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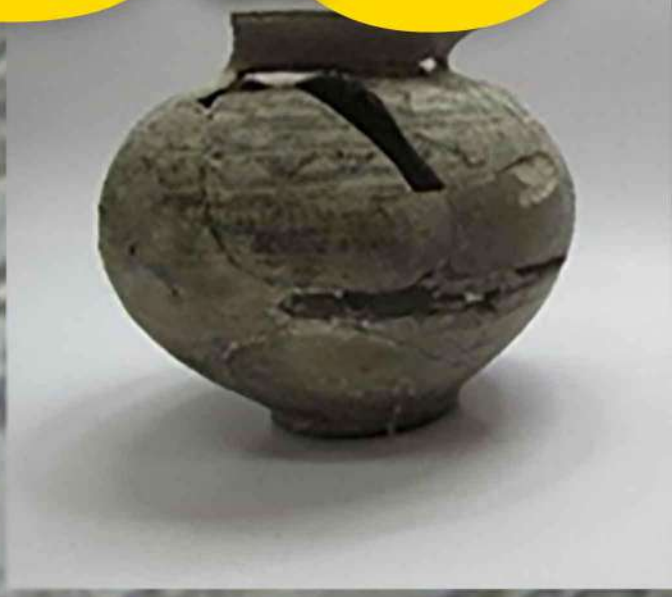

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PHOTO: GREY WARE AND DETAILS OF GEOMETRIC PATTERNS ON THE SHOULDER, SHAHRE-I SOKHTA, IRAN.

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Guide for Authors

Preface

The ***Journal of Sistan and Baluchistan Studies (JSBS)*** is devoted to South-Eastern Iran and welcomes articles in various areas of the world with a Sistan and Baluchistan legacy, especially adjacent areas such as Afghanistan, Pakistan, India, Oman, the Persian Gulf, and Central Asia with a chronological span from Paleolithic to Modern times. Contributions must be original and have not previously been published elsewhere. Please be ensure that there are no conflicts between the authors before submitting. Before being published, manuscripts submitted to the ***Journal of Sistan and Baluchistan Studies (JSBS)*** are critically reviewed. The purpose of the review is to reassure readers that the papers have been approved by competent and unbiased professionals. Manuscripts should be written in English, with the use of one spelling style throughout the entire manuscript. Both British and American spelling will be accepted. The manuscript should be submitted only via the ***Journal of Sistan and Baluchistan Studies (JSBS)*** the Editorial System (http://www.jsbs.uoz.ac.ir/). All papers are available free of charge at the Journal's webpage.

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Structure of Articles

The structure of the articles can be modified based on their subject. The text should be written in a succinct and cohesive manner, with an emphasis on significant points, conclusions, breakthroughs, or discoveries, as well as their broader relevance. All running text should be saved as a Word document with Times New Roman 12, 1.5 spacing. Figures and tables can be put within the text or at the bottom. Figures should have a high enough resolution to allow for refereeing.

Short communication consists of title page, text, acknowledgments, and references with figure and table captions.

The original research articles should contain the following sections:

Title page

The title page must contain the title that should be clear, intelligible to experts in different disciplines, and represent the substance of the article. Moreover, full name(s) of the author(s),

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The title's information does not need to be duplicated in the abstract. The abstract should not be more than 350 words long. It must include the study's goal, methods, findings, and conclusions.

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Provide three – seven keywords, covering the most precise phrases in the article. They should explain the subject and results and should not be the same as the terms used in the title.

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State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

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Results should be clear and concise.

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This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices

If there is more than one appendix, they should be identified as A, B, etc.

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Reference list:

Book

Curtis, J. (2012). *The Oxus Treasure*. London: British Museum Press.

Piperno, M. and Salvatori, S. (2007). *The Shahr-I Sokhtya graveyard (Sistan, Iran): excavation campaigns,1972-1978*. Roma: ISIAO.

Chapter in an edited book

Vidale, M. (2020). Chlorite Containers from the Oxus civilization between technical choices and iconographic codes. In: B. Lyonnet, and N. A. Dubova, (eds.), *The World of the Oxus Civilization*. London: Routledge, pp.293-332.

Journal paper (electronic)

Perrot, J. (2008). Jiroft iv. Iconography of Chlorite Artefacts. *Encyclopædia Iranica*, 14, pp.656–664. [Online]. Available at: https://www.iranicaonline.org/articles/jiroft-iv-iconography-of-chlorite-artifacts [Accessed 25 August 2021].

Journal paper (printed copy)

Sajjadi, S. M. S. (2007). Wall painting from Dahaneh-ye Gholaman (Sistan). *Ancient Civilizations from Scythia to Siberia*, 13(1-2), 129–154.

Jarrige, J. F., Didier, A. and Quivron, G. (2011). Shahr-i Sokhta and the chronology of the Indo-Iranian regions. *Paléorient*, 37 (2), 7–34.

Website

Shahr-i Sokhta - UNESCO World Heritage Centre. [Online]. Available at: http://whc.unesco.org/en/list/1456/ [Accessed 25 August 2021].

Thesis

Shirazi, R. (2008). *Etudes typologiques et comparatives des représentations humaines en terre crue, en terre cuite et en pierre de l'Asie centrale et de l'Iran oriental du Chalcolithique à l'âge du Bronze (4000-1800 av. J.-C.).* Ph.D. Thesis. Panthéon-Sorbonne University.

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Abbreviations

dates: 1980-1985, not 1980-85

pages: 250-275, not 250-75

following/s: f./ff.

centimeter/s: cm

meter/s: m

etcetera: etc.

circa: c.

videlicet: viz.

exempli gratia: e.g.

volume/s: Vol./Vols.

chapter: Chapt.

column: Col.

folio/s: Fol./Fols.

translator: transl.

second [II] century: 2nd century, etc.

century and millennium: never abbreviated

before Christ: BCE

after Christ: CE

plate/s: only when referring to author's plates within one's own text: Pl./Pls.

figure/s: only when referring to author's figures within one's own text: Fig./Figs.

fig./figs., pl./pls. in all other cases

note/s: fn./fns.

number/s: n./nn.

editor/s: ed./eds.

no place: n.p.

no date: n.d.

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Mister: Mr

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EXCAVATIONS AND MATERIALS FROM QAL'A-YE TEPE, SISTAN (IRAN): AN ARCHAEOLOGICAL PROJECT OF THE 60S OF THE LAST CENTURY

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Abstract: The paper addresses an interesting site in the easternmost region of Sistan, Iran, partially excavated in the 1960s. The article proposes a preliminary study of Qal'a-ye Tepe, particularly concerning ceramic production. The author investigates the collections of unglazed and glazed pottery fragments existing in Italy, describing their fabrics and shapes. The excavations were conducted by the late Professor Umberto Scerrato, the director of the Italian Archaeological Expeditions of IsMEO (Istituto Italiano per il Medio ed Estremo Oriente), IsIAO (Istituto Italiano per l'Africa e l'Oriente), and ISMEO (Associazione Internazionale di Studi per il Mediterraneo e l'Oriente). These explorations revealed interesting archaeological and chronological data, although they were never published. However, the excavations at Qal'a-ye Tepe were particularly significant as they presented a very long chronological sequence with three main phases ranging from the 3rd century BCE to the beginning of the 11th-12th century CE. This archaeological ellipsoidal/oval site, with the longest west-east axis of 125 m and the shortest north-south one of 85 m, constitutes a kind of fortress with the characteristics of the ancient nomadic camps found throughout Asia. The site, formed by the decay of raw earth structures, is located about 20 km northeast of Zabol, near the village of Qasemabad, a few kilometers north of the ruins of old Zahedan, or Zaranj in the Islamic era.

Keywords: Sistan, Iran, Archaeology, Qal'a-ye Tepe, Pottery.

چکیده: این مقاله به محوطه‌ای جذاب در شرقی‌ترین منطقهٔ سیستان ایران می‌پردازد که بخشی از آن در دهه ۱۳۴۰ حفاری شده است. این مقاله یک مطالعهٔ مقدماتی دربارهٔ قلعه تپه، به ویژه در مورد تولید سفال است. نویسنده به بررسی مجموعه‌ای از قطعات سفالی بدون لعاب و لعاب‌دار موجود در ایتالیا پرداخته و بافت‌ها و اشکال آن‌ها را توصیف می‌کند. این کاوش‌ها توسط پروفسور فقید اومبرتو اسکراتو، مدیر کاوش‌های باستان‌شناسی ایتالیایی IsMEO، IsIAO و ISMEO انجام شده است. این اکتشافات داده‌های باستان‌شناسی و گاه‌شماری جالبی را آشکار کرده‌اند، اگرچه هرگز منتشر نشدند. اما، کاوش‌های قلعه تپه از اهمیت ویژه‌ای برخوردار بوده‌اند، زیرا یک توالی زمانی بسیار طولانی را با سه مرحله اصلی از قرن سوم قبل از میلاد تا قرون یازدهم و دوازدهم پس از میلاد ارائه داده‌اند. این محوطه باستان‌شناسی بیضوی شکل، با طولانی‌ترین محور غربی–شرقی به طول ۱۲۵ متر و کوتاه‌ترین محور شمالی–جنوبی به طول ۸۵ متر، نوعی دژ با ویژگی‌های اردوگاه‌های عشایری باستانی است که در سراسر آسیا یافت می‌شود. این محوطه که بر اثر پوسیدگی ساختارهای خاکی خام به وجود آمده است، در حدود ۲۰ کیلومتری شمال شرقی زابل، در نزدیکی روستای قاسم آباد، در چند کیلومتری شمال ویرانه‌های زاهدان قدیم یا زرنج دوران اسلامی قرار دارد.

کلیدواژه: سیستان، ایران، باستان‌شناسی، قلعه تپه، سفال.

I. Records of excavations

Until the 1960s, Sistan had been the subject of scarce consideration by systematic archaeological research activities, both for the geomorphological conformation of the region that was difficult to access and, above all, for an underestimation of its historical and cultural importance by scholars.

Up to that moment, the activities had mostly been limited to reports and surface reconnaissance. In this regard, we recall: those of Tate in 1903 (1910-1912), concerning the monuments of the historical period; the more scrupulous one by Stein in 1916 (1928), limited to the Iranian part of the region, which led to the identification of numerous prehistoric sites; the one of Herzfeld (1931-1932), also in the Iranian Sistan, who made excavations in Kuh-e Khwagha, and to whom we owe the recognition, on the site, of the palace-sanctuary of the Parthian-Sasanian period; the one of the Hackin mission in Afghan Sistan in 1936, of which only photographic documentation remains, but which testified the opening of a small trench in Nad-i 'Ali by Ghirshman, published in 1939 (1939; 1942); finally, two reconnaissance made by W. Fairservis Jr. in 1949-50 in the Afghan Sistan again, which made other prehistoric sites in Sistan known (1961), and the last activities conducted 50 years ago (Dales 1977).

Though certainly pivotal, all those discoveries were not enough to shed light on the history of ancient Sistan: they acted, however, as a springboard from which to dive. It was the Centro Studi e Scavi in Asia of IsMEO (then IsIAO and now ISMEO), directed by Giuseppe Tucci, that designed an organic research program, including a methodical re-examination of the data previously collected on the field and a re-examination of the historical sources together with the fulfillment of a series of systematic surveys and excavations. The choice of the sites to investigate was made following two surveys by Giuseppe Tucci himself in 1959 and 1960, and they were: Shahr-e Sokhte, the mounds of Qal'e-ye Rostam and Tepe Abdali for the prehistoric and protohistoric phases; Dahāne-ye Gholāmān and Namaki for the Achaemenid period

(now you can see Genito ed., 2023), Qalʿa-ye Sam for Parthian time (Genito 2021); Tepe Shahristan, Kuh-e Khwagha and Qalʿa-ye Tepe for the Hellenistic, Sakā-Parthian and Sasanian period; the old Zahedan and Bibi Dust for the Islamic era (Genito ed., 2023). The activities of the Italian archaeological mission lasted until the mid-70s and included the participation of several members: Umberto Scerrato and Gherardo Gnoli of the Università "L'Orientale" of Napoli (1962); Giorgio Gullini of the Università of Torino (1961); Maurizio Tosi (since 1967); Marcello Piperno; Raffaele Biscione; Maria Grazia Bulgarelli; the architect Cesare Carbone (1962); the designers Enrico Frascarolo, of the Amministrazione Provinciale di Torino (1960 and 1961) and Tullio Tamagnini, of the Amministrazione delle Antichità e Belle Arti (from 1963); the assistants Manlio Valentini (from 1960 to 1965) and Gabriele Graziani (from 1961) of the Amministrazione delle Antichità e Belle Arti; the photographer Francesca Bonardi and, later on, the architect Luca Mariani; the archaeologist Bruno Genito; the architects Eugenio Baldari, and Giuseppe Berucci; and other mission members split into various working groups that operated on different sites.

II. Introduction

During the activities of the Italian Archaeological Mission in Sistan, Umberto Scerrato took care of the site, together with the assistant Gabriele Graziani, the designer Enrico Frascarolo, and thanks to the collaboration of Mr. Kangewi, an official of the General Service of Antiquities of Iran. Qalaʿye Tepe was described as a fortified place looking like a low hill with an ellipsoidal/oval shape, which rises for a dozen meters above the desert plane, measuring about 160×130 m, with the major axis in the east-west direction (Fig. 1). The mound appears to be made up of an artificial formation, unlike what usually occurred in Sistan at that time, where the ruins stood on a base of natural terrain shaped by the wind. The site had previously been visited by Stein (1937, 90-91), who had collected a considerable amount of Islamic glazed pottery and ribbed decoration pottery, typical at Kuh-e Khwagha too. Before starting the excavation tests, the team headed by Scerrato surveyed the area in 1960, collecting, among the surface material, a small quantity of white and blue late glazed, an abundant amount of Sasanian type and engraved pottery, with light and dark green glazing (the so-called "sgraffiato"), which is now considered mainly coming from the Persian Gulf (Rougelle 2004, 14, 15) and a considerable amount of pottery with ribbed and burnished decoration, similar to that found in Kuh-e Khwagha and Tepe Sharestan (Mohammadkhani, Mehrafarin 2021).

Figure 1. Qalʿa-ye Tepe, photo-satellite after Google Earth 2022.

III. Excavations

It was in 1961 and 1962 that the team opened a series of trial trenches (Fig. 2), highlighting the site's three main life periods and numerous sub-phases.

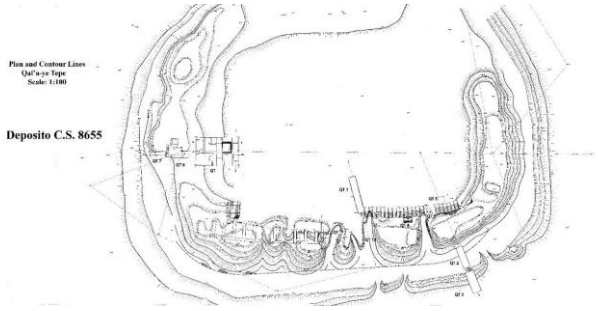


Figure 2. Qalʿa-ye Tepe, General plan, after MAI, Dep. Cs., by Tullio Tamagnini.

In particular, the main trench, called QT, and ten other ones, marked by the same abbreviation followed by a progressive number from 1 to 10, were opened too, together with QT11, opened in 1962 (Fig. 3). The works revealed that the tepe was defended by a double ring of walls. The external one, almost completely destroyed, is the most recent and dates back to the Islamic era (period III); its thickness is about 2 m, it is built in unfired bricks, and is about 9 m far from the innermost wall, datable to the Parthian-Sasanian period (period II) and, unlike the first, it is preserved for almost the entire perimeter, except in the southern area. It is an imposing earthen bastion thicker than 10 m, made with non-homogeneous layers of earth, reinforced by a sort of pisè; in addition, at some spots, the wall has an unfired brick cladding, especially along the external façade on the north-east corner and inside the north-west one. The north-east corner has also a series of at least eleven vaulted rooms opening inwards and made of pisè in the lower and upper parts, or walls and vaults of unfired bricks. These rooms seem to belong to a more recent phase of the lifespan of the wall, but earlier than the external boundary wall, therefore to period III, which partially reused them. The large internal boundary' wall as it seemed evident at trench QT4, leans against an older one with a very clear shoe profile, located in an

even more internal position. The latter is visible only on the inner north-west corner. The upper part is made of flat bricks alternating, every two rows, with cut bricks. However, this arrangement does not seem to correspond to the internal part, at least from what can be seen in trenches QT9 and QT1; in fact, the external cladding, discovered at trench QT4, seems to be built with irregular blocks of clay instead. This more ancient and inner city wall refers to the period I, datable at least to the ancient Parthian period according to Scerrato. Unfortunately, neither the virgin soil nor the levels connected with the base of the scarp wall were reached. Nevertheless, it was recovered. Among the materials of the earth bastion of period II encapsulating the walls of period I (QT1), there is also the painted pottery which Scerrato suggested to call Dipinta Storica Sistana (Sistanic Historical Painted), absent from all the other Sasanian and post-Sasanian layers at the site. This pottery is characteristic of the second layer of Qal'e-ye Sam and it is present in the VI layer of the palace of Kuh-e Khwaje. It is believed that it can not date back beyond the 2nd–3rd century BCE; it is also absent among the ceramic materials of the Achaemenid period of Dahāne-ye Gholāmān. The QT trench, built at the base of the external wall, must be attributed to period III, which highlighted – under the current level of the desert and under another sterile level consisting first of sand and then clay – the ceramic fragments of the period that do not date back to an era before the 13th century. In this trench, some traces of a structure datable to period III have been revealed: they can be connected to ceramic engraved with monochrome or green, yellow, and dark glazing, the so-called "sgraffiato". As far as period II is concerned, the findings attributable to it consist exclusively of ceramic, of which most of the material comes from the QT trench and the QT1 test. Within these trenches, no wall has been highlighted, and the ground appears as a homogeneous mass, resulting from the collapse of raw bricks mixed with coal and animal bones. Starting from the frequency of the materials, two main levels can be distinguished: a more superficial and a deeper one, even if there is no substantial difference between the ceramic types collected from both. A third level has been identified in QT about one meter above the desert floor, characterized by the presence of a millstone and very fragmentary and atypical ceramics. However, the survey did not reach the virgin soil. Period III seems to have been occupied very long back to the 10th-12th century, with visitors until the 15th century. The Islamic occupation seems to have taken place after a very long gap when the structures of the Sasanian phase II had fallen into disrepair. It is not possible to fully understand whether there was also a gap between the end of Period I and the beginning of Period II.

