient South Arabian", in Stefan Weninger (ed.), *The Semitic Languages*. (Handbücher Zur Sprach- und Kommunikationswissenschaft 36.) Berlin and Boston: De Gruyter Mouton.
- Stern, S. 2012. *Calendars in Antiquity: Empires, States, and Societies*. Oxford: Oxford University Press.
- Toorn, Karel van der, Bob Becking and Pieter W. van der Hors (eds). 1999. *Dictionary of Deities and Demons in the Bible*. Leiden and Boston: Brill.
- Ulfsgard, H. 1998. *The Story of Sukkot: The Setting, Shaping and Sequel of the Biblical Feast of Tabernacles*. Tübingen: Paul Mohr Verlag.
- Varisco, Daniel Martin. 1991. "The origin of the Anwa' in Arab tradition", *Studia Islamica* 74, 5–28.
- Varisco, Daniel Martin. 1993. "The agricultural marker stars in Yemeni folklore", *Asian Folklore Studies* 52/1, 119–42.
- Winnett, F.V. 1957. *Safaitic Inscriptions from Jordan*. (Near and Middle East 2.) Toronto: University of Toronto Press.
- Winnett, F.V. and G. Lankester Harding. 1978. *Inscriptions from Fifty Safaitic Cairns*. (Near and Middle Eastern Series 9.) Toronto and Buffalo: University of Toronto Press.
- Winnett, F.V. and W.L. Reed. 1970. *Ancient Records from North Arabia*. Toronto: University of Toronto Press.
- Wright, D.P. 2007. "Syria and Canaan", in S.I. Johnston (ed.), *Ancient Religions*. Cambridge, MA and London: The Belknap Press of Harvard University Press.