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**Title:** Carving interactions: rock art in the nomadic landscape of the Black Desert, northeastern Jordan

**Issue Date:** 2019-10-17
CHAPTER 3 | Investigating content, production, and consumption

3.1. Introduction

In the previous chapter, I introduced the Jebel Qurma region and described a brief overview of its topography, environment, and history of inhabitation in the late 1st millennium BC and early 1st millennium AD. The picture that has emerged about this region is based on fieldwork carried out since 2012 by the Jebel Qurma Archaeological Landscape Project. The aim of this chapter is to, first, provide an overview of how the rock art dataset of this study was collected and documented during this fieldwork. Second, this chapter outlines how I processed the rock art data post-fieldwork, providing the basis for the analyses of the rock art. Finally, I describe the methodology I use for these further analyses on the content, the traces of production and consumption, and the places of production and consumption. The results of these analyses are presented in Chapters 4, 5, and 6, respectively.

3.2. Discovery and documentation

3.2.1 Fieldwork in Jebel Qurma

Annual fieldwork has been conducted in the Jebel Qurma region since 2012 by the Jebel Qurma Archaeological Landscape Project, led by Prof. Dr Peter Akkermans of Leiden University, the Netherlands. The fieldwork consists of extensive surveys and excavations, documenting all archaeological and epigraphic remains, from the Palaeolithic up until the recent past. The Landscape of Survival project, funded by the Netherlands Organisation for Scientific Research (NWO), has since 2014 been researching the inhabitation of this region in the 1st millennium BC to the 1st millennium AD. As part of the Landscapes of Survival project, this study investigates the rock art that was produced during this period. This study is based on the data that was collected during the five fieldwork campaigns carried out from 2012 to 2016. Fieldwork continued in 2017 and 2018, during which campaigns approximately 180 additional carvings were found, the majority of which are inscriptions, but due to time constraints, these are not included in this study.

During each of the five fieldwork campaigns between two and ten weeks were spent surveying. In this period, the western part of the Jebel Qurma region, 52.1 km² in total, was surveyed (fig. 2.2). The sampling strategy that determined the area is based on surveying a wide variety of the different topographic areas within the region (Huigens 2018, 49). In the harra, this included the different basalt plateaus, valley systems, wadis, and the majority of the area around the large mudflat Qa’a al-Teyarat. The hamad terrain has been surveyed as well, but no pictorial engravings have been found here (see § 3.2.3). Preparatory remote sensing was carried out for the entire region to identify sites with large structures, such as cairns, wheels, pendants, and kites. Subsequently, surveys were carried out on the ground, which consisted of thorough field walking to document sites that had been identified using remote sensing and discover and document new sites. The entire terrain of the survey area was surveyed intensively and all visible structures, artefact assemblages, and engravings were documented, leading to a very high resolution of data.

5 For a detailed description of the general fieldwork methodology and of the documentation and analysis of the archaeological structures, I refer the reader to Huigens (2018).
6 I participated in and carried out the rock carving surveys in 2015 and 2016, but many team members and students contributed to collecting the data used in this study.
3.2.2 Documentation of sites

Sites have been defined as an assemblage of archaeological and/or epigraphic remains, including structures, artefacts, rock art, and inscriptions, clustered within an area determined by natural topographic boundaries or arbitrary boundaries (Huigens 2018, 51). This methodology was developed based on the terrain of the basalt region and the nature of the archaeological and epigraphic remains. Thus sites can range from large clusters of stone structures, artefacts, rock art, and inscriptions to several isolated engravings or artefact scatters with no associated structures (ibid.). Each site was assigned a site number with the prefix QUR- (e.g. QUR-148) and was documented thoroughly using photographs, field drawings, field reports, and GPS measurements. The structures, artefacts assemblages, and rock carvings at each site were each documented individually as well.

Figure 3.1: Flags mark the position of carved panels at the site of QUR-370. In the background a team member surveys for carvings.

Figure 3.2: A panel covered with Safaitic engravings and, on the right with a lighter patina, Arabic inscriptions, a wasm, and a modern camel carving superimposing the Safaitic carvings (QUR-64.73). Scale bar = 20 cm.
3.2.3 Documentation of rock carvings

The striking orange-red colour of the Safaitic carvings makes them highly visible in the field and could therefore quickly be identified. At the sites where engravings occurred, these were first all identified and given a number (fig. 3.1). All types of engravings (Safaitic pictorial and textual carvings and modern carvings) can occur on the same rock panels, with the modern engravings sometimes superimposed on the Safaitic ones (fig. 3.2). Panels were therefore identified and numbered under the collective term Rock Art with the accompanying prefix RA (e.g. RA3). Each panel was documented using photographs and a field form (fig. 3.3). Tracings of the engravings were not made due to their time-consuming nature and the sheer number of engravings.\footnote{To illustrate, during the four-week 2015 survey, my colleague Chiara Della Puppa and I documented on average 100 panels a day.}

The field forms and photographs contained the detail necessary for post-fieldwork processing. The field form focused on the recording of the panel information, including the types of engravings present, the state of preservation, and any association with structures. The photographs aimed to document the landscape setting of the panel, the panel itself, and the individual figures and inscriptions and their details. From the fieldwork campaign 2015 onwards, a GPS reading was taken for each individual panel. Prior to 2015, GPS measurements were taken per site.