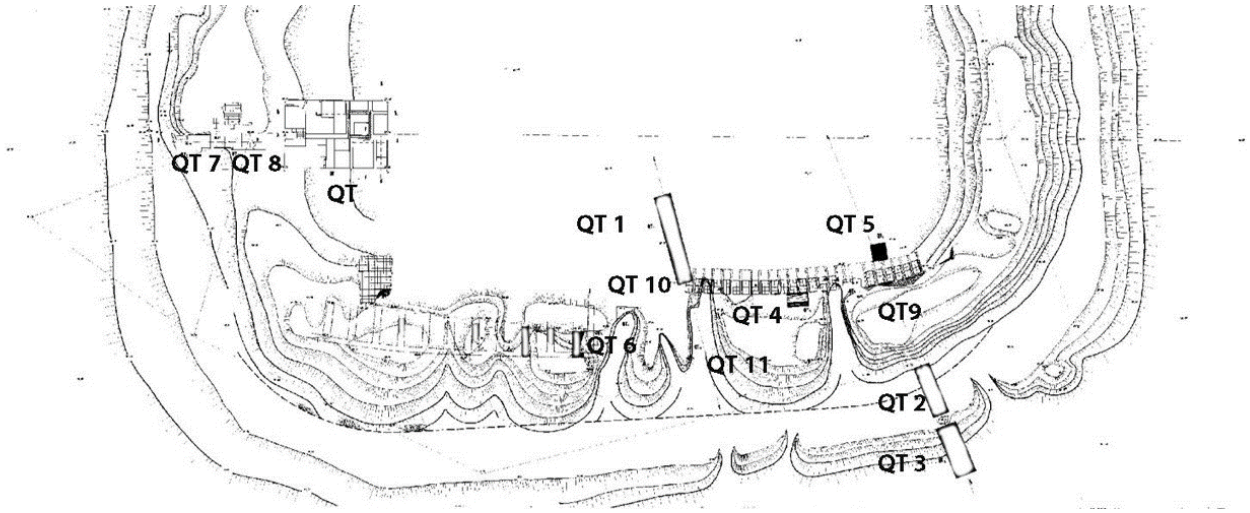


Figure 3. Qal'a-ye Tepe, map with the detail of the test trenches nos 1-11, after MAI, Dep. Cs., by Tullio Tamagnini.

IV. Materials

The archaeological material, mainly consisting of ceramics, found in Qal'a-ye Tepe during the surveys carried out in the 1960s by the IsMEO (then IsIAO now ISMEO), had been brought to Rome, Italy, and deposited partly in an area of the Museo delle Civiltà/Museo d'Arte Orientale "Giuseppe Tucci", and partly in the headquarters of the IsMEO / IsIAO/ISMEO Centro Scavi. In 2006, following the relocation of the Centro Scavi from via Merulana to via Aldovrandi in Rome, the material was temporarily transferred to another deposit of the Museo delle Civiltà/Museo d'Arte Orientale "Giuseppe Tucci"; subsequently, in August 2007, it was definitively transported to CISA (Centro Interdipartimentale di Servizi per l'Archeologia), at the Università di Napoli "L'Orientale", under my responsibility. Already during the first move, an attempt to understand the quality and

quantity of the documentation available was made. For this reason, a sort of inventory was drawn up, which could facilitate the reorganization and publication of the material and the site at a later stage. The paper material found consists of two short reports written by Umberto Scerrato: one on the Qal'a-ye tepe, drawn up in 1961, and the other, named "The excavation trenches", on all the Sistan sites which, in the 60s, were the subject of investigations by the Italian archaeological mission. The inventory includes a site map with various sections of the trenches and plans of the excavations; 94 photos concerning the pottery, 8 of the site and 96 of the excavation; about 42 level drawings of one of the trenches (QT 11); three notepads containing excavation notes (a few lines and some sketches). At the moment it is not possible to find either the excavation diaries or an inventory of the materials, and not even to know if they have been lost or never existed. The fact that almost 60 years have passed since the activities of the Italian Archaeological Mission, which took place in Qal'a-ye Tepe has probably determined this serious scarcity of documentation. In addition, it is difficult to interpret the information available and the absence of any member who has been part of the aforementioned mission. All this has caused quite a few problems in dealing with this work. A work of systematic organization of the Qal'a-ye Tepe documentation began in August 2007. The vast majority of ceramic finds are composed of two specific classes: glazed and unglazed. There is also a very small percentage of non-ceramic materials, including metals, fragments of stone pottery, glass, and illegible bronze coins. The material was confusedly distributed in boxes and, therefore, it was first necessary to separate and group it in different places, according to its original provenance and stratigraphic location. Soon after, the fragments were cleaned up and left to dry. Looking more carefully at the material during the washing, it was possible to note that most of the fragments had already been selected in the 60s according to a preliminary distinction between "diagnostic" and "non-diagnostic" fragments. Naturally, with the aid of notes, from the excavation plan and the excavation report drawn up by Umberto Scerrato, a comparison was then made between the number of trenches indicated by labels of the individual envelopes containing the material with that of the dug, indicated in the available plans. From this comparison it was possible to note that complete documentation was not at disposal, hence the material of all the investigated trenches was not present, apart from the QT trench, QT 1, QT 2, QT 3, QT 3 bis, QT 4, QT 6, QT 11. So, QT 5, QT 7, QT 8, QT 9 and QT 10 were missing. Unfortunately, it was not possible to understand the reason for these absences: we can not know if it was not possible to find material from those trenches or if, otherwise, it was so insignificant that its transfer to Italy was not considered useful. Despite this, the material available made it possible to do partial work, quite significant both chronologically and typologically. Once the ceramic material was divided into the two main classes, the glazed and the non-glazed, the quantity of material available in each class, level, and trench was determined; 274 fragments belonged to the first class, while 988 fragments to the second. The samples are not statistically very significant but reflect a more or less generalized ratio between glazed ceramics (which is almost always between 10 and 20%) and the unglazed one. The discussion that follows is, however, not an exhaustive description of the material (to which I will refer later), but only a division into phases of the work carried out.

The unglazed pottery was then divided, counted, and recorded, on paper by wares: common, ribbed, painted, and burnished ceramics are part of typical products of the Sistan area. Then we proceeded to register - first on a paper card to facilitate the work, and then on a digital format – all the data with the addition of the distinction for fabrics or ceramic pastes, and this represented the third phase of the work. The fabrics chosen as samples were observed on a macroscopic level, favouring the technical characteristics of the mixture and the treatment of the surface. The fabrics of the unglazed fragments obtained from this research are 15. For each selected sample, a description was made, highlighting the appearance of the ceramic body, the fracture, and the colour, and reference photos were then taken. All the paperwork was computerized using the Excel and the Access format, both capable of containing data in fields similar to those of the paper file, and thus obtaining very useful statistical and quantitative information. A computerized archive is easier to manage, for it can be updated easily and, being not physically macroscopic, it can be looked into briefly. Furthermore, throughout these programs, information can be implemented, displayed, correlated, and interrogated; for example, a graph of the distribution frequency can be made, displaying a fabric or several fabrics within a level, multiple levels, or an entire essay. The work steps described up to now for unglazed ceramics have also been carried out for glazed ceramics. After registration and counting, it was divided by wares. From this subdivision 9 main wares have been identified: slip painted, underglazed, sgraffiato, sgraffiato and splashed, splashed, monochrome green, monochrome turquoise, monochrome black, and monochrome dark brown. Each fragment was classified according to the corresponding ware, and for each fragment the decorative motif was described too. The next step was the sampling of the fabrics, chosen with the same criteria of the fabrics of the unglazed fragments. In this case, however, the treatment of the surface or the colour was not included, as it is covered

with a showcase and it is part of a completely different technology and function. The surface was not included in the fabrics, but within the wares, though differently. The samples of glazed ceramic fabrics that have been extrapolated are 7. For each of them, a detailed description has been outlined, also including several reference photos. As for the unglazed fragments, all these data were reported in an Excel database (copied in Access format as well). It consists of columns and horizontal lines called records. Within each record, the fragments characterized by similar fabric, ware, and shape are grouped (the fragments have also been preliminarily divided by shape, only mentioning whether they are open or closed). Subsequently, we proceeded to the selection of those fragments thanks to which it will be possible to reconstruct a typology. In this case, the choice was limited to those fragments coming from objects whose shape and type are well-defined. Whenever a new form or type appears, the fragment is extrapolated and set aside for graphic representation. This work was done for both the unglazed and the glazed classrooms. As mentioned before, the fragments selected for the first are 105, while for the second they are 26. Each fragment has been numbered and inserted in a list containing also the essay and the level from which it comes. Approximately 40 drawings made in the 60s must be added to the 105 selected fragments from the unglazed pottery. The drawings were checked and, despite the lack of inventory, it was possible to reconnect each drawing to the corresponding fragment, thanks to a number written in pencil on the fragment which is also found on the drawing. Except for some fragments, which were drawn from scratch because the corresponding drawings were wrong, the other drawings were well executed; they were scaled and polished using the AutoCAD program. It is necessary to mention a further problem that arose during the first phases of registration and counting of the materials: the wording affixed on the tags indicating the site, the number of the trench and the horizontal and vertical origins used to mark the material found in the various trenches appeared to be quite particular and left many doubts. For example, upon a first examination of the two terms QT1B Ib and QT1 Ib, it was assumed that the material marked by them came from the same trench, that is no 1. Carrying on the examination of the tags, it turned out that the same phenomenon of absence or presence of a capital letter after the acronym QT recurred for all the trenches up to QT6, and this aroused suspicion. We began to think that the provenance was not the same and that the cards referred to different trenches, also because the ones without letter A or B perfectly matched the trench layout at our disposal, while the others did not. Consequently, it has been inferred that the material stranger to the plans is not part of QT1, QT2, QT3, QT4, QT5, and QT6 trenches and that, conversely, it comes from the QT trench. Furthermore, through a careful examination of the notebooks and sketches drawn up by Scerrato, we noticed the presence of a rectangle divided lengthwise into twelve squares. In our opinion, the rectangle represents the QT trench. Both the upper and lower squares are numbered from 1 to 6. The upper squares should, therefore, correspond to the letter A of the cards placed immediately after the number, while the lower squares should correspond to the letter B. For this reason, we believe that everything that, after the initials QT, presents the letter A or B, comes from the main trench, while the cards that do not have these letters refer to material from trenches from 1 to 6. Such a conclusion represented the criterion with which we went on working in the most possible proper way. Back to the description of the operations performed on the material, with the drawings available, we started to divide the drawings according to their shape, thus identifying thirteen shapes whose description has been proposed: cup, basin, small olla, olla, jar, jug, single-handled jug, amphora, bottle, miniature vase, lid, filter, biconical vase. The dimensions were also observed and reference limits were developed for the dimensions for certain shapes, i.e.: cup and basin defining, for example, a "small", "medium" or "large" cup, according to the rim diameter. For other shapes such as jars and pitchers, we did not use this criterion since, in this case, the rim diameter is not indicative of the size of the body. In fact, a jar with only 8 cm diameter can also have large dimensions. For the type of material, we can not neglect an examination of the various types that may belong to the aforementioned shapes, determined on the basis of the morphology of the body – in the case of the open shapes – and of the neck – in the case of the closed shapes. Each type has been assigned a Roman number. In the case of the cups, for example, number I indicates a hemispherical cup, II stands for a truncated cone cup, and so on. After that, the subtype was also analyzed, indicated by lowercase letters, which we focused on examining the morphology of the hem. Before moving on to the next step, which is the assignment of the shape, type, and subtype to each fragment, each of them has been initialed, affixing on the internal surface the origin, the inventory number (INV) and an identification number (ID), starting from QT1 up to the QT 11 trenches, continuing with the QT trench and, finally, with QT S, QT '62 and QT '64. The next phase, the typological assignment, was digitized with the same formats used for the work carried out so far, thus creating a database complementary to the first one which, unlike that, does not group different fragments in the same record, but has only one fragment for each one. Moreover, the ID number, the inventory number, and a field indicating whether the fragment drawing is present or not have been added to

the database fields. This has the purpose of making the fragment identifiable, providing it with a sort of identity card that prevents it from being confused with other fragments, should the information relating to it be searched on the database. In addition, one or more photos were taken for each fragment. Every fabric has a graph that shows, trenches and levels, and their distribution. Graphs have been made relating to the fabrics, illustrating their most frequent shapes and types, and the topographical and stratigraphic distribution.

V. Macroscopic Analysis of the Fabrics of Un-glazed Ceramics[1]

The appearance of the ceramic body can be more or less compact, grainy, and sandy. This also applies to the presence of inclusions, their size, frequency, and color. Another important factor is the colour of the surface and the one visible in the fracture. For the description of the colour of the fabric samples, we have used the Munsell Soil Color Charts, which refers to three variables by which it is possible to describe the surface and fracture appearance of a fragment. The variables are the colour (hue), which refers to the position of the colour in the spectrum, the value (value) which indicates how light or dark a colour is on a scale from 0 (black) to 10 (white), the degree of saturation or purity of colour (chroma) ranging from 0 (neutral grays) to 10 (purer colours). The colour is, therefore, expressed with the order colour-value-degree of purity, with a space between the colour and the value and an oblique line between the value and the degree of purity (Orton, Tyers, Vince 1993, 136-137). The identification of the fabrics within a ceramic corpus provides information on different factors, such as the type of production, the identification of the production centers, the distribution area of ceramics, and the relationship between the production and consumption centers.

This identification allows to analyze aspects concerning technology, function and social significance of the different ceramic types. After these preliminary clarifications, it is possible now to proceed with the analysis of the 15 samples of the un-glazed ceramic fabrics recognized:

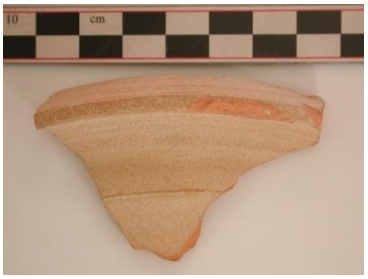
Macroscopic Analysis of the Fabrics of unglazed Ceramics

FABRIC 1 (Provenance of the sample: QT1 bis S) Very hard and compact ceramic body; clear fracture even if with a slightly jagged appearance. Background colour: 5 YR 7/4 (pink). Inclusions are predominantly round in shape, from small to medium in size (less than 1 mm in diameter), and mostly dark red and dark gray in colour; rare white inclusions and probably chalky in nature, smaller than the previous ones; traces of very small micaceous inclusions. The vacuoles, present with low frequency, are probably attributable to vegetable elements in the dough. The external surface has a whitish engobe (similar to 10 YR 8/2 - 8/3) which, however, fails to cover the larger inclusions. Furthermore, the fragment taken as a sample shows traces of an engraved decoration on the internal surface with epigraphic signs.

FABRIC 1

FABRIC 2 (Provenance of the sample: QT1 bis S) Hard ceramic body, rather compact and well purified; clear but grainy fracture. Background colour: 2.5 YR 6/8 (light red). The inclusions are extremely small in size for the most part; the yellowish-white ones are better evident, but they are present and distributed in a rather homogeneous way, with small dark-coloured inclusions and others of micaceous nature; some inclusions of larger dimensions and rounded morphology, similar to those peculiar of fabric 1, are sporadically distributed within the ceramic body. On macroscopic analysis, no vacuoles are perceptible. Both the internal and external surfaces are often covered (similar to the fragment taken as sample) by a whitish engobe (similar to 10 YR 8/2 – 8/3) or a light one (similar to 5 YR 8/3) of thin thickness, smooth enough to reveals the underlying inclusions; in other cases, however, the surfaces simply have a smoothing or appear burnished.

[1]At the moment, we are not able to present the archaeometric results of the analyses made on the samples kept in the Museo Nazionale di Arte Orientale (now Museo delle Civiltà) of Rome, brought to Italy in the 60s of the last century. As soon as possible we will publish the related achieved data.

FABRIC 2

FABRIC 2.1 (Provenance of the sample: QT 3-4 B III) Rather hard and compact ceramic body; clear but slightly grainy fracture. Background colour: 2.5 YR 6/6 (light red). The inclusions are for the most part very small in size; in addition to very small dark-coloured inclusions and those of a micaceous nature, better perceivable white-yellowish inclusions, probably of a chalky nature, are distributed with considerable and uniform frequency and characterized by larger dimensions than the others. On macroscopic analysis, the presence of vacuoles is not evident. The external surface is often covered (as in the case of the fragment taken as a sample) by a light engobe (similar to 5 YR 8/3), very thin, and smooth enough to allow a glimpse of the underlying inclusions; in other cases, however, the surfaces simply have a smoothing or appear burnished.



FABRIC 2.1

FABRIC 2.2 (Provenance of the sample: QT 3 A III) Hard and quite compact ceramic body; fracture with a rather grainy and jagged appearance. Background colour: 5 YR 7/6 (reddish yellow). The mixture is characterized by the presence of white-yellowish inclusions, probably of chalky nature, small and medium in size and with irregular morphology, distributed evenly and with considerable frequency; there are also very small dark-coloured inclusions and others of micaceous nature. The vacuoles, rather sporadic, are probably attributable to the inclusion in the mixture of elements of vegetable nature. The external surface is often covered by a light engobe (similar to 5 YR 8/3) that is very thin, and smooth enough to reveal the underlying inclusions; moreover, in the case of the fragment taken as a sample, on the internal surface there are traces of a burnished made on a rather thick red-lacquer "wash" layer (similar to 10 R 4/6 - 4/8)

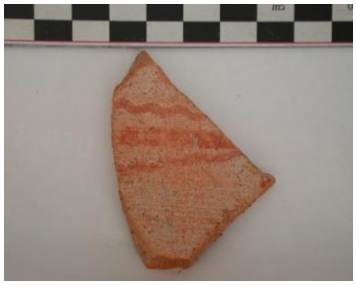

FABRIC 2.2

FABRIC 2.3 (Provenance of the sample: QT 1AB I) Compact ceramic body; fracture with a sandy appearance. Background colour: 5 YR 6/4 (light reddish brown). The fabric is characterized by a dense presence of extremely small inclusions, mainly yellowish-white in colour and with a rounded morphology. Micaceous inclusions and some sporadic ones of similar to the former in nature and morphology, but larger in size, are visible too. The sandy texture makes the presence of vacuoles virtually imperceptible.