The five surveys led to the discovery of 311 sites with Safaitic engravings. Pictorial engravings were found at 241 of the 311 sites. Surveys were carried out in the harra and the hamad, but only two inscriptions were found in the hamad. No rock art was found there. Two inscriptions engraved in limestone rocks from the hamad were also found in the basalt. The carvings are thus found almost exclusively in the basalt region and engraved in basalt stones. Limestone is a much softer rock than basalt and thus weathers faster, so it is possible that other engravings existed in the hamad or on limestone panels. However, the existence of a few inscriptions on limestone indicates that they do preserve. Therefore, it is unlikely that the engravings were first distributed widespread across the hamad as well and that all but a few have eroded.

3.3. Post-fieldwork processing

3.3.1 Rock art chronology

As mentioned in Chapter 1, engravings from different periods have been found in the Jebel Qurma region. These can be divided roughly into three typological and chronological categories: Safaitic engravings, medieval and modern Arabic engravings, and \textit{wusūm} (also sometimes known as tribal marks). The Arabic
engravings and *wusūm* are much younger than the Safaitic engravings, dating to, broadly, the 2nd millennium AD, with many dating to the 19th and 20th centuries (Berghuijs 2017) (fig. 3.4). The vast majority of these engravings are either texts or, in the case of the *wusūm*, geometric marks, and are not associated with a pictorial engraving. There are no clear indications for Neolithic rock art in the Jebel Qurma region like that which has been found further north in the harra (cf. Betts 1987). However, there is one petroglyph that probably pre-dates the Safaitic carvings. It is an abstract figure that is much more weathered than the Safaitic inscriptions on the same panel (fig. 3.5). No other similar figures were found.

Figure 3.4: A panel engraved with a *wasm* (plural: *wusūm*) in the Jebel Qurma region (QUR-1022.2). The patina of this carving is much lighter than that of the Safaitic carvings.

Figure 3.5: The abstract figure on the lower right side of this boulder might be prehistoric in date. It is much more weathered than the two Safaitic inscriptions on this panel, one of which slightly superimposes the abstract figure. Scale bar = 50 cm (QUR-728.2).
This study limits itself to the investigation of the Safaitic rock art of the Jebel Qurma region. The few Arabic pictorial engravings and the *wusūm* were therefore not included. Rock art, in general, is notoriously difficult to date and petroglyphs even more so due to the lack of absolute dating methods applicable to carvings (cf. Bednarik 2002). However, the association of Safaitic inscriptions with rock art allows us to place the images in the relatively closed timespan of the late 1st millennium BC to the early 1st millennium AD. Associating the petroglyphs with the inscriptions has been done based on one of two conditions. The first is the direct association between an image and a text. The majority of the images are ‘signed’ by the person who made it, the author of the accompanying text. Many of these refer directly to the image. For example, in figure 1.6, the author refers to the image, stating ‘By Rāgel son of Zamhar son of ’Aus are the animals’. In some cases, the carver only signed his name next to the depiction (fig. 3.6).

The second condition applies to petroglyphs that are not accompanied by a text. In these cases, the petroglyph was included in this study if it could be associated with the Safaitic carving tradition based on the similarity with known Safaitic carvings in style, content, and patina. The combination of these three criteria in a petroglyph allows it to be identified relatively securely as a Safaitic carving. Style and content were evaluated based on the other Jebel Qurma rock art figures. Patina was evaluated based on what is known about the weathering process of basalt. Basalt is dark, but when carved, the removed surface is at first grey-white. As the carving weathers over time, it gains patina that goes progressively from grey-white to orange-red before, eventually, returning to the colour of the surrounding rock (Betts 1987, 219). As early as 1929, this phenomenon was noticed by scholars. René Dussaud describes the process and its implications for dating the Safaitic inscriptions:

> ‘Un élément important à considérer est la teinte brune prise par la surface du basalte des pierres retaillées pour entrer dans les constructions. Il faudrait s’assurer si elle correspond ou non à la teinte qui caractérise les inscriptions safaitiques. Nous avons jadis observé que les textes gravés au moyen âge (textes arabes datés) sur le basalte de ces régions conservent encore une teinte grise. Dans un millénaire, sous l’action atmosphérique, cette teinte sera pas vue au rouge, tandis que les inscriptions safaitiques, aujourd’hui rouges, commenceront à se bien moins détacher de la teinte noire environnante, parfois d’un noir brillant comme celui des vases attiques, que prend le basalte éclaté depuis des millénaires’ (Dussaud 1929, 148).

As Dussaud observes, the younger Arabic carvings are lighter and usually grey-orange in colour, a fact that can be seen in the *wusūm* engravings as well (fig. 3.4). In contrast, the Safaitic engravings are more weathered and thereby obtained their striking orange-red colour. The eventual weathering of the carving to the dark grey colour of the basalt surface could be observed in some carvings in the Jebel Qurma region; these carvings were only visible in relief (fig. 3.7). The weathering process appears to have progressed much faster for these carvings. Similarly, I observed that carvings that had been buried under sand or exposed to wind-blown sand weathered much more quickly and obtained a more ‘washed out’ tint (fig. 3.8). The rate of weathering and formation of patina is thus variable, being subject to environmental factors such as wind direction, climate, topography, and production aspects, such as groove depth and technique (Betts 2001, Bednarik 2002). For this reason, the colour of the patina is only a general rule of thumb and it cannot be used to date the engravings or to establish a typo-chronology within the Safaitic carvings. However, it can

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8 For a study of the *wusūm* in this region see Berghuijs 2017.
9 QUR-529.23.1.
aid in identifying Safaitic carvings within panels and adjacent panels. Petroglyphs that have the same patina as Safaitic inscriptions on the same or an adjacent panel (thus exposed to the same weather conditions) and that were similar in style and content to known Safaitic rock art can with confidence be identified as a Safaitic carving (fig. 3.9).

Based on the two conditions outlined here, a total of 4510 petroglyphs could be identified as Safaitic. An additional two engravings are discussed for which the association with the Safaitic inscriptions is not clear. They depict the desert kite structures described in Chapter 2 and are two of many kite carvings found in the eastern badia. It is much debated whether the desert kite depictions are Safaitic in date or much older and therefore these two carvings also warrant discussion in this study.
This study does not endeavour to develop a typo-chronology within the Safaitic rock art. For this, it would be necessary to compare the rock art of Jebel Qurma with that of other regions, in content and style, and compare it with inscriptions that include dates. This task is complicated by the fact that superimpositions are very rare in the rock art (see Chapter 5.5.1) and can therefore not help in making a relative chronology within the figures. Therefore, more data from other regions is needed and subsequently a comparative study with the Jebel Qurma material needs to be conducted. Acknowledging that there may be temporal differences within the rock art, this study treats the 4512 petroglyphs as one corpus, which is

Figure 3.8: A rock art panel depicting two oryx, a carnivoran, an anthropomorph with dots, and an inscription (QUR-12.58). The bottom half of the rock was buried in the sand, causing this part of the panel to weather differently than the rest of the panel and get a washed-out colour.

Figure 3.9: There is no Safaitic inscription associated with this image. However, the rock art has the same patina as known Safaitic carvings on adjacent panels and the style and content of the carving is typical of known Safaitic rock art (QUR-137.73).
made possible by the relatively small geographic region and the relatively closed timespan of the production of Safaitic carvings.

3.3.2 Processing the petroglyphs

Using the field forms and photographs, I examined and recorded each of the 4512 petroglyphs and their features in a database to provide the basis for the further analyses of content, production, and consumption. Each petroglyph was recorded individually as a figure. The figure was identified and its various features were examined and described. Subsequently, for each figure, I determined whether it had an association with another figure. I recognise two types of figure associations: 1) a scenic composition (scene) and 2) a non-scenic composition (group). Both are different types of rock art compositions. I then evaluated whether the figure or rock art composition is associated with a Safaitic inscription (combined carving). An encompassing association was used for the study of the spatial distribution: composite carving.

A scene is defined here as a composition that ‘reflects an action, usually with a defined theme, that can be described even if the meaning and theme are unknown’ (May and Domingo Sanz 2010, 37). In this study, scenes are therefore recognised as two or more figures interacting with one another and reflecting an action, for example, a hunting scene (fig. 3.10).

When two or more figures have been carved as part of the same composition but do not interact, they have been categorised as a group. For example, four ostrich figures carved together is a group, as is a dromedary camel associated with a set of dots (fig. 3.11). Figures, scenes, and groups are all types of rock art compositions.