FABRIC 2.3

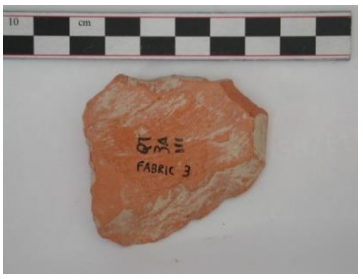
FABRIC 2.4 (Sample Provenance: QT11 IIb) Rather hard, finely porous, and quite compact ceramic body; fracture with a jagged and slightly grainy appearance. Background colour: 5 YR 7/8 (reddish yellow). The inclusions are of different typology and morphology: while those of a very small size – yellowish-white – are distributed more uniformly, those of red, gray, and dark gray colour – larger in size and irregular but more frequently rounded – are less homogeneous and frequently within the ceramic body; moreover, rare ones are visible too, including brilliants of a micaceous nature. Rather sporadic vacuoles are probably attributable to the inclusion in the mixture of elements of a vegetable nature. On the external surface of the fragment taken as a sample, there are traces of a light pink engobe (5 YR 8/4), extremely thin, which reveals the underlying inclusions, and on which a red-orange painted decoration is carried out (10 R 4/6: red).


FABRIC 2.4

FABRIC 3 (Provenance of the sample: QT1 bis S; Trench QT3A III) Ceramic body with a rather plastic appearance. The fracture has a slightly lamellar appearance, less grainy than Fabric 2. Background colour: 2.5 YR 6/8 (light red). The inclusions are slightly larger than the latter, albeit of a similar nature; however, they are distributed less frequently within the ceramic body. Vacuoles are rare but still visible.





FABRIC 3

FABRIC 4 (Provenance of the sample: QT1 bis S) Hard ceramic body, very compact and well purified; clear fracture. Background colour: 2.5 YR 5/8 (red). Inclusions are extremely small in size, barely noticeable to the naked eye. Evenly distributed within the ceramic body, they are yellowish-white and dark gray; there are also sporadic ones, including some bright of micaceous nature. The outer surface is often covered with a light engobe (similar to 5 YR 8/3), very thin and smooth enough to reveal the underlying inclusions. The fragment taken as the sample has an engraved decoration, probably epigraphic, on the external surface.


FABRIC 4

FABRIC 4.1 (Provenance of the sample: QT 3-4B III) It has a compact ceramic body, similar to the one of Fabric 4, but it is characterized by an evident prevalence of small and medium-small white inclusions. It differs from Fabric 2.1 by virtue of a lower graininess and a consequent greater compactness. Background colour: 2.5 YR 5/8 (red).


FABRIC 4.1

FABRIC 5 (Sample Provenance: QT3) Fairly hard and fairly compact ceramic body, well purified, characterized by remarkable lightness; rather clear fracture but slightly porous in appearance. Background colour: 5 YR 8/4 (pink). The very small inclusions, barely perceptible at a macroscopic level, are mostly dark in colour and rounded, and less evident than the vacuoles of lamellar morphology and slightly larger dimensions; on the other hand, the sporadic included brilliants of probable micaceous nature are better visible. The external surface is covered by a very thin whitish engobe (similar to 10 YR 8/2 – 8/3); in the case of the fragment taken as a sample, it shows traces of an engraved geometric or epigraphic decoration.

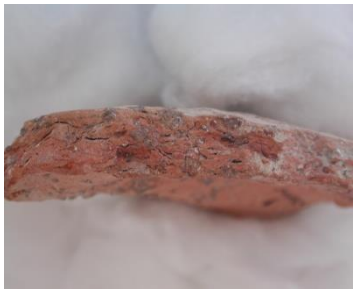


FABRIC 5

FABRIC 5.1 (Sample Provenance: QT3) Quite hard and purified ceramic body, but characterized by remarkable porous texture and lightness; clear but grainy fracture. Background colour: 7.5 YR 8/4 (pink). At a macroscopic level, only sporadic inclusions of probable micaceous nature are distinguishable, while round vacuoles of very small and small dimensions are more evident. The external surface is covered by a very thin whitish engobe (similar to 10 YR 8/2 – 8/3) which cannot cover the underlying inclusions. Furthermore, the external surface of the fragment taken as a sample reveals traces of an engraved geometric or epigraphic decoration.


FABRIC 5.1

FABRIC 6 (Provenance of the sample: Trench QT 3A III) Poorly compact ceramic body; very irregular fracture. Background colour: 2.5 YR 6/8 (light red) The fabric is characterized by the presence of inclusions irregular in morphology, mostly dark red and dark gray, large (between 0.5 and 1 cm), with a quite angular profile. There are also small and medium-size inclusions of white colour and chalky nature, as well as scattered inclusions of a micaceous nature. The fragment, which is part of a hand-modeled vessel, has very rough surfaces with outcropping inclusions and a crackle-like appearance, despite a layer of light clay spread to make them uniform (probably broken during firing due to lack of dilatometric agreement).




FABRIC 6

FABRIC 6.1 (Sample Provenance: QT11 IIb) Hard ceramic body, not very compact and rather rough; fracture of irregular and jagged appearance. Background colour: 2.5 YR 6/8 (light red). Inclusions in dark gray colour are distributed with high frequency but poor uniformity within the ceramic body. They have varying sizes and morphology: those of smaller dimensions generally have a rounded morphology, while those larger (up to 5 mm) usually have an irregular morphology, mostly angular; moreover, medium-size dark red inclusions are sporadically present. Finally, inclusions of probable micaceous nature are quite frequent on the external and internal surface of the fragment taken as a sample, on which traces of fire are visible too.


FABRIC 6.1

FABRIC 7 (Provenance of the sample: Trench QT 1B I) Compact ceramic body; somewhat sandy-looking fracture. Background colour: 10 YR 8/2 (white). Fabric has very small yellowish-white rounded inclusions and traces of micaceous inclusions. Extremely small-diameter vacuoles are distributed frequently and uniformly.

FABRIC 7

FABRIC 8 (Sample provenance: QT 6A IVc) Very compact ceramic body; irregular-looking fracture tending to flake. Background colour: 2.5 YR 6/8 (light red). Dense presence of inclusions, of different colours and sizes, but all mostly rounded. The dimensions vary from medium to large (up to 8 mm), and the colours from yellowish white to red and brown.

FABRIC 8

VI. Identification and Description of the Forms of Unglazed Ceramic

The shapes identified are 13: I. cup, II. basin, III. small olla, IV. olla, V. jar, VI. jug, VII. single-handled jug, VIII. amphora, IX. bottle, X. miniature vase, XI. lid/cover, XII. flacon. The reason for such a high number of forms is that they had to fulfill various functions. Generally speaking, ceramic objects perform three main "functional categories": storage and/or transport of goods, food preparation and consumption. It was appropriate, then, for the craftsman to give the object different technical characteristics depending on the function it had to perform. For example, a jar used for the transport of goods had not only to be of considerable size but, at the same time, be resistant to impacts, as well as easy to handle during transport (hence the importance of the loops). Furthermore, it had to be made of little porous material and designed to be closed to preserve the goods stored. Each shape has been divided into specific types, according to the morphology of the body – in the case of the open shapes – and of the neck – in the case of the closed shapes. Each type has been assigned a Roman number. The types, in turn, were further divided into subtypes based on the examination of the morphology of the rim. These subtypes are indicated by lowercase letters. Below we will present the description of the thirteen forms accompanied by the subdivision into types and subtypes.

I. CUP: The cups are part of the open-shaped vessels. In this case, there are cups ranging from a diameter of 11 cm to a maximum of 25 cm. They can be divided into small, medium, and large cups, respectively as follows: from 11 to 15 cm, small; from 16 to 20 cm, medium; from 21 to 25 cm, large. Cups, however, are likely to have been used mainly as tableware, to consume liquid and solid foods. Five different types of this shape have been identified among the material.

The most frequent families regarding the cups are the "ribbed" and the "burnished" wares. The following examples for the first ones are selected from the most significant (Table I, Inv. 30, 15, 11), for the burnished (Table I ID 776; Table II, Inv. 118, 184, 120).

The family of the "painted", on the contrary, is attested only in some cases, namely (Table III, Inv. 138, 21, 51). In these cases, the decoration follows geometric patterns made with red pigment. As far as the "ribbed" decoration is concerned, it has been noticed that it is not the same in all the cases: on some fragments it is rather evident, on others it is lighter. As for the "burnished", some differences in the stroke depending on the fragments were found: the stroke is sometimes thinner, it is sometimes wider. The colour of the strokes can also vary, ranging from light reddish to brownish, according to the colour of the fragment. The "burnished" strokes of the cups are always horizontal. In some fragments, "ribbing" and "burnishing" occur

at the same time (Table IV Inv. 41, 42, 16, 174). In this case, there are two possibilities:
a. the "ribbing" decoration is on the external surface and the "burnishing" on the internal one;
b. the "burnishing" decoration is on the outside, superimposed on the ribbing.
As for the decoration (engraved, rouletted, with comb, molded, etc.), there are no such examples of decorated cups, except in one case (Table V, Inv. 49) in which the decoration is engraved with wavy horizontal lines, under the edge on the external surface and, in other cases in which the decoration is molded, under the lip (Table V, Inv. 191a, Inv. 191b, Inv. 174, Inv. 174b).
Most ribbed and burnished cups have very simple hems. As for the morphology of the bases of the cups, the records available are very scarce, in fact, there are only two whole profiles in which the bases are flat-shaped (Table VI, Inv. 199a, Inv. 199b; Inv.184a, Inv. 184b; Inv.109a, Inv. 109b).
The other examples of bases are not part of the whole profiles, thus making it very difficult to determine whether they belong to cups or other shapes. Given this paucity of records, it is impossible to say if there were other shapes for the bases or if the cups only had flat bases.

II. BASIN: The basin belongs to the category of open-shaped vessels too. It is usually distinguished from the cup both by the larger dimensions of its diameter and by the thickness of the wall and the rim, which is more complex and larger in size. From a macroscopic observation of these three elements, it is possible to distinguish them from the cups and, then, divide them according to the size of the diameter in small, medium, and large basins: items from 23 to 28 cm, small; items from 29 to 35 cm, medium; items from 36 to 46 cm, basins. The function of these containers is linked to the phase relating to the preparation and/or storage of food and, in some cases, to the table (those, perhaps, with a smaller diameter and with a "brim" edge, characterized by an almost edgy cup/pelvis). Furthermore, they could be used during washing operations and during various types of production activities (Cortese 2005, 325-338). As for the families, the most frequent characteristic in the basins is the presence of the ribs (Table VII, Inv. 113; Inv.132; Inv. 4; Inv. 48; Inv. 17), even if in less quantity than the cups. The "burnished" ware is attested in a few cases, where it appears, unlike the cups, with vertical lines in the inner part of the wall (Table VIII Inv. 163a, Inv. 163b; 130). The painted ware, on the other hand, is not present. The examples of decoration are scarce, limited to Inv. 112, in which the container is molded (the molding is light and located under the rim), to Inv. 44, in which the decoration is engraved with a wavy horizontal line, and to some fragments in which the decoration is engraved with short, vertical, oblique lines on the upper part of the rim (Table IX: Inv. 112; Inv. 44; ID 347). For the morphology of the bases of the basins, as well as for the bowls, we have very few records, in fact, the only whole profile is Inv. 163, in which the base is disc-shaped (Table X: Inv. 163a, Inv.163c, Ø 57 cm). Given this paucity of records, it is impossible to say if there were other forms for the bases.

III. SMALL OLLA: This particular shape is generally considered to be intermediate between a closed shape and an open shape (between a cup and a jar). Among the materials under scrutiny, small olla is mostly characterized by particularly thin walls. In some cases, the diameter of the rim roughly coincides with the one of the body. In other cases, however, it is slightly shorter than the one on the body. Probably, these containers were used to contain liquids and semi-liquids with canteen functions. In the fragments with a smaller diameter, from 10 cm to 13 cm, there are decorations painted both on the edge and on the walls (Table XI: Inv. 173; ID 145, Inv. 28; Inv. 29). These vessels are painted with red-pigmented geometric patterns. It is in this particular form that we encountered the so-called Dipinta Storica Sistana (Sistanic Historical Painted), which we had already mentioned before.

IV. OLLA: The olla is a closed vessel, neckless or with a short neck and globular body. The diameter of the rim is smaller than the one of the belly, which is the maximum diameter. This shape, although morphologically similar to those of jars, has been distinguished because it has different functions, fabrics, and dimensions. In particular, this container was used for food making. On a first macroscopic observation, this shape already shows clear traces of burns, and it testifies to a reserved use for fire functions. Concerning the material, these vessels are characteristic of three fabrics: 6, 6.1, and 3. The jars are vessels characterized by fairly thin walls. The reduced thickness of the walls of the jars is perhaps also due to their supposed use: they were used to cook food, and too thick walls were of course not functional for the diffusion of heat. Moreover, thin walls, the absence of edges, hulls, and high porosity facilitated the lowering of thermal expansion (Mannoni and Giannichedda 1996, 159). As regards to the material, there are very few claims of this particular form. We do not know if these pots were provided with handles or grips, as we do not have any examples at our disposal. The absolute lack of bases, probably due to the reduced thickness of the walls which facilitated the breaking and wearing of the container, does not allow us to give information about their morphology. This shape does not present any decorative motif (Table XII: Inv. 137a, Inv. 137b (drawing) Ø 35 cm; Inv. 183a, Inv. 183b (drawing), Ø 14 cm).

V. JAR: These containers are also present in small, medium, and large sizes and were used for storing solid

food and, probably, also liquid substances. For this form, the identification of the types has been carried out taking account of the morphology of the neck. The jars showed a wide morphological and typological variety, which can be found in the number of types reported: fourteen. It was not possible to say the same for the bases, because only one variant is present: flat base. It is possible to explain the presence of this type of base, as it is more suited to the function for which the jars are intended to be produced. An example of this variant can be found in the QT 3 trench, where there was also a discreet presence of decorated walls and a pourer which, together with the base, are almost certainly part of the same object (Table XIII: ID 102, ID 143). In that case, it should be a jar to hold liquids.

Indeed, it is interesting to note that the fabric assigned to these fragments is fabric 3, whose technological characteristics are very suitable for water-based ceramics. Obviously, this is not the only fabric that characterizes this shape, in fact, the highest percentage is given by fabrics 2 and 4 in the lowest percentage. These jars have, in general, a globular body and a flat base, although we cannot always confirm this, because in many cases there is not enough wall left, so it was not possible to have a body in the types of jars. This form is the one that presents decorative motifs of various kinds more than the others: incised, imprinted, excised, rouletted, and molded. The molded decoration is usually found on the shoulder of the vessel and can be more evident as in Inv. 124, or less clear as in Inv. 125, or there may be more light moldings starting from the shoulder and ending on the belly as in Inv. 106 (Table XIII: Inv. 124, Inv. 125; Inv.106).

The engraved decoration can be found on the upper part of the hem, where the incision is in short vertical oblique lines, and on the belly, where the incision is in wavy horizontal lines (Table XIV: ID 680, ID 580).

The excised decoration is less frequent; an example is the item where the excision is located on the upper part of the belly and is constituted by a horizontal band formed by a sort of small triangles (Table XV: Inv.162).

One of the decorative motifs of the embossed decoration can be seen in an item, where there is a horizontal band formed by a sort of small squares arranged in a triangle (Table XV: Inv. 157).

The rouletted decoration superimposed on the moldings on the shoulder has also been found, examples in which several decorative styles are combined: rouletted, engraved, and molded. In this case, we have the rouletted decoration superimposed on the moldings on the shoulder and the incision with horizontal wavy lines on the belly (Table XVI: ID 677, ID 657).

As far as families are concerned, we can give some examples that apply to everyone: the "Ribbing" (Table XVI: Inv. 3; Inv. 151), and the "Burnishing" (Table XVII: Inv. 157 (drawing), Ø 13 cm).

We have noticed that burnishing in jars is usually found on the outside of the vessel and goes in the horizontal direction. In this form, we did not find any painted objects (Table XVII: Inv. 162a, Inv. 162b (drawing) Ø 11 cm).

VI. JUGS: The jug is a fairly complex shape, and it is difficult to identify a type it, especially when, as in our case, there are no objects or entire profiles available. The jugs can usually be divided according to the shape of the body, which can be ovoid, pear-shaped, and globular; the ovoid jugs do not have any type of swelling on the body; the pear-shaped jugs, on the other hand, show a considerable swelling in correspondence of the shoulder that tapers more and more to the base; the globular jug has a bulge that occupies almost the entire body, from the shoulder to the base. Since it was not possible to divide the jugs on the basis of the shape of the body, because of the absence of the entire objects available, as already said, the types have been divided only according to the morphology of the neck. Five different types have been highlighted. The base of the jugs, regardless of the shape of the body and the one of the neck and rim, can be flat or disc-shaped. The jugs were mainly intended to contain liquids, both as storage vessels, in the case of large objects, and as a canteen, in the case of medium and small vessels. As regards the families in this form, there are "burnished" and "ribbed" objects, while painted objects miss. Examples of "burnishing" can be seen in the fragments Inv. 169, 189, and 149, where the "burnishing" is found on the outside of the fragment and is made of horizontal lines (Table XVIII: Inv. 169a, Inv. 169b; Inv.194a, Inv. 194b (drawing)), where the "burnishing" is made of oblique vertical lines that join together (Table XVIII: Inv. 149, Ø 8 cm). Examples of ribbing, on the other hand, can be highlighted (Table XVIII: Inv. 108a, Ø. 10 cm, Inv. 108b (drawing); Inv. 168).