In many cases, a rock art composition is associated with an inscription. Evaluating whether the image is associated with an inscription was done jointly by Chiara Della Puppa and me. While the rock art compositions are the focus of this study, they cannot be seen as a separate creation from the inscription stating the carver’s name and sometimes a reference to the image or an activity. The carver made a

![Figure 3.10: Three canids surround a male oryx. The figures are depicted ‘interacting’ with one another, representing a scene in which the canids are hunting, attacking, the oryx. The inscription refers to ‘the bull’ (QUR-370.103).](image)

![Figure 3.11: A rock art composition consisting of a male dromedary camel figure and an ‘anthropomorph with dots’ figure. Together they form a group. The two figures are associated with the Safaitic inscription (which refers to ‘the camel’), together forming a combined carving (QUR-307.5).](image)
composition consisting of rock art and an associated inscription. For example, the hunting scene shown in figure 3.10 belong together with the inscription that states the carver’s name and refers to ‘the bull’. For this reason, to accurately analyse the amount of rock art at a site or on a boulder and their spatial distribution, I counted by carving composition. A single camel can be a composition, a camel with associated inscription is a composition, and so is a scene or a group of ostriches with an inscription, and so forth. For this, I use the term composite carving.

3.4. Content

The analysis of the content of the rock art is based on the identification and examination of the figure, its features, and the scene if it is depicted in one. I recognise that the breaking down of rock art figures into categories and sub-categories does not do justice to the complexity of the material and that there are always limitations inherent to the choices made in which categories to use and in which to place the various figures. However, it is a necessity to make the dataset analytically viable on several levels and I hope that, in being as transparent as possible, future researchers can use and improve upon the identifications I have made and the analyses I have carried out.

I recognised four categories of types of figures, according to conventional rock art research terminology: anthropomorph, astromorph, geometric, and zoomorph. When the type of figure could not be recognised it is categorised as ‘unknown’. The unknown figures are not included in the further analyses in Chapters 5 and 6. Geometric figures are to some extent a ‘rest category’ and include geometric designs, such as circles and lines, but also figures that are abstract in form and not readily recognisable. There are three motifs that fall in between the anthropomorph and zoomorph type: hybrids, equids with riders, and camels with riders. There are two hybrid figures that I have classified under anthropomorphs because they resemble more human form than animal. I have categorised the equids and camels with riders under zoomorphic motifs because the rider tends to be depicted small and lacks details; the visual emphasis lies on the animal. However, I discuss the weapons of the riders in the section on anthropomorphs (Chapter 4.3.3).

Secondly, I identified the type of motif within these categories, for example, ‘woman’, ‘dromedary camel’, or ‘set of dots’. When the motif could not be identified only the type of figure is registered, for example, an unknown anthropomorph. In some cases, this is due to the simplicity of the image, but in many cases, it is due to weathering or effacement.

Classifying the various zoomorphic motifs posed the greatest challenge. Identifying animals in rock art is a notorious issue for rock art researchers (cf. Davidson 2017). As researchers, we are limited by our knowledge of the animals extant in the area in the period in which the rock art was produced and by our own modern preconceptions about the appearance and representation of animals. Linking zoomorphic motifs to known animal species can, therefore, be difficult. However, identifying animals in the Safaitic rock art is aided to a great extent by the inscriptions; for example, an image of a felid associated with the inscription ‘By [name] is the lion’ can unambiguously be identified as a lion. When motifs are depicted in a fairly consistent manner, such as is the case with the lion, it is then also possible to identify other lions even when there is no inscription. This is not possible to the same extent for all zoomorphic motifs. For example, there is still a lot of ambiguity surrounding the interpretation of the words used in Safaitic to denote the different types of equids (see Chapter 4.4.4).

However, overall, the inscriptions provide a valuable method for identifying animals and how they are represented in the rock art. Additionally, the distinctive features of certain animals play an important
role in the identification process; for example, the scimitar-shaped horns of the male ibex make it easily recognisable (see Chapter 4.4.3). Lastly, it is important to take into account what we know of the fauna of the Black Desert and the surrounding landscape in Classical Antiquity, as many of the animals depicted in the rock art are now extinct in the area. To reconstruct the past fauna, I make use of several sources to supplement the sparse zooarchaeological record. The first source is what is known of the different species indigenous to this region as studied by, among others, the International Union for Conservation of Nature (IUCN)\textsuperscript{10} and biologists. The second is historical sources, which mostly pertains to equids in the Ancient Near East. Thirdly, I consulted travel journals and books written by travellers who visited the region in the 19\textsuperscript{th} and 20\textsuperscript{th} centuries, when many of the desert animals were still present in the region. Lastly, I have looked at the so-called pre-Islamic poetry, which is oral poetry composed by poets in the Arabian Peninsula in the pre-Islamic era from the sixth century AD on and written down later in the eighth century. They include the classic odes, qasidah, in which the poet describes his journey through the desert on his mount, the camel or horse, and the hardships he endures and things he sees, and the tardiyah, hunting poems in which the author describes his hunting exploits (G.R. Smith 1990, S. P. Stetkevych 1993). Although there are thematic similarities between the pre-Islamic poems and the Ancient North Arabian inscriptions and rock art, I will not use the poems as a source for understanding the Safaitic rock art, as this would be problematic for many reasons. I use the poems, critically, as one of several historical sources that can aid in reconstructing the wildlife of the region and, to an extent, the possible interactions desert peoples may have had with the domestic and wild animals in the desert. Based on these different sources, it is possible to make more accurate identifications of specific species of animals and also to identify what is not depicted in the rock art.

In all cases, I lump rather than split data as much as possible to provide careful identifications. There are a number of figures that cannot be identified beyond group or family level with certainty. For example, the difference between an ibex and gazelle is often difficult to discern because gazelles and female ibex both have short, backwards-curving horns and have no other species-specific distinguishing features. Rather than provide a tentative identification of either ibex or gazelle, I have identified the motif as a ‘bovid’ and express the possibility of it being an ibex or gazelle under the sub-motif. These are expressed in tables and charts with the suffix \textit{unid}. (for unidentified; e.g. bovid \textit{unid}. or ungulate \textit{unid}.). As is the case for the other ‘unknowns’, an identification is not always made impossible by lack of detail or distinguishing features, but often also by weathering, effacing, or superimposition.

For each figure, I have examined and recorded information about its features. This includes stylistic and anatomical features, such as the sex of an anthropomorph or zoomorph, the presence or absence of a mane and tail on an animal, the type of object an anthropomorph is holding, or the presence and type of patterns on a figure.

Finally, scenes are identified in the rock art when, as outlined above, two or more figures are depicted as interacting with one another. Each scene has been numbered and described separately, recording information about the type of scene depicted, the type of motifs depicted in the scene, and the number of figures.

3.5. Traces of production and consumption

After recording the above-outlined information on the content of each figure, I have examined the aspects

\textsuperscript{10} Detailed information on extinct and extant species is available in their Red List of Threatened Species (www.iucnredlist.org).
of the figure’s production and consumption. With regards to the terminology for carving techniques, I use the terms outlined by the IFRAO (2018).

3.5.1 Production

In the analysis of the Jebel Qurma rock art, I distinguish between two main types of carving technique: percussion and incision. Percussion technique is carving with the use of a hammerstone and can be divided into two sub-types: pounding and pecking. Pounding is the process of direct percussion, carving directly with a hammerstone onto the surface rock, and pecking is the process of indirect percussion, using a hammerstone and a chisel to carve (IFRAO 2018). Pounding can be recognised by the broader, often shallower marks it produces. On basalt, pounding tends to result in irregular lines and a more uneven appearance as it is not possible to align each blow precisely with the previous one (Keyser and Rabiega 1999) (fig. 3.12). Pecking tends to produce more regular, neater lines because the carver is able to control and align the lines more carefully (fig. 3.13) (ibid.). The overall figure has a more even appearance and it also often results in deeper grooves. Rock art experiments replicating the two techniques on different types of rock surfaces, including basalt, have shown that this distinction is a valid one (Keyser and Rabiega 1999, Da Rosa et al. 2014).

Based on these characteristics, I have identified the type of percussion technique used to carve a figure. However, the difference between the two techniques is not always easy to deduce from the end result.

![Figure 3.12: A hunting scene featuring two carnivorans (most likely lions) hunting three ostriches. The scenes has been made by pounding technique. The irregular lines and shallow marks that pounding often results in are clearly visible here (QUR-439.6).](image)

![Figure 3.13: This wild ass has been pecked, recognisable by the neat, regular lines along the outside and the even in-fill of the figure. The archer hunting it has been incised (QUR-839.35)](image)

A perceived irregular and inaccurate line cannot always be attributed to pounding because other variables, such as the type of rock, the direction of impact, and tools used, can also account for the regularity of the groove (cf. Bednarik 1998, 24). Indeed, in the Black Desert, the surface of the basalt rock varies from smooth to coarse, from porous to dense, and has a significant effect on the appearance of the carving. Therefore, the distinction between pounded and pecked lines has only been made when a carving can clearly be identified as being either pounded or pecked. If not, the technique is categorised as percussion unidentifiable (abbreviated to unid).