VII. ONE HANDLE JUG: Unfortunately, this form is little attested in the material under scrutiny. In fact, it was possible to extrapolate a few significant fragments to be merged into the typology. Two types were highlighted: a) the single-handled jugs which, as well as the jugs, were mainly meant to contain liquids in quality of storage vessels, in the case of large objects, and of canteen, in the case of medium and small vessels. They appear to be canteen vessels. As for the morphology of the lugs of the single-handled jugs, it was observed that the lugs have a vertical loop that engages immediately under the rim. Most of the loops are ribbon, and their width ranges from 2 to 4 cm (Table XIX: ID 423, ID 439, ID 538, ID 546, ID 635, ID 655) another type of handle attested in the material is a vertical twisted loop of discrete dimensions that was also used as a sample of fabric 7 (Table XIX: ID 368).

In another item, it was possible to hypothesize that the loop was thinned and belonged to the vertical type surmounting (Table XIX: Inv. 176, Ø 6 cm), while in Inv. 143 it was only assumed that it was a vertical loop. The families are not present in this form but, given the few specimens at disposal, it was not possible to exclude their presence a priori. In fact, a fragment presents a loop, whose wall is burnished. Even the decorations are scarcely attested: Inv. 143 has a molding on the neck just where the attachment of the handle is; Inv. 176 features a broad-pointed incision made with horizontal lines on the neck (Table XIX: Inv. 143a, Inv. 143b, Ø 5 cm).

VIII. AMPHORA: The amphora is a container with two handles used for transporting or storing liquid or semi-liquid foodstuff. The types are only two, but not available unlike the other shapes, so the entire objects we have at disposal have kept the morphology of the neck. In Inv. 135, a discreet concavity in the internal part under the rim was noticed and it allows to hypothesize that the amphora was accompanied by a lid, which unfortunately has no comparison with the available material. The handles of Inv. 1035 are placed under the hem in the initial part of the neck, and it is only possible to assume that they were vertical. About the Inv. 197, on the other hand, it is possible to say much more about the morphology of the loops. They start immediately below the hem, ending on the upper part of the belly; they are slightly overlapping vertical ribbon handles. An element observed in Inv. 197 is the blackish colour of the clay body. This can be explained through the cooking procedure for the ceramic vessels: at the beginning, when the temperature still does not exceed 200° C, the heat eliminates the residual mixing water. In order to avoid the breaking of the walls of the product, the furnace must be heated gradually. Once the 300° C is exceeded, the combustion of the organic matter contained in the product begins. In this phase, if the air in the furnace is poor in oxygen, the clay takes on a blackish colour visible in the fracture. In order to avoid this phenomenon, the potter must use a furnace with a good draft. This is to say that the container (Inv. 197) has this blackish colour due to a cooking error. The families and decorations are not present in this form, except for Inv. 197, in which broad-pointed incisions made with the horizontal parallel lines are visible on the belly (Table XX: Inv. 135a, 135b (drawing) Ø 14; Inv. 197a, 197b, Ø 3,50)

IX. BOTTLE: In the material at disposal, unfortunately, there is a single example of a bottle: a long and thin neck with a rim diameter of 4 cm has broad-pointed incisions immediately below the neck, made with two parallel horizontal lines. It is not possible to define the shape of the belly, but it is to imagine that it was ovoid with a flat base. This container is used to hold liquids and as a canteen container (Table XXI: Inv. 185a, Inv. 185b, Ø 4 cm).

X. MINIATURISTIC VASE: This shape includes small vases, with rim diameters often less than 10 cm, and characterized by the use of thin walls. Probably, these small containers were used to contain liquids and semi-liquids, but we do not know for what specific use they were meant. The shape has been divided into three types on the basis of the morphology of the neck, whose containers grouped with the first type resemble small jugs; the vessel in the second type resembles a small neckless jar; the vessel from the third type resembles a small jar with a neck. Unfortunately, it is not possible to be sure of what was the morphology of the base of these vessels, also because an entire object is missing. It could have been convex (although this hypothesis is unlikely), flat (raised), ring-shaped, or discoid. The families/wares of the burnished and the painted ones are not present in this form, but the family of the very light ribs is present. As for the decorations, only the molded decoration is attested, and it can be seen where the molding is located just below the neck (Table XXII: Inv. 179a, Inv. 179b (drawing), diam. 0.4; Inv. 156a, Inv. 156b).

XI. LID/COVER: Lids have not a shape resembling them and are not part of a specific "functional category". They are, to all intents and purposes, an auxiliary "element" per se, but must necessarily be linked to another container. These objects, in fact, were used to close various types of containers, from jars to small jugs, from larger ones in which liquids were stored to large jars or amphorae used for the transport of goods. We have a very restricted morphology of these artifacts since only two specimens have survived in the available material, one of which has a hemispherical shape (Inv. 158 type I) and one has a truncated cone shape (Inv. 186 type II). The first is equipped with a central socket, probably hemispherical in shape, and has a small ring base (5 cm). The second is very low, in fact, it has a height of about 2 cm, but it has a base, also ring-shaped, with a larger diameter (13 cm) than the first one. We do not know if it was accompanied by a socket or not, as the fragment is too small. Inv. 1086 has an engraved and imprinted decoration. Furthermore, as in Inv. 197 (amphora), the clay is blackish in colour, especially when fractured, and this is the mark, as we have already stated, of a cooking mistake (Table XXIII: Inv.158a, Inv.158b, Inv.158c, Ø Base 5; Inv. 186a, Inv. 186b, Ø Base 13).

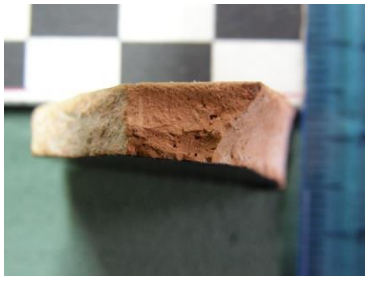
XII. FLACON: There is only a single specimen of this particular shape. Probably it contained liquids, but its use is unknown. This shape called flacon has a flattened biconical body with a flat base of 4 cm and a

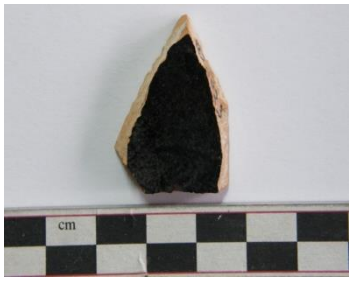
rounded edge. The mouth opening is very small, in fact, the diameter is of only 2 cm (Table XXIV: Inv. 198a, 198b, Ø (base) 4 cm, (rim) 2 cm).

VII. Macroscopic Analysis of the Fabrics of Glazed Ceramics

The samples of the fabrics of the glazed ceramic were selected with the same criteria as the fabrics of the unglazed ones. In this case, however, the treatment of the surface or the colour was not included, as it is covered with a showcase, and it is part of a completely different technology and function. Therefore, the surface was not included in the fabrics, but within the wares instead. The descriptions of the seven glazed ceramic samples are presented below:

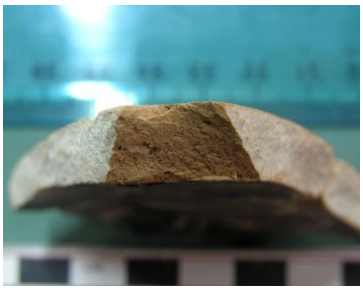
FABRIC 10 (Provenance of the sample: QT-1B I) similar to Fabric 2. Rather compact ceramic body; fracture with a slightly grainy appearance. Base colour 5 YR 7/8 (reddish yellow). Extremely small-size inclusions, the yellowish-white ones are more evident; some are rounded, others oblong. There are also very rare inclusions, equally small, dark in colour, and others of micaceous nature. There are vacuoles of different sizes: very small and small.



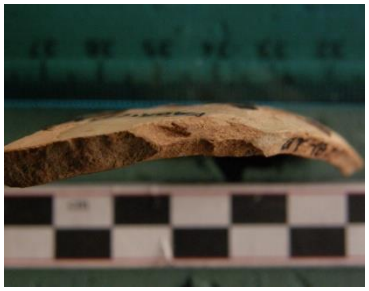
FABRIC 10

FABRIC 10.1 (Provenance of the sample: QT-1 A / B I) Rather compact ceramic body; a rather grainy fracture. Base colour 5 YR 7/6 (reddish yellow). Present inclusions and vacuoles of colour, shape, and size equal to those of fabric 10. In fact, the main difference between the two fabrics lies in the greater graininess of 10.1.



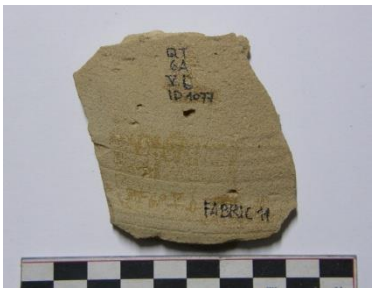

FABRIC 10.1

FABRIC 10.2 (Sample provenance: QT-1 B I) (similar to fabric 2.2) Rather compact ceramic body; rather grainy-looking fracture. Base colour 5 YR 7/6 (reddish yellow). Clear prevalence of white-yellowish inclusions with a rounded shape and small dimensions that completely cover the ceramic body. There are rare inclusions of micaceous nature. On macroscopic analysis, there are few visible vacuoles.




FABRIC 10.2

FABRIC 11 (Provenance of the sample: QT-6 A V b) Not very compact and slightly porous ceramic body; fracture with a sandy appearance. Background colour 5 YR 8/4 (pink). On a macroscopic level, only a few dark-coloured and very small inclusions are visible. The vacuoles are distributed with very high frequency; they are of various sizes, from very small up to 2-3 mm.

FABRIC 11

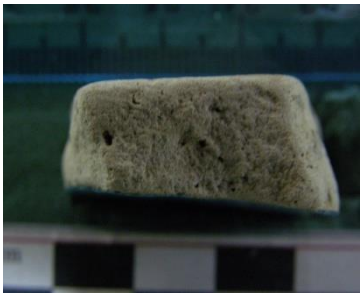
FABRIC 12 (Provenance of the sample: QT-6 A V b) A so-called fritware. Siliceous mixture. Background colour 10 YR 8/1 (white) with epigraphic painted decoration as well.


FABRIC 12

FABRIC 13 (Provenance of the sample: QT-2 B II) Not very compact ceramic body, characterized by a notable lightness; porous fracture. Base colour 10 YR 8/4 (very light brown). The inclusions, mostly dark and small, are not very noticeable. Large amounts of small vacuoles are distributed evenly over the entire ceramic body.


FABRIC 13

FABRIC 13.1 (Provenance of the sample: QT-3 bis II) Compact ceramic body; porous fracture. Base colour 10 YR 8/3 (very light brown). There are very small light brown inclusions, distributed unevenly. Instead, a large amount of very small vacuoles is distributed evenly within the ceramic body; there are also small and medium-sized vacuoles with a rounded shape, unevenly distributed in smaller quantities.




FABRIC 13.1

VIII. Definitions of the Wares identified within Glazed Ceramics

Nine main wares have been identified within the glazed ceramic: I. slip painted, II. under-glazed, III. sgraffiato, IV. sgraffiato and splashed, V. splashed, VI. monochrome green, VII. monochrome turquoise, VIII. monochrome black, IX. monochrome dark brown.

I. SLIP-PAINTED: it was first produced in the Muslim world starting in the 10th century. The slip usually consists of semi-liquid clay and is often used to coat the entire surface of a vase in order to create a background for further decoration. Floral, geometric, animal, and figurative motifs were often engraved on the slip before the vase was covered with a transparent or coloured display case. Pottery with black, white, or red slip dates back to around the 10th-11th century and developed in the Samanid territories of eastern Iran and central Asia.

II. UNDERGLAZED PAINTED: it was widespread in Syria and Egypt from the 9th to 10th century, it consists of a painted decoration under a transparent display case. The colours used for this decoration are limited to 3: cobalt blue, turquoise and black; these colours were applied either all together or often only in two shades.

III. GRAFFITA: engraved and under glazing, it is from an ancient pre-Islamic tradition and are undoubtedly inspired by metallics. The technique consisted in engraving the engobe that covered the ceramic body with a burin or other sharp instrument until the underlying colour of the paste emerged. After this operation, the object was covered with monochrome or polychrome glazing. The decorative repertoire included abstract and figurative motifs. Spread across a large part of the Islamic world (Central Asia, Iran, Mesopotamia, Anatolia), it appeared for the first time in Persia in the 10th century. Among the different types of scratched crockery, the so-called "Amul" and "Aghkand" must be mentioned, named after the Persian towns.

IV. GRAFFITA-SPLASHED: they consist of a combination of the two decorative elements listed above. Although this ware is often labeled sgraffiato (incised) in the literature, only a small proportion of the splashed pottery has incised ornament, generally consisting of simple, often hastily executed leaf scrolls and half-palmettes. Splashed and incised wares have been found over Islamic western Asia, from Syria to Khorasan (Lane 1947, 25-27); in Egypt; and in the former Byzantine empire (Allan 1974, 18-20, pl. 3).

V. SPLASHED: these are drips of coloured showcase, usually green or brown, which develop on a single surface of the product or on both. One of the few datable vessels of this type is from Susa (Allotte de la Fuye, pp. 6-17)

VI. MONOCHROME GREEN: this type of coating is superimposed on the engobe (if present) before the second firing and, depending on the pigments used, it can be (cfr. in particular Samarra, Susa, Siraf, and other sites (Sarre 1925, pl. VI; Lane 1947, pl. 3; Whitehouse 1979, pl. IIIa):

a. "lead" type, with lead oxide flow, consisting of a thin and waterproof layer that adheres completely to the product, hiding surface irregularities, smoothing the edges, and making it bright. Much less alterable than alkaline glazing, it melts at a lower temperature and easily "runs". The lead glazing can be transparent and colourless or coloured with metal oxides. Adopted by Greek and Roman potters in a large area from the 3rd century BCE onwards, it was then used in the Middle Ages in Islamic and Byzantine production, through which, once again, it entered the European Mediterranean where it had disappeared after the fall of the Western Roman Empire;

b. "lead-tin" or enamel type. This term is used to indicate lead glazing containing suspended tin oxide particles (generally from 6 to 15%), with the function of making the display case perfectly white and opaque. It is a glassy, impermeable mantle, which covers the ceramic body, hiding its colour and surface imperfections and softening the contours. It constitutes a perfect background for any decoration (graffiti, splashed) and, compared to the thin and transparent showcase, it is characterized by perfect opacity and body. In this case too, the mixture is applied by partial or total immersion (Whitehouse 1979, 51-56).

Among these nine wares, six are the examples concretely and extensively documented:

I.SLIP PAINTED (Table XXV: Inv. 67; Inv. 81; Inv. 69a, Inv. 69b; Inv. 72a, Inv. 72b)

II. UNDERGLAZED (Table XXVI: Inv. 66a, Inv. 66b; Inv. 64)

III. GRAFFITA (Table XXVII: Inv. 82a, Inv. 82b; Inv. 65; Inv. 71a, Inv. 71b; Inv. 83)

IV. GRAFFITA AND SPLASHED (Table XXVIII: Inv. 70a, Inv. 70b; Inv. 68a, Inv. 68b; Inv. 84a, Inv. 84b)

VII. MONOCHROME TURQUOISE (Table XXIX: Inv. 76a, Inv. 76b)

VIII. MONOCHROME BLACK (Table XXIX: Inv. 75)

IX. Conclusion

The very small size of Qalʿa-ye Tepe and the curvilinear shape of its walls clearly confirm that the site was originally a small, fortified camp, even if, during the excavations, no element to be traced back to military-type functions came to light. The subject of this article, with particular reference to the ceramic and cartaceous data at our disposal, could confirm the hypotheses of prof. Scerrato regarding the chronology of the site.

According to Scerrato, Qalʿa-ye Tepe shares the period of settling with other sites, such as Tepe Shahristan, Qalʿa-ye Sam (Genito 2021, 1-19) and Kuh-e Khwagha: the three sites were inhabited in the Hellenistic, Parthian, Sasanian (Scerrato 1970, 126) and Islamic periods. This is also attested in Qalʿa-ye Tepe, although there is an incomplete sequence that allows one only to state that the settlement was certainly occupied in the proto-Islamic period, while there is no news for the subsequent period.

The presence of painted pottery in the site (especially in QT 11, to a lesser extent in the QT 4), but also in Kuh-e Khwagha (site of secure Parthian origin) and in Qalʿa-ye Sam, allows one to confirm the relative proximity in time of these sites, as in a certainly older site, such as Dāhāne-ye Ghōlaman, where no pottery with painted decoration has been found. The painted pottery of Qalʿa-ye Tepe, therefore, can be evaluated in reference to the one of Qalʿa-ye Sam II, in which the red wine (absolutely majority), black and ochre colours, on a cream or beige background, prevail and are similar to those used in the material we are analyzing. As for the decorative motifs, vegetal and geometric ones prevail. In turn, these characteristics of Qalʿa-ye Sam II connect it to the palace of Kuh-e Khwagha VI (the VI is the earliest level). The uniformity is such that allows the painted pottery of these three sites to be grouped under the unique label of Dipinta Storica Sistana (Sistanic Historical Painted), a cultural trait dating back to the 3rd-2nd century BCE which, chronologically, has no connection with the Achaemenid period (Haerinck 1983, 220). This ceramic is very similar to the common undecorated one, also as regards the shapes. The only exception is constituted precisely by Qalʿa-ye Tepe, where the painted decoration mainly characterizes the form defined as "small olla" in this paper and present in QT 11 II b, Trench E -4.70 and, to a lesser extent, in QT 4 I-II layer. We do not know if this phenomenon is due to the intentionality of the ceramist or if it is just accidental. The decoration was done before cooking. In general, it is monochromatic, but there is no trace of two-colour samples. The surface involved is generally the external one, especially the upper half (Haerinck 1983, 218). The decorative motifs found are the following:

- vertical and horizontal bands;
- horizontal parallel lines;
- triangles;
- points;
- wavy lines;
- crosses with pointed arms;
- stylized vegetables.

It should be noted, however, that in the case of Kuh-e Khwagha, the decorative motifs are much simpler, limited to continuous lines or herringbone (Gullini 1964, 239). Also, for what concerns Qalʿa-ye Tepe, there are only some of these motifs, that are the bands, lines, and triangles; perhaps this lack of variety is due to the scarce quantity of painted fragments at our disposal, rather than to an inventive defect of the potters of Qalʿa-ye Tepe.

The date we have set for the Dipinta Storica Sistana (Sistanic Historical Painted) is largely based on Qalʿa-ye Sam, a site which, due to the absence of glazed pottery, certainly predates the advent of Islam. If this dating is correct, it follows that Qalʿa-ye Tepe was inhabited in the Parthian era (225-250 BCE), which was a period of general artistic flourishing. Given that the Parthian Empire controlled a territory ranging from the Euphrates River to Bactriana, it should not be surprising that, as it will be shown later, the same characteristics of the Qalʿa-ye Tepe pottery can also be found in rather distant territories. However, it is interesting to point out here that when the Parthian dynasty collapsed due to the new Sasanian rulers (225 CE), there was no such change in material culture, including pottery, that might have been expected. Incidentally, we point out that Kuh-e Khwagha I dates back to the Sasanian era (Scerrato 1970, 212) and Qalʿe-ye Sam was also still busy at this time, so it is reasonable to expect that this also applies to Qalʿa-ye Tepe.

Another factor that undoubtedly unites our site with that of Kuh-e Khwagha is the ribbed pottery, so abundant that it was found in Qalʿa-ye Tepe already in the first survey carried out in the 1920s. The typical rib

of Sistan (of all the Iranian provinces indeed) is part of the common pottery. The walls are 5 to 10 mm thick. The fabric is compact and tempered with more or less finely crushed gravel or crushed lime. The colour ranges from buff (7.5 YR 8/4 and 7.5 7/4) or pink (2.5 YR 6/4) to brick red (10 R 5/8). A cream or buff but also reddish engobe is often observed. In general, the outside has the same colour as the dough. The ribs are incised, parallel, and pronounced. Ribbed pottery seems to characterize the shape of the jars and should be a relatively recent invention because it is absent in the Achaemenid levels and appears only from the 3rd-2nd century BCE (Parthian era). However, it was still in use in the Sasanian period and probably at the beginning of the Islamic era. From a spatial point of view, it also spread to western Pakistan and southwestern Afghanistan (Haerinck 1983, 17).

Dipinta Storica Sistana (Sistanic Historical Painted) and "ribbed" ceramics are, nevertheless, just two of the ceramic productions that connect Qal'a-ye Tepe with the sites we are talking about and, in a broader horizon, with the rest of Sistan. Let's see, in Haerinck's treatment (1983, 213-221), what these aspects consist in:

Common ceramic: it is characterized by a compact and regular fabric corresponding to our fabric 5, degreased by means of gravel or crushed lime in variable quantities. The vases are often beige or suede tending to pink. However, light gray vases were also found. The internal surface has the same colour as the internal one and both have the same colour of the dough. A whitish or yellowish engobe is often present (YR 8/3-8/4). The examples with engraved decoration document parallel lines or a wavy line;

Cup: in the great variety of forms attested it is the most common, especially the flared one with a straight lip. In fact, many cups with a slightly keeled profile and concave lip have also been found. The latter appear in Iran at the beginning of the Iron Age but are also well attested to the most interesting era, namely the Parthian one. The morphology of these cups is quite elegant because Parthian ceramics had preserved the memory of Roman artistic production (Lane 1947, 9). The cups with a slightly carinated profile and flat rim are also well documented (for example in Dāhāne-ye Ghōlaman), but they are from the Achaemenid period. Finally, we point out the cups with straight lips, which have been defined as "small olla" here. There are also very large plates, of the same type widespread throughout the Near East which, as regards the geographical area under our responsibility, must date back to the 3rd-1st century BCE;

Comb decoration: it mainly concerns common pottery, and it is mainly attested in Kuh-i Khwagha on all levels;

Dark red ceramic with burnishing stripes: it generally has a fabric purified with mineral degreasers. The colour is orange, brick red, gray, and brown and it is always cooked well. The outside is free from engobe and has the same colour as the dough or, at times, it is a little darker. The burnishing strips are parallel and horizontal, spaced regularly according to the size of the vase.

Here a particularity of the coarse pottery of Qal'a-ye Tepe is pointed out (fabrics 6 and 8): its high content of gravel visible to the naked eye allows to hypothesize a Sasanian dating for the levels that contain it, since in the Parthian era or later, in the Abbasid period, coarse pottery was of a slightly higher quality (Northedge 1985, 121). Taking into account all the characteristics examined so far, the similarity of the ceramic material of Qal'a-ye Tepe is striking not only with the sites mentioned so far but also with that of Tureng Tepe, in the Gurgan plain, whose occupation lasted from the 1st CE in the 8th century (Gardin 1987), thus coinciding, at least for part of the levels (Tepe Tureng VC and VD), with the most important period of occupation of Qal'a-ye Tepe, the Parthian one. For the examination of the material owned, we rely on Lecomte (1987, 93-119). The first similarity between Qal'a-ye Tepe and Tureng Tepe (but also Qal'a-ye Sam) is that the settlement is intended for military use. In the two levels under scrutiny most from a chronological point of view, common pottery was found in large quantities, and a smaller amount of coarse pottery was found too. The prevailing colour is red, but there is also gray and beige common ceramic. The colour of the coarse pottery is brown or gray, while the coarse pottery samples in Qal'a-ye Tepe mainly show a red colour. But, beyond the hue, which can be due to various factors, what is most striking is the extreme resemblance in the forms attested to Tureng Tepe and those identified in Qal'a-ye Tepe, and even more of the details, like hems. As an example, it should be pointed out that a closed form without neck and lip is attested in Tureng Tepe, and it is also found in Qal'a-ye Tepe: this is the type I jar attested in QT 4 to III and in QT 5 A III a. We also report the type II jar found in the QT 3 bis trench.

Furthermore, burnishing was also common in Tureng Tepe. Unfortunately, our comparisons are not truly exhaustive, due to the fact that any complete Qal'a-ye Tepe profiles is present, so it is not possible to claim whether even here, as in Tureng Tepe, the bases of the vases were mostly flat. But what is really interesting is that Lecomte places the ceramics of Tureng Tepe in relation to the one of Central Asia and not to that of Western Iran (Lecomte 1987), proposing very precise comparisons, especially with Chorasmia (Uzbekistan), from the same period as Tureng Tepe VC and VD.

For the general study of the pottery of the Parthian and Sasanian time in Iran, there are not many archaeometric analyses, and here it is due to mention one of the most important ones made by different

authors recently (Amiri, Kouhpar, Neyestani, Nadushan 2013). The contribution sets to give a better picture of the pottery assemblages from the Sasanian-Islamic sites (Bishapur, Sar Mashhad, the city of Gur, Darabgird, Istakhr) and the historical city of Siraf as a main port of the Sasanian era through macroscopic and laboratory analyses of the available material.

For most time study of all Islamic pottery of the first four hundred years has been dominated by the finds from Samarra in Mesopotamia, which had been the capital of theʿAbbasid caliphate from 221/836, when it was founded by al-Moʿtaṣem, until 269/882, when it was abandoned by al-Moʿtamed. In 1911-13 the German expedition led by Ernst Herzfeld and Friedrich Sarre conducted excavations at the site, where large amounts of pottery were found. Sarre published a monograph on this pottery (1925), which included, in addition to a wide range of Islamic wares, some Chinese and supposedly Chinese material: white porcelains, greenware, and wares striped or mottled with green and brown. Originally almost all were thought to date from the brief period during which the city was the capital. As a result, scholars concluded that Islamic potters had developed a new range of table wares in the 3rd/9th century as a direct response to the introduction of Chinese ceramics into western Asia (Lane 1947, 10-16). In recent decades, however, excavations of similar wares at Susa in Kuzestan and Siraf on the Persian Gulf, as well as at a number of sites in Khorasan, Afghanistan, and Transoxania, have forced a reconsideration of the accepted chronological framework based on the finds from Samarra.

As far as we know, monochrome glazed pottery was not produced in the Iranian plateau during the Sasanian period, and the glazed vases present at this time had been, most probably, imported from Mesopotamia and the Persian Gulf (Wilkinson 1973, XLII). The alkaline blue glaze ware, one of the most famous ceramic production of the Abbasid period, and especially the so-called "Sasanian-Islamic" jars, widely exported, was found on most of the coastal sites of the 8-10th centuries all around the Indian Ocean and even in the Far East as far as China and Japan. This ware belongs to a long tradition of alkaline glazed wares produced in southern Iraq (Mason, Keall 1991, 57-61). However, although that production is one of the main type-fossils of the early Islamic period, the real starting and ending time of the manufacture is not precisely dated. Another type-fossil of the Abbasid period, the opaque white glazed bowls were equally produced at Basra and other centers in Iraq (Mason, Keall 1991, 61). White glaze ware is much better documented than the blue one, and the periods of the introduction of the different classes - plain or decorated in cobalt, luster, or splashes of glaze - seem now rather precisely dated, from around 800 for the earliest production, with cobalt decoration, to around 900 for the latest, with monochrome luster (Northedge 1996, 231-235). At Susa, the type is present until the second half of the 9th c. (Kervran 1977, 152-153); at Siraf it is well represented in period 3 (9-10th c.) but also in period 4 (11-13th); at Kush, white glazed pieces were found and they appear in phase IV (9-11th c.) and are present in all levels with many residual pieces found in the late reoccupation layers of phase VIII (late 16th-early 17thc.).

Sgraffiatos pieces with a rather fine red fabric and a decoration incised through a white slip under a lead glaze, monochrome or mottled in various tints of green, yellow, and brown have also been found. Contrary to early sgraffiatos, with a pale fabric that was produced in the 10th c. in Mesopotamia, red ware was most probably made in Iranian kilns (Stein 1932, 90-91 et pl. IV; Kennet 2004, 34). It is well-represented on all sites in the eastern Islamic world dated ca 11-13th c., and several varieties are recorded according to the style of the decoration which can be simply incised, incised on a hatched background or champlevé, or according to the glaze, either monochrome or mottled. The dating of monochrome sgraffiatos is still under debate. They are often considered as a later evolution of the ware, dating to around the end of the 11th c. onwards, at Lashkari Bazar and Kush for example, but they seem to appear much earlier on other sites (Kennet 2004, 36 and 75-76).

The ceramic production found in eastern Iran from late Sasanian time and early Islamic is still less documented and published and is very less related to the rest of the available documentation (Kennet 2004). Early Islamic pottery (Whitehouse 1991) has been found in Khuzestan and the Persian Gulf, on one hand, and the Persian plateau, including Khorasan, on the other. A general survey of this class of different production has been generally described (Crowe 1992; Curatola, Scarcia, 1990; Fehérvàri 2000; Fontana 2001; Soustiel 1985; Boucharlat, Haenrick 1992).

The cognitive panorama of ceramic Islamic production in recent years is more widely documented than before, above all thanks to the works of Axelle Rougeulle (2004; 2005a; 2007a; 2007b; 2008; 2018), who with her excavations and studies especially in Yemen, Oman, has expanded its productive and chronological themes from Iran, Persian Gulf and the Red Sea, etc. with new data coming from more reliable archaeological contexts. Especially for the "sgraffiato" production (2005b) she strongly underlines the concrete possibility of locating its origin in south-eastern Iran, starting from Sistan and Baluchistan as already noticed (Stein 1937).

The exponential economic growth in the first centuries of Islam of sites such as Basra in Iraq, Siraf in Iran, and Sohar in Oman is the main socio-economic factor of the time, and many sources talk about the opulence of these markets and the importance of their

commercial activities that stretched from China to Africa.

In the Red Sea, Aydhab, the port of Egypt in the 10th-13th centuries, is very poorly known besides all this shore, except for the later site of Qusayr, but at least ten sites on the Arabian coast yielded abundant Abbasid material, such as Athar, a very important to the Yemeni dynasty of the Zaydites, and Ayla in Jordan; many interior establishments also delivered this type of equipment. Merchant activities were, therefore, important in this area and extended to the Gulf of Aqaba. On the African coast, Abbasid imports are present in many sites in Kenya and of the Comoros whatever their size, simple camps or trading towns: Manda, in the Lamu archipelago, the levels of phase I (c. 9th-10th centuries) yielded sherds with blue glaze and with white glaze, which together represent high percentage of the ceramics imported at this time; and at Shanga, not far from Manda, fragments of these two types were discovered in contemporary layers.

The study of the ceramic routes in the western Indian Ocean in the 9th-12th centuries allows, thus, to highlight the existence of two distinct phases. Until the end of the 10th century, ceramics seem to have been mainly transported by ships from the Persian Gulf which dominated trade throughout the region and including the Red Sea; the number of them had to pass through a port before reaching their final destination. Next, this trade appears to be shared between the Red Sea and Persian Gulf networks. Their importance relative is poorly known but the Red Sea may have been closed to Iranian merchants who then concentrated their activities in the Indian Ocean itself; the sgraffiato shows that this particular type was probably produced in southern Iran, perhaps in Tîz where ovens would have been highlighted. While Aden is the transit port for trade to Fatimid Egypt, Sharma in Oman, seems to play the role of redistribution center for the ceramics disseminated by the Iranian networks. The sgraffiatos found on the site were perhaps primarily intended for the African market, but the final destination of Eastern imports, particularly Chinese is less clear. Most of these pieces were to return to the Persian Gulf; archaeological data on Qays and Minab/Old Hormuz, the two great economic centers of the time, are unfortunately very succinct, but Sohar delivered material identical to that of Sharma (both in Oman), notably stoneware with painted decoration from the Xicun kilns and pieces with brown-black glaze. Perhaps part of the production was redirected to Aden and then the Red Sea and particularly Fostat, contacts which could be evidenced by the presence of imports from Tihama (Yemen) to Sharma.

Considering this state of Art and waiting for the results of the archaeometric analyses on the fragments found in Qal'a-ye Tepe, the Islamic production found there does not seem to be distinguished in any way from contemporary Islamic productions, both Sistanic, such as Kuh-i Khwagha, and from other places in the Islamized world. Furthermore, the dough defined as "fritware" (our fabric 12) is certainly from the mid-Islamic period, around the 13th century, when, in imitation of Chinese porcelain, it was introduced (Northedge 1985, 124). A proof comes from the shapes: in the Middle Islamic period (Lane 1957), preference was given to glazed cups with straight walls or, at times, carinated, also present in our material in which the fragments of walls prevail, telling us very little about the shapes of the entire vases (Northedge - Falkner 1987, 164). The presence of engraved ceramic in trench 4 B III, in the QT 3 bis IInd and IIIrd layer trench (but also in other locations not very useful for stratigraphy, such as QT S, QT '64, and QT without tag), however, would lead to backdate the layers, in which it is present, in the post-Abbasid era, therefore, after the 9th century CE. On the other hand, the pottery of the previous period, the Umayyad one, is difficult to identify in all the Islamic sites, and this is valid also in Qal'a-ye Tepe; an old reason for that was that the Umayyads did not consider pottery as an artistic form, and they had relegated it to perform the humblest functions (Lane 1947, 7). Numerically, alkaline turquoise glazing prevails in our fragments, obtained with potassium oxide, the manufacturing center of which was, most probably, in southern Iraq, near Basra, and whose main feature is its poor sealing (Kennet 2002, 155). It was preferably applied to the cups, but a basin is present too from QT 2. Since this type of glazing did not come into circulation before the 8th century CE, we have a further element confirming the dating we claim as more probable. Unfortunately, the ceramic objects at disposal are in such a fragmented condition as not to allow evaluations on the decorative motifs, but in general, it can be said that floral and symmetrical patterns predominate within the material examined. This latter motif, purely geometric, was very dear to Islamic ceramics, who usually preferred formal and basically abstract artistic models (Lane 1957, 5). We do hope, however, that the completion of the resumed work on the data about Qal'a-ye Tepe, could give more contribution to the historical reconstruction of the site.

References

Allan, J.W. (1974). Incised Wares of Iran and Anatolia in the 11th and 12th Centuries, *Keramos*, 64, 15-22.

Allotte de la Fuye, F. M. (1928). *Inventaire des monnaies trouvées à Suse*, Mémoire de la Mission Archéologique de Perse, 20, 6-17, Paris.

Amiri, M., S.M. Mousavi Kouhpar, J.Neyestani, F.K. Nadushan (2013) Comparative Study of a Pottery Sample from Sasanian Islamic Sites of Fars and Siraf, Mediterranean Archaeology and Archaeometry, Vol. 13, no 2, 89-101.

Boucharlat, R. e Haenrick, E. (1992). s.v. Ceramics XII. *The Parthian and Sasanian Periods, Encyclopaedia Iranica, V*, edited by Ehsan Yarshater, 304-307, California

Cortese, C. (2005). *Le ceramiche comuni: problemi generali e criteri di classificazione*, La ceramica e i materiali di età romana: Classi, produzioni, commerci e consumi, a cura di Daniela Gandolfi, 325-338. Bordighera.

Crowe, Y. (1992). s.v. *Ceramics XV. The Islamic Period, 10th-13th/16th-19th centuries, Encyclopaedia Iranica*, V, edited by Ehsan Yarshater, 327-331, California

Curatola, G. - Scarcia, G. (1990) *Le Arti nell'Islam*, Urbino-Roma.

Dales, G.F. (1977) New excavations at Nad-i Ali (Sorkh Dagh), Afghanistan. Research Monograph Series, Center for South and Southeast Asian Studies, University of California, Berkeley, Research Monograph No. 16. Berkeley: University of California.

Fairservis, W.A. (1961). Archaeological studies in the Seistan basin of Southwestern Afghanistan and Eastern Iran, *Anthropological Papers of the American Museum of Natural History*, 48(1), 128 p., New York, American Museum of Natural History.

Fehérvàri, G. (2000). *Ceramics of the Islamic world in the Tareq Rajab Museum*, London - New York.

Fontana, M.V. (2001). *Arte Protoislamica, Antica Persia - I tesori del Museo Nazionale di Tehran e la ricerca italiana in Iran* (Museo Nazionale d'Arte Orientale - Roma, 29 maggio - 22 luglio 2001), 157-161. Roma.

Gardin, J.C. (1987). *La céramique islamique, R. Boucharlat and O. Lecompte* (eds.) Fouilles de Tureng Tepe sous la direction de Jean Deshayes I: Les périodes sassanides et islamiques, 121-70. Paris.

Genito, B. (2021) Plan, Form and Function of a "Fortified" Site in the Iranian Sistan of Post-Achaemenid and possibly Parthian Period, Iranian Journal of Archaeological Studies, Vol. 11, No.2, 1-19. Zahedan.