The incision technique results in a very different appearance because it entails the use of a sharp, pointed tool directly on the rock. It results in narrow grooves that can range from shallow to deep (fig. 3.14). Carvings with this appearance have been identified as being incised. When a figure has been made
using a combination of techniques, I have noted all techniques and how they were used within the figure. Macdonald (1995) has recognised the same three types of techniques for the production of the inscriptions but uses the term ‘direct hammered’ for pounded and ‘chiselled’ for indirect percussion. These are also the terms used in the OCIANA database. However, I follow the conventional rock art terminology as defined by the IFRAO, as stated in Chapter 1.7.

3.5.2 Consumption

Evidence for consumption

Recognising traces of consumption can be difficult because it is not always possible to distinguish between what the original carver has done and what a later person may have changed, added, etc. Unless the actions occurred much later, for example in medieval or modern times, the patina will be very similar. Interestingly, a number of carvings have been interacted with in much later times (fig. 3.15). I focus on those interactions that can be assumed, based on patina and composition, to date to the period of the Safaitic carvings.

It is important to keep in mind that certain actions might have been those of the producer, rather than the consumer; even the effacement of a figure might be the work of the original carver. However, there are two reasons to assume that there were interactions going on in the rock art beyond the original actions and intentions of the producer. The first is the large number of different names that occur in the Safaitic corpus (cf. Della Puppa forthcoming). The names are found scattered across the Jebel Qurma region, but also across sites and even boulders. For example, on large panels an accumulation of images with associated inscribed names can often be found, suggesting a large number of people interacted with the boulder in a variety of ways (fig. 3.16).

The second reason is that there is evidence from the Safaitic inscriptions that the carvers had knowledge that other people would see and possibly interact with their engravings. There a large number

Figure 3.14: An incised hunting scene of a rider on an equid hunting an oryx. Different groove depths and thicknesses have been used. The associated inscription has also been incised. The inscription refers to ‘tn or ‘female ass’ and probably indicates that the equid is a mule or hinny (see Chapter 4.4.4) (QUR-551.41).

Figure 3.15: This female dromedary camel figure is a good example of recent interaction with Safaitic rock art. It has been modified twice since production. The front-most hind leg has a slightly lighter patina; it was either added or the original was pounded over. And, most interestingly, a saddle and tassels were added quite recently, judging from the very light patina (QUR-176.49).
of inscriptions in the Safaitic corpora that contain curses against people effacing their inscriptions. For example, 'curse whoever erases the carving'\textsuperscript{11}, 'may whoever erases the writing be thrown out of the grave'\textsuperscript{12}, or 'O S² hqm blind whoever scratches out [the drawing of] the horseman'\textsuperscript{13} are just a few of the types of curses that occur. In the Jebel Qurma region, there are also several inscriptions that include a curse against anyone who might efface the carving (Della Puppa forthcoming). Interactions with other people's carvings were not all negative. There are also inscriptions wishing good to come to those who read the inscription, for example, 'O Lt, may he who would read this writing aloud have security and forbearance'.\textsuperscript{14} Additionally, there are carvings where the author himself expresses finding and reading an inscription and reacting to it, for example, 'By 's'ilm son of S’d…and he found the inscription of his grandfather and so grieved in pain'.\textsuperscript{15}

This evidence for the (negative and positive) interactions with other people’s carvings and the evidence for production by many different people, based on the variety in names, indicate that there was consumption of the carvings. The traces of this should be visible in the rock art. I recognise four types of consumption: effacement, superimposition, modification, and accumulation. The act of neglecting or ignoring carvings can also reveal insightful information on consumption (cf. Dietler 2010, 226), but leaves little traces in the material record. However, it may be possible to detect whether specific types of carvings are left alone, for example, from acts of effacement.

\textbf{Figure 3.16:} A large panel at QUR-147 which has become a patchwork of accumulated textual and pictorial engravings. Scale bar = 20 cm.

\textsuperscript{11} KRS 1116 (see Appendix B for sigla references).
\textsuperscript{12} KRS 1379.
\textsuperscript{13} KRS 331.
\textsuperscript{14} LP 685.
\textsuperscript{15} C 2237.
**Effacement**

Effacing is recognised as the act of ‘erasing’ a carving or part of a carving. In the Black Desert rock art, carvings that are effaced are hammered, or, more rarely, incised, over, causing the carving to become only partly visible or not visible at all anymore (fig. 3.17). I examine the occurrence of effacement among the rock art images, whether specific parts of figures are effaced, whether specific figures are consistently left alone, and how its occurrence compares to the effacement of the inscriptions.