Genito, B. (ed.) (2023). *Archaeological Excavations at Dāhāne-ye Gholaman (Sistan, Iran) (1959-1965, 1975-1976). Archive*, Documentation of IsMEO, A Way Forward. Università degli Studi di Napoli "L'Orientale", Dipartimento Asia, Africa e Mediterraneo, Series Maior, XVI, ISMEO - Associazione Internazionale di Studi sul Mediterraneo e l'Oriente. Serie Orientale Roma n.s. 32, Orientalia Romana 3. I-II. Napoli-Roma. ISSN 1824-6117. ISBN 978-88-6719-235-9.

Ghirshman, R. (1939). *Récherches Préhistoriques en Afghanistan. Fouilles de Nad-i-Ali dans le Seistan Afghan (Rapport préliminaire)*, Revue des Arts Asiatiques, Annales du Musée Guimet, XIII, 10-22 (= Memorials of the South African Archaeologist Française en Afghanistan, VIII.

Ghirshman, R. (1942). Récherches Préhistoriques en Afghanistan. Fouilles de Nad-i Ali dans le Seistan Afghan. *Revue des Arts Asiatiques, Annales du Musée Guimet* XIII (1), 10-22. Paris : Musée Guimet.

Gullini, G. (1964). *Kuh-i Khwagha. I dati del terreno: la ceramica e l'archeologia, Architettura Iranica dagli Achemenidi ai Sasanidi - Il "palazzo" di Kuh-i Khwaga (Seistan)*, 223-244, Torino.

Haerinck, E. (1983). La céramique en Iran pendant la période parthe (c. 250 av. J.C. à c. 225 après J.C.) : typologie, cronologie et distribution, *Iranica Antiqua*, Supplément II, Gent.

Herzfeld, E. (1931-1932). *Sakastan. Untersuchungen zu den Ausgrabungen am Kuh i Khwādja*, Archäologische Mitteilungen aus Iran, IV, 1 and ff.

Kennet, D. (2002). Sasanian Pottery in Southern Iran and Eastern Arabia, *Iran*, XL, 153-162.

Kennet D. (2004) Sasanian and Islamic pottery from Ras al Khaimah. Classification, chronology, and analysis of trade in the Western Indian Ocean. BAR International Series 1248.

Kervran, M. (1977) Les niveaux islamiques du secteur oriental du Tépé de l'Apadana II. Le matériel céramique, Cahiers de la D.A.F.I., 7, 75-161

Lane, A. (1947). *Early Islamic Pottery - Mesopotamia, Egypt and Persia* (other edition 1958), London.

Lane, A. (1957). *Late Islamic Pottery*, London.

Lecomte, O. (1987). *La céramique sassanide, Fouilles de Tureng Tepe, 1. Les périodes Sassanides et Islamiques*, 93-119, Paris.

Mason, R.B. and E.J. Keall (1991) The 'Abbāsid Glazed Wares of Sīrāf and the Baṣra Connection: Petrographic Analysis, Iran, Vol. 29, 51-66

Mohammadkhani, K., Reza Mehrafarin (2021) The results of the magnetometric survey in Sassanid site of Ram Shahrestan, Zahak, Sistan, communication read at the *The Third International Conference on Archaeology of South-eastern Iran*, University of Zabul, 13-15 December 2021.

Northedge, A. (1985). Planning Sāmarrā': a report for 1983-4, *Iraq*, XLVII, 109-127

Northedge, A. e Falkner, R. (1987). The 1986 survey season at Sāmarrā', *Iraq,* XLIX, 143-173

Olimpo. A.I. (2009). *Qal'ye Tepe, Sistan (Iran):* Scavo e materiali degli anni '60. Tesi di Laurea in Archeologia e Storia dell'Arte Iranica. Università degli Studi di Napoli "L'Orientale"

Orton, C., Tyers, P. e Vince A. (1993). *Pottery in archaeology, Cambridge.*

Rougeulle, A. (2004) Le Yémen entre Orient et Afrique: Sharma, un entrepôt du commerce médiéval sur la côte sud de l'Arabie, Annales Islamologiques, Institut Français d'Archéologie Orientale, 201-253.

Rougeulle, A. (2005a) Golfe Persique et mer Rouge: notes sur les routes de la céramiques aux Xe-XIIe siècles, Actes du Colloque, Chine-Méditerranée. Routes et échanges de la céramique avant le XVIe siècle, 41-51. Paris, Société Française d'Etude de la Céramique Orientale, Musée Cernuschi (TAOCI 4), 41-51,

Rougeulle, A. (2005b) The Sharma horizon. Sgraffiato wares and other glazed ceramics of the Indian Ocean trade (ca AD 980-1140), Proceedings of the Seminar for Arabian Studies, vol. 35, 223-246.

Rougeulle A. (2007a) A medieval trade entrepôt at Khor Rori? The study of the Islamic ceramics from al-Hamra al-

Sharqiya, Khor Rori Report 2, 2007, 645-667. Arabia Antica Series. Rome, Erma di Bretschneider,

Rougeulle A. (2007b) Ceramic production in mediaeval Yemen: the Yadhghat kiln site, Proceedings of the Seminar for Arabian Studies, Archaeopress, vol. 37, 239-252.

Rougeulle, A. (2008) Ḥayrīğ, Šarwayn, Ḫalfāt, les ports anciens du Mahra (Yémen, c. IXe-XIIe siècles)

Rougeulle, A. (2018) Bahrain in the medieval period: Islamic sites in the Bahrain Archaeological Map Project, Claire Hardy-Guilbert, Hélène Renel, Axelle Rougeulle et Eric Vallet (eds.) Sur les chemins d'Onagre Histoire et archéologie orientales, Hommage à Monik Kervran, 169-192.

Sarre, F. (1925). Die Keramik von Samarra, *Die Ausgrabungen von Samarra 2,* Berlin.

Scerrato, U. (1970). *La Missione archeologica Italiana nel Sistan persiano,* Il Veltro, 1-2 anno XIV febbraio-aprile, 123-142

Stein, A. (1928). *Innermost Asia: detailed report of explorations in Central Asia, Kan-su and eastern Iran*, carried out and described under the orders of H.M. Indian government, II, Oxford.

Stein, A. (1932) On Ancient Central Asian Tracks: Brief Narrative of Three Expeditions in Innermost Asia and Northwestern China. Reprinted with Introduction by Jeannette Mirsky. Book Faith India, Delhi. 1999.

Stein A. (1937) Archaeological reconnaissance in north-western India and south-eastern Iran. Londres.

Soustiel, J. (1985). *La céramique islamique, Fribourg.*

Tate, G.P. (1910-1912) Seistan, A Memoir on the History, Ruins and People of the Country, I-III. Calcutta.

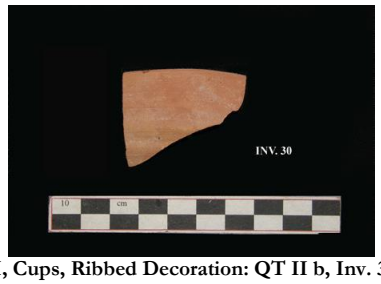
Whitehouse, D. (1975) The decline of Sîrâf , F. Bagherzadeh (éd.) Proceedings of the Third Annual Symposium on Archaeological Research in Iran, Téhéran, 265-267, sgraffiato Style III.

Whitehouse, D. (1979). Islamic Glazed Pottery in Iraq and the Persian Gulf. *The Ninth and Tenth Centuries, Annali dell'Istituto Orientale di Napoli*, 39 (n.s. 29), pp. 45-61. Napoli.

Whitehouse, D. (1991). CERAMICS xiii. The Early Islamic Period, 7th-11th Centuries, *Encyclopaedia Iranica*, Vol. 5, 3, 308-322, Originally Published: December 15, 1991, Last Updated: October 11, 2011.

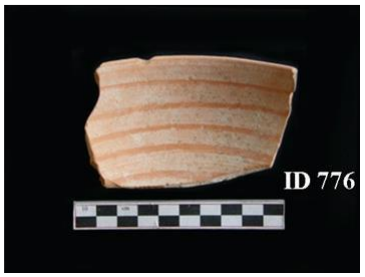
Wilkinson, K. (1973). *Nishapur: The Pottery of the Early Islamic Period,* New York.

Table I



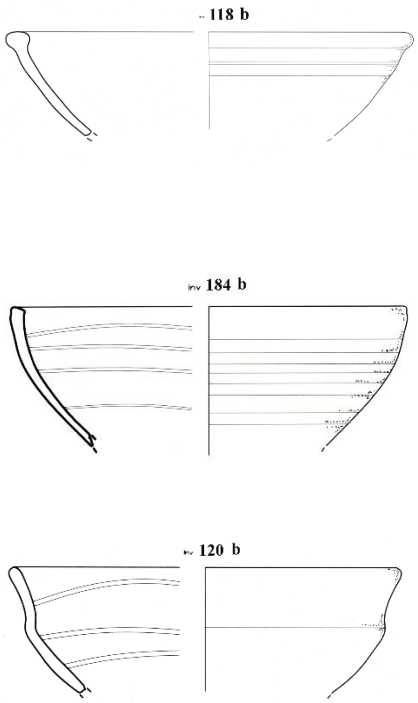
I, Cups, Ribbed Decoration: QT II b, Inv. 30, ID 259 (left); QT II b, Inv. 15, ID 260 (right).

I, Cups, Ribbed Decoration: QT II b, Inv. 11, ID 211.



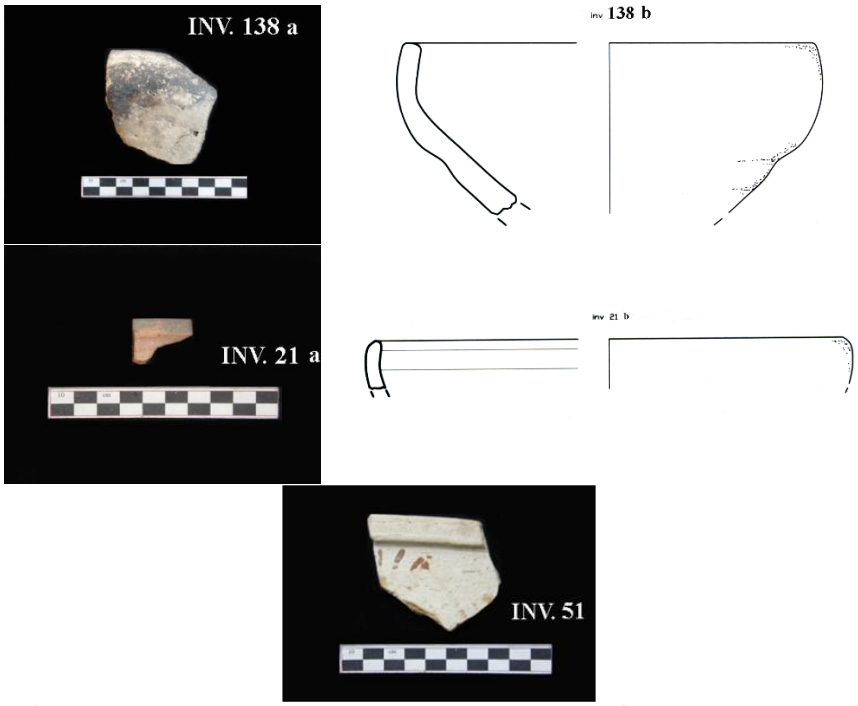
I, Cups, Burnished Decoration: ID 776.

Table II



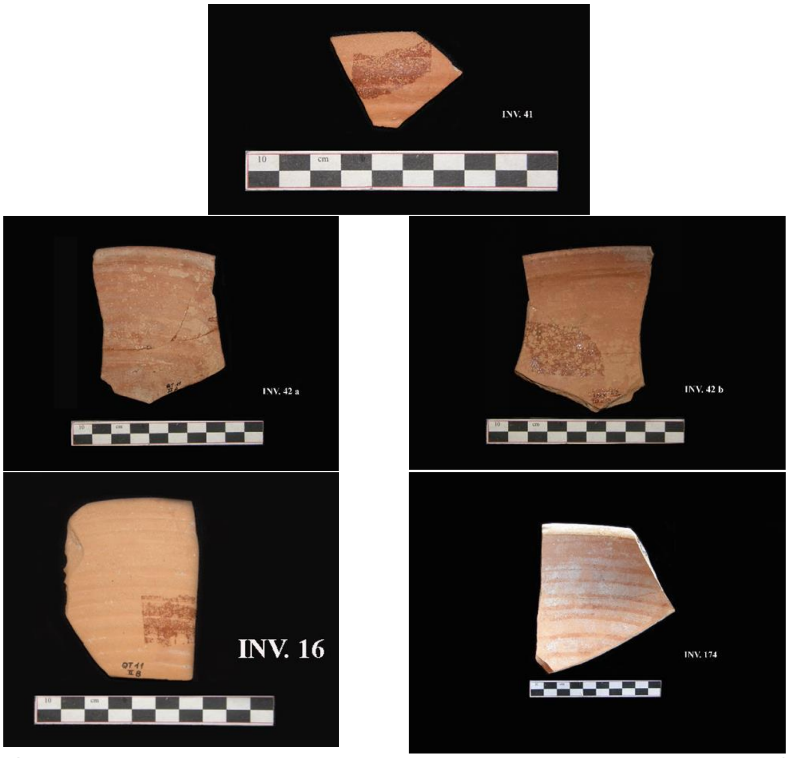
I, Cups, Burnished Decoration: from up to down and from left to right, Inv. 118a, Inv. 118b (Drawing) QT 1 I, ID 39; Inv. 184a, 184b (Drawing) QT 6A IV d, ID 790; Inv 120a, Inv. 120 b, QT 1 I, ID 35.

Table III



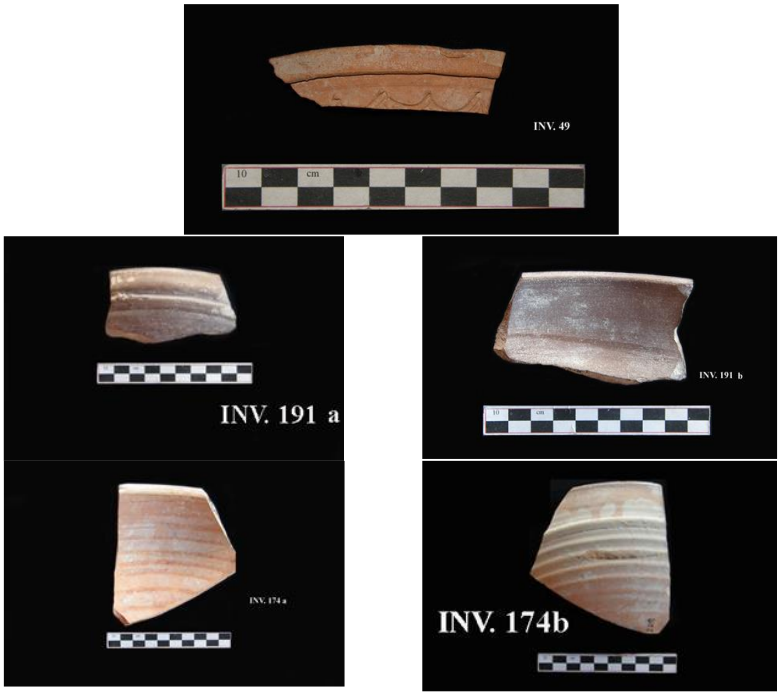
I, Cups, Painted decoration: from up to down, Inv. 138a, Inv. 138 b (Drawing); Inv. 21a, Inv. 21 b (Drawing); Inv. 51.

Table IV



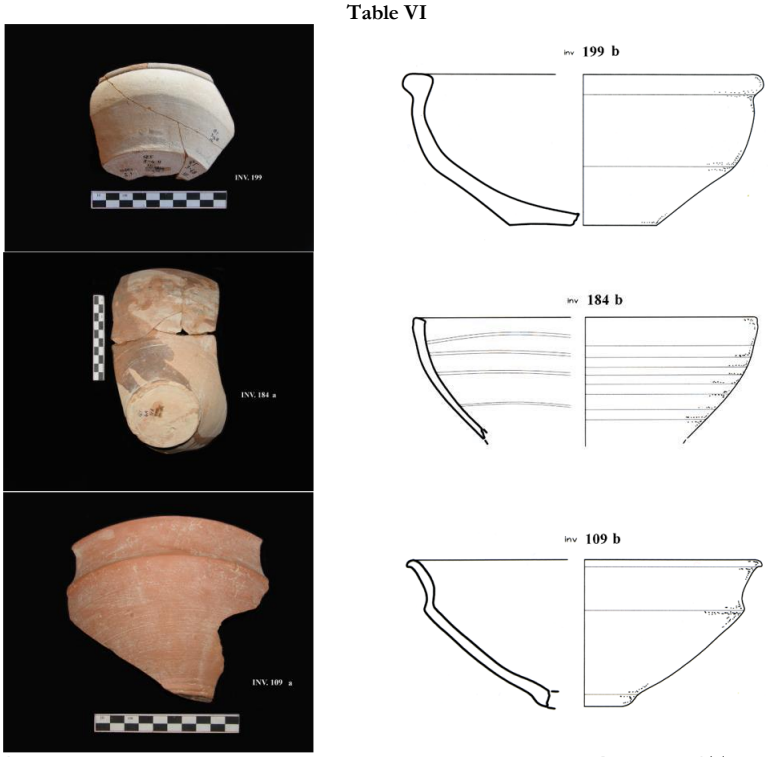
I, Cups, Ribbed and Burnished decoration: from up to down, from left to right, Inv. 41, QT 11 IIb, ID 233; Inv. 42a, Inv. 42b, QT 11 IIa, ID 213; Inv. 16; Inv. 174, QT 5A IVb ID 642.

Table V



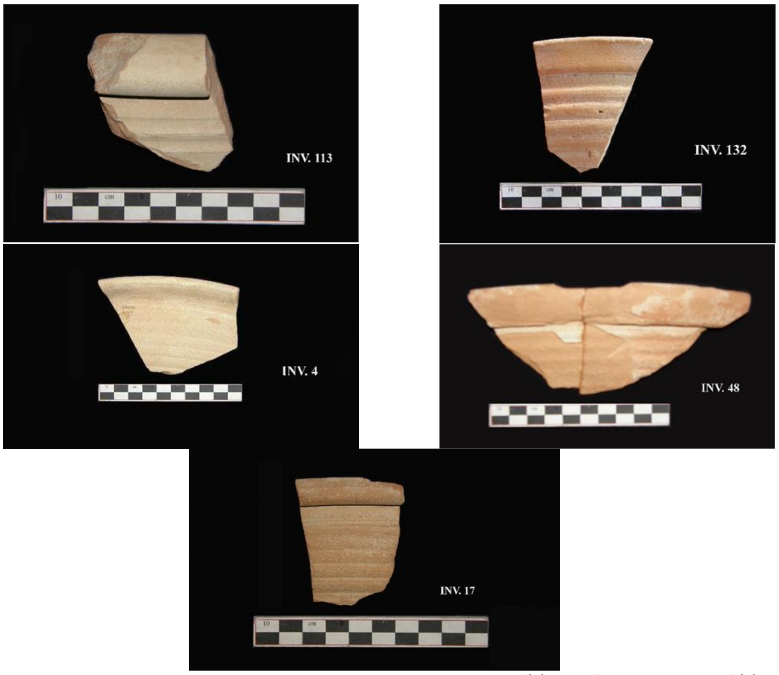
I, Cups, Ribbed, Burnished decoration: from up to down, from left to right, Inv. 49, QT 11 IIa, ID 223; Inv. 191a, Inv. 191b, QT 5, ID 918; Inv. 174a, Inv. 174b, QT 5A IVb, ID 64.

Table VI



I, Cups, Bases of Ribbed and Burnished forms: Inv. 199a, Inv. 199b (Drawing), QT 3-4, ID 476; Inv. 184a; Inv. 184 b (Drawing); Inv. 109a, Inv. 109b (Drawing), QT 1 I, ID 29.

Table VII



II, Basins, from up to down and from right to left, Inv. 113, QT 1 I, ID 40; Inv. 132, QT 1 III, ID 86; Inv. 4 QT 11 2a, ID 216; Inv. 48, QT 11 IIa, ID 222; Inv. 17, QT 11 II b, ID 241.

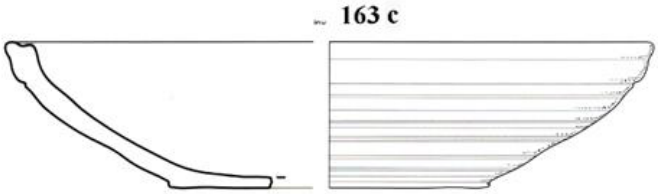
Table VIII

II, Basins, Burnished decoration: from up to down, Inv. 163a, Inv. 163b, QT 4 B III, ID 530; Inv. 130, QT 1 Ia, ID53.

Table IX

II, Basins, Painted decoration, from up to down, Inv. 112, QT 1 I, ID 3; Inv. 44, QT 11 IIb, ID 246; ID 437.

Table X

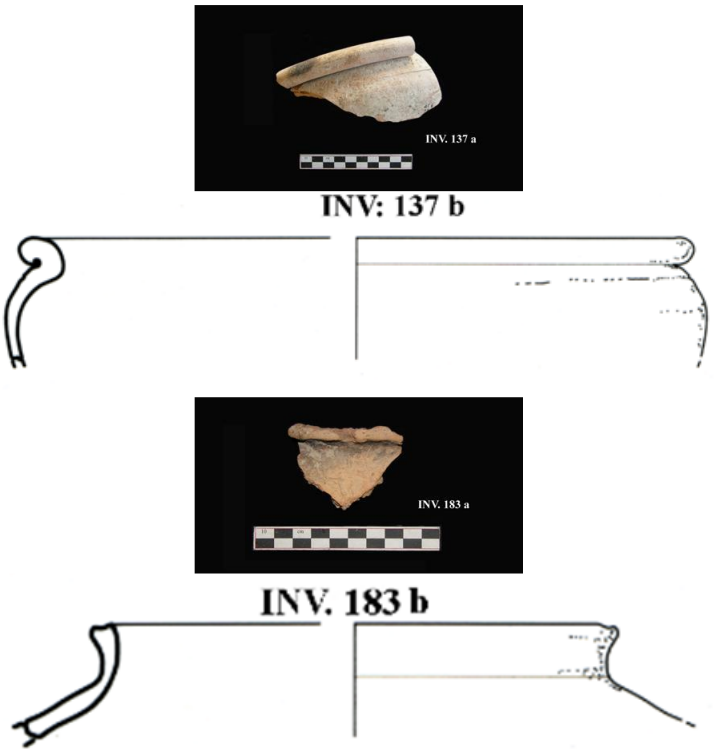


II, Basin, Bases: Inv. 163a, Inv. 163c (Drawing) QT 4 B III, ID 530.

Table XI

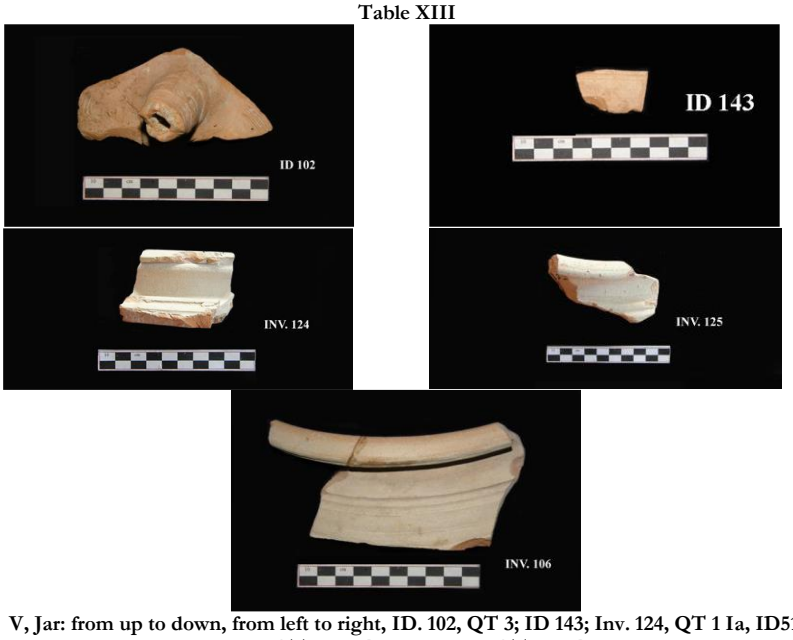
III, Small Olla; Painted decoration: from up to down from left to right, Inv. 173; ID 145; Inv. 28; Inv. 29.

Table XII



IV, Olla: Inv. 137a, Inv. 137b (Drawing), QT6 I b, c, d, ID 149; Inv. 183a, Inv. 183b (Drawing), QT 6A IV, ID 752.

Table XIII



V, Jar: from up to down, from left to right, ID. 102, QT 3; ID 143; Inv. 124, QT 1 Ia, ID51; Inv, 125, QT 1 Ia, ID 49; Inv. 106, QT 1 I, ID 27.

Table XIV

V, Jar, Engraved Decoration: ID 580; ID 680.

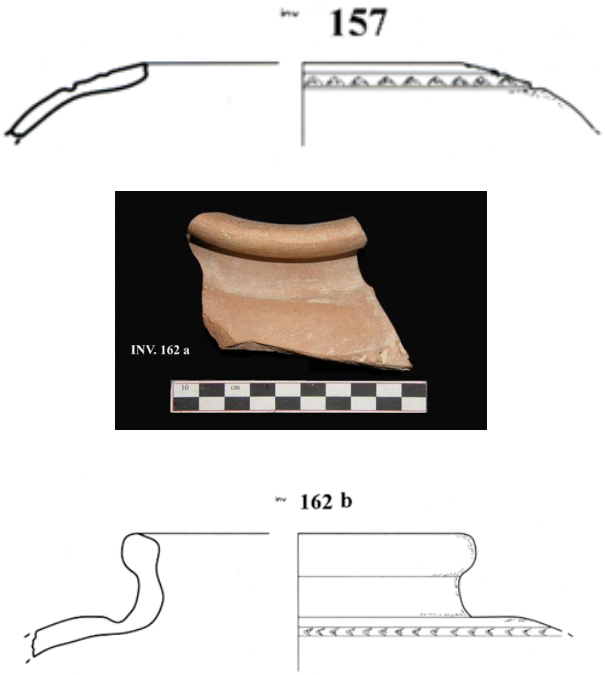
Table XV

V, Jar, Excised decoration: up, Inv. 162, QT 4B III, ID 532; below, decorative motifs, Inv. 157 QT 4A IIIa, ID 501.

Table XVI

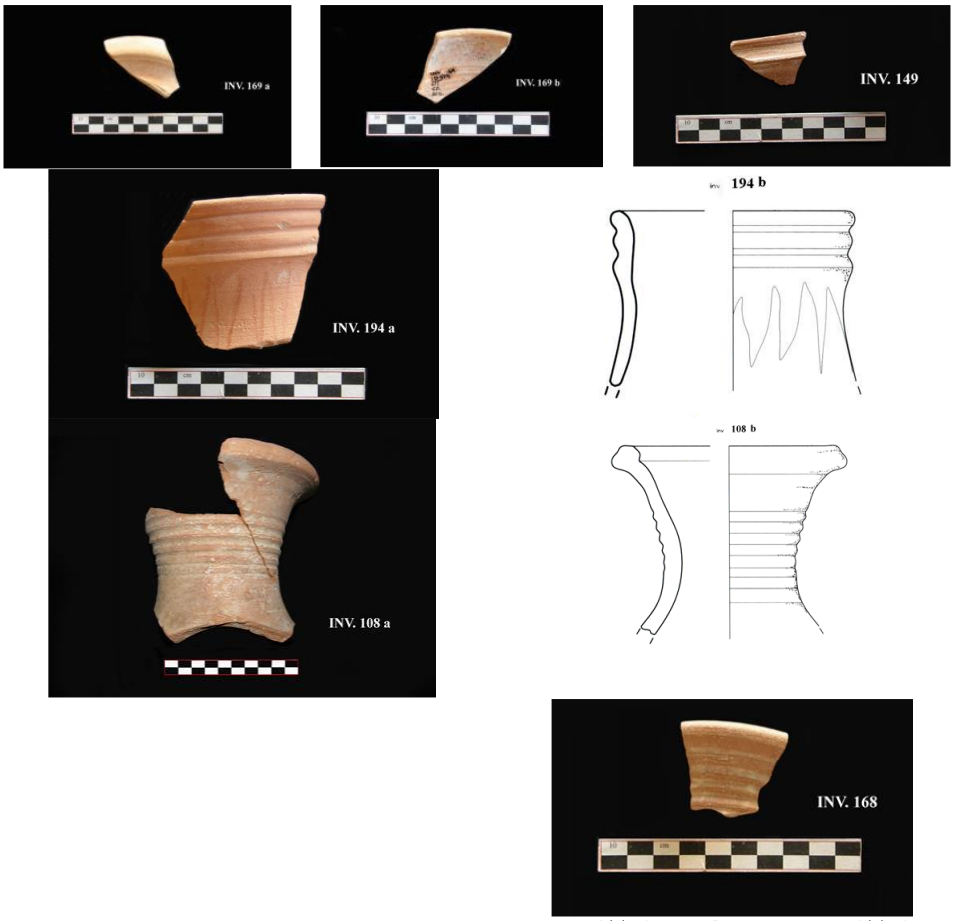
V, Jar, Roulettes decoration: from up to down from left to right, ID 657; ID 677; Inv. 3, QT 11 II b; Inv. 151, QT 3A IIIa, ID 457.

Table XVII



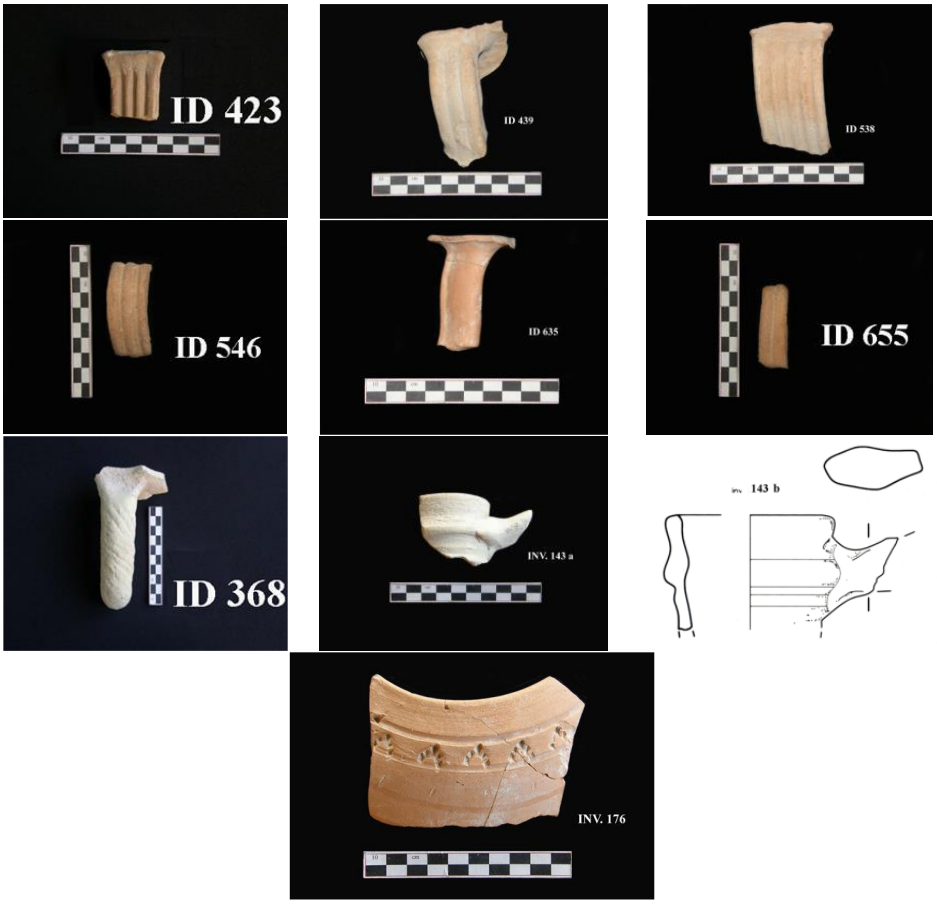
V, Jar, Burnished decoration: Inv. 157 (Drawing), Inv. 162a, Inv. 162b (Drawing), QT 4B III, ID 532.

Table XVIII



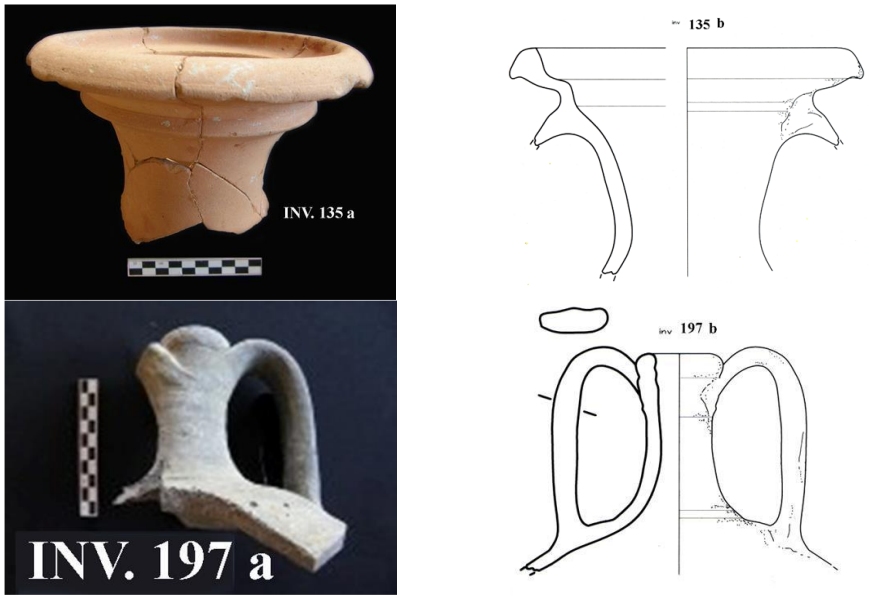
VI, Jugs: from up to down, from left to right, Inv. 169a, Inv. 169b, QT 5A IIIa ID 579; Inv. 149, QT 3A III, ID 434; Inv. 194a, Inv. 194 b (Drawing), QT S, ID 944; Inv. 108a, Inv. 108b (Drawing), QT 1 I, ID 32; Inv. 168 QT 5 A III, ID 564.

Table XIX



VII, One handle jug: ID423; ID 439; ID 538; ID 546; ID 635; ID 655; ID 368; Inv. 143a, Inv. 143b (Drawing); Inv.176.

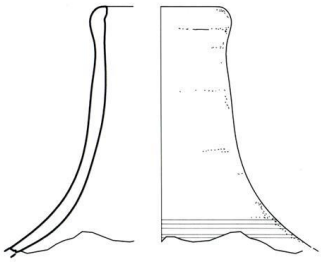
Table XX



VIII, Amphora: Inv. 135a, Inv.135b (Drawing), QT 3bis VII, ID 185; Inv. 197a, Inv. 197b (Drawing).

Table XXI

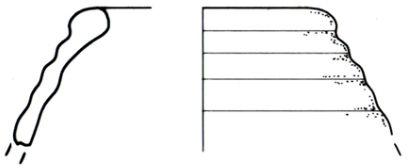
inv 185 b



IX, Bottle: Inv. 185a, Inv. 185b (Drawing) QT 6A, IV d, ID 791.