![Figure 3.17: The head of the dromedary camel and parts of the inscription have been effaced. There are also various pounded marks around the body of the camel, which might be an act of effacement as well (QUR-2.428).](image)

**Superimposition**

Superimposition is identified as the placement of a carving on top of another (fig. 3.18). I analyse how often this occurs in the corpus.

**Modification**

The act of modification is arguably the most difficult to attribute to another person with certainty; any changes made to the figure might have been carried out by the producer. However, I examine the occurrence of clear modifications to figures that appear to not be part of the original chaîne opératoire. It may be possible to subsequently evaluate whether the alterations were made by another person or not.
Accumulation

The act of accumulation is recognised as the act of producing an image on a panel or at a site containing existing carvings, thereby adding to the accumulation of carvings over time. It is a topic that can be researched in-depth and through detailed analyses, both theoretically and methodologically (see e.g. Sapwell and Janik 2015). I include a small investigation of this phenomenon based on the accumulation at the micro-landscape level and the macro-landscape level. On the micro-landscape level, I analyse the accumulation of rock art compositions per boulder. On the macro-landscape level, I analyse the accumulation of groups of figures and the accumulation of composite carvings per site. In theory, the more carvings on one boulder or at a site, the higher the extent of accumulation is. The amount of composite carvings per site has subsequently been used as the basis for the analysis of the spatial distribution of the sites in the landscape.

3.6. Places of production and consumption

In Chapter 1, I discussed how the relationship between rock art and the landscape can be investigated on different levels: the micro-landscape and the macro-landscape. I examine where the rock art was produced and consumed at these two scales of landscape.

3.6.1 Micro-landscape

The micro-landscape is investigated as the panel surface and the relationship between the petroglyphs and this surface. To explore whether there is a relationship, whether choices were made in production with regard to the rock boulder, and what the effects might have been on the consumer, I study the micro-landscape of the rock art. This entails an in-depth study of the rock art boulders and their features in the field and during the post-fieldwork processing to investigate how the rock engravings use or interact with
the natural features of the surface rock.

### 3.6.2 Macro-landscape

**Landscape distribution**

The macro-landscape is investigated as the regional level: the relationship between rock carvings and the landscape within the Jebel Qurma region. I do this through a study of the spatial distribution of carving (rock art and inscriptions) sites, exploring their possible relationship to landscape features, such as prominent hills, slopes, or valleys. The study is carried out for the surveyed area of the Jebel Qurma region and is based on the GPS locations of the 308 sites containing engravings.\(^{16}\) The distribution maps are based on an overlay of a 12 m resolution WorldDEM and a model of the surface slope of this area, generated by Huigens (2018) (fig. 3.19-21). I examine the distribution in the region as a whole and by zooming in on five different areas. Here I also discuss selected sites, which provide a more detailed picture of the nature of the rock carving sites.

One of the five areas, the north-western area, is used as a case study for a more detailed study of the spatial distribution. This area was surveyed in 2015 and there are GPS coordinates available for the individual boulders containing carvings (fig. 3.21). This makes it possible to plot the distribution in more detail and examine whether there is a difference when the distribution is analysed per boulder rather than per site.

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\(^{16}\) Although 311 sites with Safaitic carvings have been discovered, GPS coordinates are not available for three sites.
Figure 3.20: Relative degree of surface slope. Darker shades indicate steep slopes and lighter shades indicate gentler slopes (After Huigens 2018). Based on WorldDEM.

Figure 3.21: Overlay of surface slope on WorldDEM, zoomed in on the area where rock carvings occur, providing a visualisation of the elevation and the steepness of hillslopes. The purple areas indicate higher terrain and the yellow areas indicate lower terrain. The darker the shade, the steeper the slope. Relevant landscape features are labelled.
Accessibility and visibility

Subsequently, I explore two aspects of the landscape setting of sites: the accessibility of carving sites and the visibility of and from carving sites. As outlined in Chapter 1, understanding the accessibility and visibility of carving sites can provide insights into why the rock art was produced in particular places, who could have produced and consumed the rock art, and how consumers would have interacted with the images. I study this on the basis of a number of formal measures. As Bradley (1997, 81) warns, identifying viewpoints in the landscape can be difficult because it ‘betrays the influence of contemporary conceptions of the landscape’. Similarly, Hyder (2004, 86) has pointed out the issue of whether researchers depend on their own modern, cultural perception of landscape, such as ‘the site has a great view’, in understanding the relationship between rock art and the landscape. Therefore, both researchers advocate the use of formal methodologies to study the landscape, such as measurements of visibility (Bradley 1997, 82) and measurements of landscape features, such as elevation and slope (Hyder 2004, 86). To formally investigate the relationship between carving sites and accessibility and visibility, I plot the distributions of sites against a number of the landscape models generated by Huigens (2018). For an explanation of the methodology used for generating them and the archaeological context and implications, I refer the reader to his study (Huigens 2018).

I make use of four models: 1) a Hillslope Position Classification (HPC), which shows the relative classification of topographic features, based on slope degree elevation, and surface curvature; 2) a Cost Surface Raster, which shows the relative cost of movement, based on slope degree and surface cover; 3) a Visual Prominence Classification, which shows the visual prominence of the different areas in the landscape, based on a cumulative viewshed; and 4) a Skyline analysis, which shows features that are more visible on the horizon than others, based on the WorldDEM. I examine the distribution of rock carvings in relation to the landscape through these four models on two levels: the distribution of carvings per site and the distribution per boulder in the north-western area of the Jebel Qurma region.

Lastly, I also investigate visibility through a number of viewshed analyses. The viewshed analyses are used to investigate the extent of visibility from the locations of carvings. A viewshed analysis is based on the WorldDEM and calculates whether cells are visible from a specific location in the landscape, the ‘observer point’. I perform these analyses from nine sites; all were selected from the north-western area from where GPS coordinates for the individual boulders are available. As such it is possible to select an observer point that represents the centre of the concentration of carvings and thus generate a viewshed model that most accurately illustrates the visibility from the carving site. The vegetation in the region today, limited to shrubs, grasses, and few trees, does not affect visibility. Although the climate in antiquity might have been slightly different, the desert environment would have precluded the type of vegetation that would have limited visibility.

Although paths have been identified in the Jebel Qurma region and may have affected accessibility, I do not investigate this relationship because it is not clear whether these paths were already present in antiquity.

3.7. Research challenges

To accurately evaluate and interpret the rock art data, it is important to be aware of a number of challenges.
that the nature of the material pose. This rock art research and the fieldwork carried out by the *Jebel Qurma Archaeological Landscape Project* are pioneering and there are a number of difficulties that are inherent to such studies. First, as mentioned earlier, without comparative studies, it is not yet feasible to establish a (typo-) chronology within Safaitic rock art. It is possible that within the Jebel Qurma corpus there are temporal differences that account for certain variations, which currently cannot be identified. However, Safaitic engravings are a fairly ‘closed’ cultural production as they are mostly limited to the *harra* region and, compared to many rock art traditions, span a relatively short time period. For this reason, it is possible to study the Jebel Qurma corpus as a whole. Future comparative studies will hopefully be able to shed light on the chronology of the rock art and make it possible to evaluate how representative the Jebel Qurma corpus is for Safaitic rock art. This corpus is not assumed to be a reflection of the Safaitic petroglyph tradition as a whole, but it provides a valuable case study for understanding this rock art.

It is currently also not possible to compare the Safaitic rock art from Jebel Qurma with contemporary rock art from other areas in North Arabia, such as the Hismaic rock art or Thamudic rock art, because there are no comparable datasets available for them. In this, the dataset from Jebel Qurma is unique, not only for Safaitic rock art but for Classical Antique rock art from northern Arabia in general.

Concerning the method of data collection, there are a number of matters that must be considered, which pertain primarily to the study of the relationship between the rock art and the landscape. First, as explained in § 3.2.2, it was not possible to define sites based on fixed parameters and therefore sites can range in spatial size and number of structures, engravings, etc. It is necessary to keep this in mind when considering the comparisons between carving sites. Exact quantitative comparisons are not always possible, but it is possible to detect overall patterns in the number of carvings. Furthermore, due to the intensive survey method, the resolution of the data is very high and therefore the distribution of sites and carvings is an accurate one.

To study the distribution of carvings in the landscape, the GPS coordinates of each site have been used because GPS coordinates are not available for all individual carved boulders surveyed from 2012 to 2014. The locations in the landscape therefore reflect the centre of the site as a whole (including carvings and structures) and not necessarily the centre of the concentration of carvings. GPS coordinates for the individual rock art boulders are available for the north-western area, surveyed in 2015. Therefore, this area is used as a case study to more precisely investigate the number of engravings and their distribution in this area. This also makes it possible to assess the results from the site study.

Lastly, a small part of the western area of the Jebel Qurma region, the area roughly to the south of the Qa’a al-Teyarat, was not surveyed (see fig. 2.2). Remote sensing of this area showed no visible large sites and surveys of the area around it yielded only a few isolated sites and artefact scatters. For this reason, it was not surveyed due to time constraints. It is therefore not possible to evaluate the distribution of carvings between the north-western area and the north-eastern area of the surveyed region. However, the homogeneity of this area and the lack of substantial sites around it mean it is possible to make a tentative hypothesis about the spread of carving sites here (see Chapter 6.3.7).