Table XXII

inv 179 b

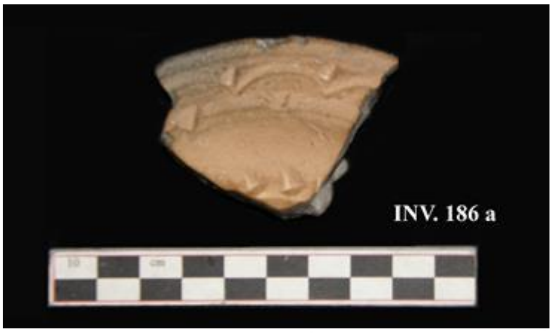


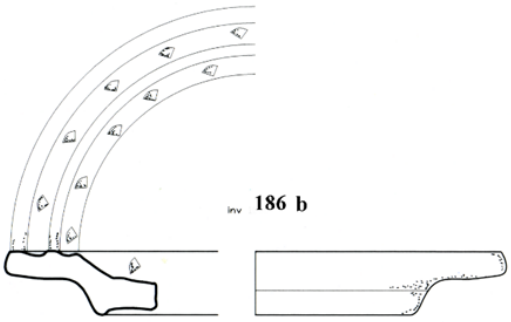
inv 156 b

X, Miniaturistic Vase: Inv, 179a, Inv. 179b (Drawing), QT 5B alfa II, ID 650; Inv. 156a, Inv. 156b (Drawing), QT 4 A IIa, ID 502.

Table XXIII

inv 158 c



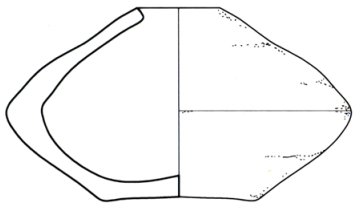


inv 186 b

XI, Lid or cover: Inv. 158a, Inv. 158b, Inv. 158c (Drawing), QT 4 A III a, ID 500; Inv. 186a, Inv. 186b (Drawing), QT 6A V b, ID 793.

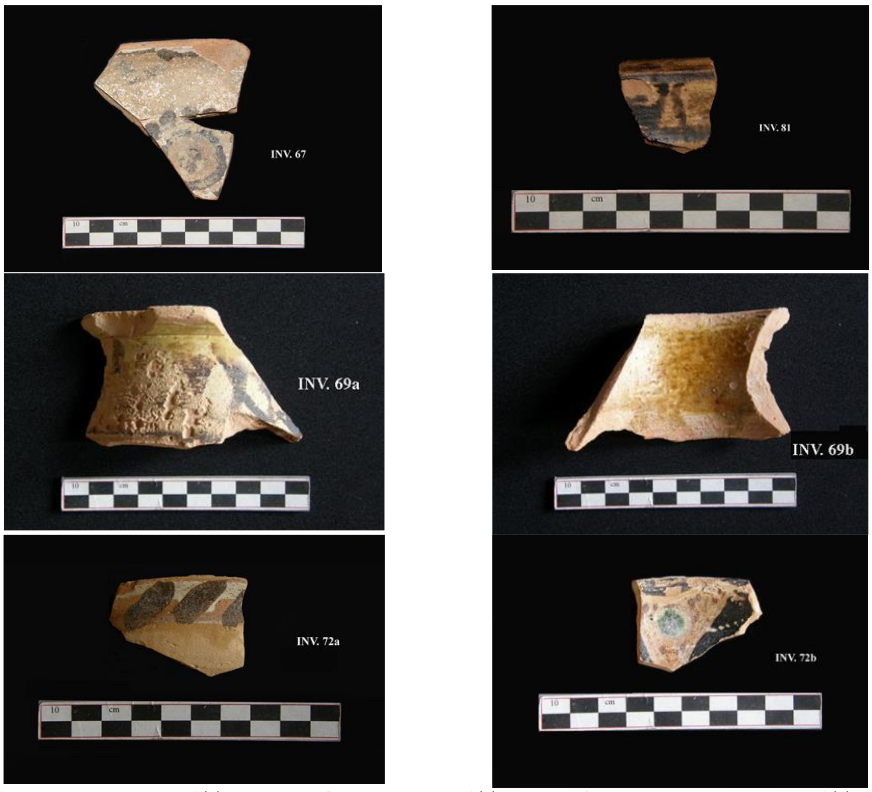
Table XXIV

inv 198 b



XIII, Flacon: Inv. 198a, Inv. 198b (Drawing), QT'64, ID 888.

Table XXV

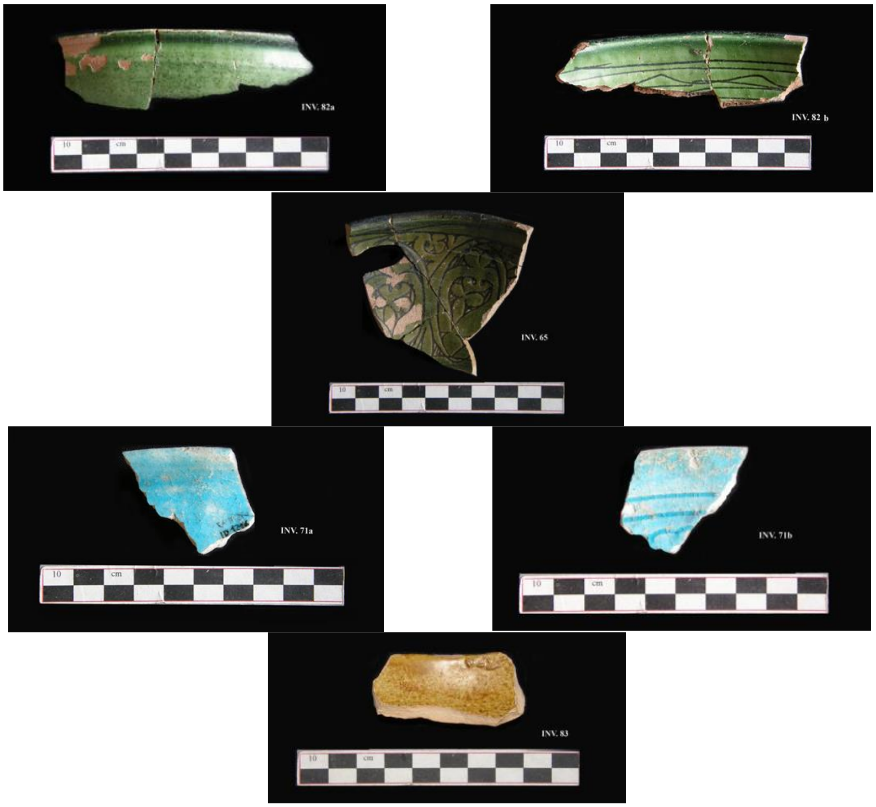


I, Slip Painted: Inv. 67, QT 3-4 B III, ID 1034; Inv. 81, QT 4B, III, ID 1037; Inv. 69a, Inv. 69b, QT B, T S, ID 1118; Inv. 72a, Inv. 72b.

Table XXVI

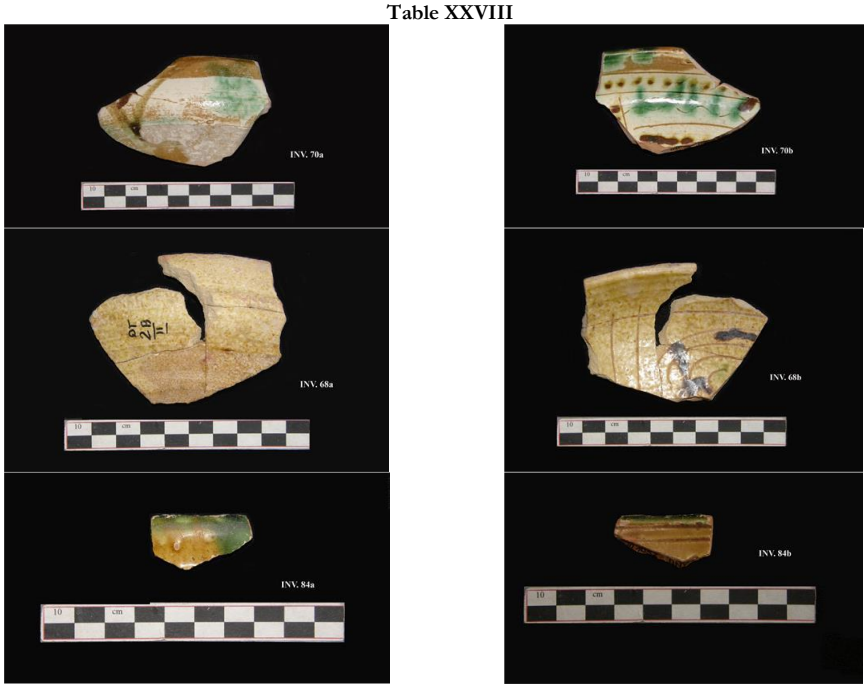
II, Underglazed: Inv. 66a, Inv. 66 b, QT 6A V B, ID 1078; Inv. 64, QT 2, ID 990.

Table XXVII



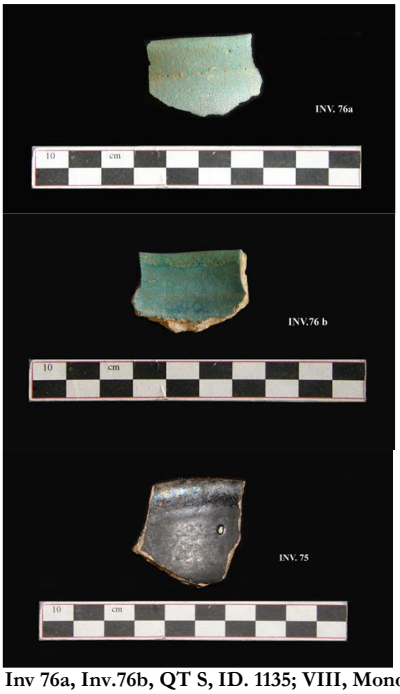
III, Graffita: Inv. 82a, Inv. 82b, QT '64, ID 1205; Inv. 65, QT '64, ID 1204; Inv. 71 a, Inv. 71b, QT, ID 1216; Inv. 83 QT 4B, III, ID 1044.

Table XXVIII



IV, Graffita and splashed: Inv. 70a, Inv. 70b, QT bis IV e, IV, ID 998; Inv. 68a, Inv. 68b, 2 B, II, ID 1031; Inv. 84a, Inv. 84b, QT 4 B, III, ID 1502.

Table XXIX



VII, Monochrome Turquoise: Inv 76a, Inv.76b, QT S, ID. 1135; VIII, Monochrome Black, Inv. 75, QT 3, ID 1070.

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QAL'E ASRAR: A NEWLY DISCOVERED SITE FROM THE LATE IRON AND ACHAEMENID PERIOD IN EASTERN IRAN

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Abstract: Eastern Iran, which today almost corresponds to the province of South Khorasan, is unknown in terms of archaeological studies. The sequence and cultural characteristics of the region during various prehistoric and historical periods are still unknown. Archaeological excavations have recently begun in the area, which promises a bright future for the region's archeology. Due to the lack of excavations and, as a result, the lack of data with a clear and reliable stratigraphic and chronological context, it is sometimes possible to suggest evidence for recognizing and introducing the cultural characteristics of a period through a superficial study of an area. This is an issue that has been addressed in this article. Qal'e Asrar, 63 km northeast of Birjand, is a site discovered in the survey and identification program of Darmian City in 2016. This area is a small monolithic castle that surface evidence, such as pottery pieces and, most importantly, a sealed piece of pottery, showing that it belongs to the late Iron Age and the Achaemenid period. Thus, the cultural material of Qal'e Asrar has been introduced as a feature of the pottery traditions of the late Iron Age and the Achaemenid period in this region of eastern Iran.

Keywords: Eastern Iran, Qal'e Asrar, Late Iron Age, Achaemenid period.

چکیده: شرق ایران که امروزه تقریباً با استان خراسان جنوبی مطابق است از نظر مطالعات باستان‌شناسی ناشناخته است. توالی و شاخصه‌های فرهنگی منطقه طی ادوار مختلف پیش از تاریخ و تاریخی همچنان ناشناخته است. به تازگی کاوش‌های باستان‌شناسی در این منطقه آغاز شده که نویدبخش آینده‌ای روشن برای باستان‌شناسی منطقه خواهد بود. با توجه به کمبود کاوش‌ها و در نتیجه فقدان داده‌هایی با بستر لایه‌نگاشتی و گاهنگاشتی مشخص و مطمئن، بعضاً می‌توان از طریق بررسی سطحی یک محوطه شواهدی برای شناخت و معرفی شاخصه‌های فرهنگی یک دوره پیشنهاد نمود، موضوعی که برای تحقق بخشیدن به آن در مقاله حاضر تلاش شده است. قلعه اسرار در ۶۳ کیلومتری شمال شرق بیرجند محوطه‌ای است که در برنامه بررسی و شناسایی شهرستان درمیان در سال ۱۳۹۵ کشف شد. این محوطه یک قلعه کوچک تک‌دوره‌ای است که شواهد سطحی همچون قطعات سفالی و از همه مهمتر یک قطعه سفال مهر شده، نشان می‌دهد که متعلق به اواخر عصر آهن و دوره هخامنشی است. به این ترتیب مواد فرهنگی قلعه اسرار به عنوان شاخصه‌ای از سنت‌های سفالی اواخر عصر آهن و دوره هخامنشی در این منطقه از شرق ایران معرفی شده است.

کلیدواژه: شرق ایران، قلعه اسرار، اواخر عصر آهن، دوره هخامنشی

I. Introduction

Iron Age studies in Iran began relatively later than in other historical periods. The beginning of the focus on Iron Age research was the explorations of the Hasanlu project in the 1950s (Dyson, 1965). The result of this project, which focused on a small part of the Lake Urmia basin in northwestern Iran, was the presentation of the Iron Age chronology of northwestern Iran, followed by the generalization of its chronology to all of Iran (Young, 1965, 1967; Dyson, 1965). It is obvious that the generalization of the chronology of a small part of the vast land of Iran to the whole was not correct and posed many challenges[1] (Muscarella 1974: 79, 1994: 143, Medvedeskaya 1983, Kroll 1994: 163, Haerinck 1988: 64).

In northeastern Iran, steps have recently been taken to recognize the Iron Age. Accordingly, in northeastern Iran, there are two cultures of Archaic Dehistan[2] and Yaz 1 with separate and sometimes common borders (Dana and Hozhabri, 2019; Dana *et al.* 2017; Basafa, 2017; Vahdati, 2016). Archaic Dehistan culture is characterized by pottery with a majority of gray pottery and a small percentage of red pottery (Kuz'mina, 2007: 379). All areas of this culture were formed on virgin soil, and all of them were suddenly abandoned without moving to the next period (Kohl, 1984: 206). The culture of Yaz 1 is characterized by hand-painted pottery with geometric patterns and fertile areas built on a high mud-brick platform (Masson, 1959). In the southeast, no evidence of the Iron Age has been

[1] In this article, the rule of Elam in the southwest and parts of the west and south of Iran, apart from the division of the Iron Age, is considered as one of the historical periods.

[2] Dehistan belongs to the Dahae people in southwestern Turkmenistan, located in the Hyrcanian area. Thus, the southern part of Hyrcani, its humid and fertile part is called Gorgan plain today and its northern part, which is a desert region, is Dehistan.

identified so far, and no area has been identified between the abandoned Shahr-e Sokhta in the second millennium B.C. to the Achaemenid site of Dahane Gholaman (Moradi *et al.*, 2014).

In the Achaemenid period, there was a huge heterogeneity in the distribution of information. Most of the information available from their capitals is Pasargadae (Stronach, 1978), Persepolis (Schmidt, 1953, 1957, 1970), and Susa (Perrot, 2013). In the eastern borders of Achaemenid Iran, such as Bactria (Leriche, 2007: 128; Wu, 2017), Sogdia (Shishkina, 1994: 85), Kharazm (Helms and Yagodin, 1997: 55) and Merv (Zadneprovsky, 1995: 158; Hermann and Kurbansakhatov 1995), significant archaeological activities have been carried out, which shows a significant difference compared to archaeological activities within the current borders of Iran[3]. In general, the cultural materials of Achaemenid Iran in its eastern lands are different from similar cultural materials in the heart of the Achaemenid lands, Persia and Susiana. The cultural material of the northeastern Achaemenid lands, almost equivalent to Greater Khorasan, is known today as "Yaz 3".

Within the borders of present-day Iran and in its eastern half, information is very scattered and scarce. However, in the eastern half of present-day Iran, three Achaemenid sites have been introduced so far. These are as follows: 1) Dehane Gholaman area in Sistan, which may be the urban center of Zaranaka (Scerrato, 1966; Genito, 1990), 2) Rivi area in Samalghan plain of North Khorasan, which has been introduced as an area of 100 hectares (Jafari, 2013, Jafari *et al.*, 2016), and 3) Anbazak area in Torbat-e Jam area in East Khorasan (Khodadoost *et al.*, 2015). Of course, in the study of the Kal Salar site in the south of Roshtkhar city, a large number of Yaz 3 sites have been introduced, which naturally belong to the Achaemenid period but have been introduced as Iron Age sites (Rezaei *et al.*, 2018).

As can be seen from the above, basically, the Iron Age and the Achaemenid period in the region defined as eastern Iran are relatively new propositions.

In this article, east Iran is a region between northeast and southeast Iran, which almost corresponds to the province of South Khorasan (Fig. 1). This area is very poor in terms of archeological activities. Archaeological activities in this area have been mostly studied and identified (Farjami and Mahmoudinasab, 2021, Soroush and Zarei, 2012). The excavations carried out in it do not exceed the number of fingers of one hand. Thus, the prehistoric, historic, and even Islamic cultures of this region are not very clear. This situation is especially evident in prehistoric and historical times. Excavation in Xunik Cave (Coon, 1951) and Razeh sites (Soroush and Yousefi, 2013), Kalle Kub (Yousefi *et al.*, 2013, Azizi Khoranaghi *et al.*, 2021) and Taxčar Ābād (Dana, 2014-2015) are the only excavations in the area in prehistoric times.

Previously, the Taxčar Ābād area of Birjand was introduced as the first site belonging to this period in eastern Iran. The Taxčar Ābād site of Birjand has been excavated by Dana for four seasons, and its results indicate a small mud-brick building probably with a ritual use that belongs to the late Iron Age and the Achaemenid period (Dana, 2014-2015). In this article, a newly discovered site called Qal'e Asrar from the late Iron / Achaemenid era in eastern Iran is introduced. In surface surveys in the form of survey and identification of Darmiān County under the direction of Sedighiyan in 2015 for the first time, this site was identified and surveyed.

Figure 1. Map of South Khorasan province in eastern Iran.

II. Qal'e Asrar site

Qal'e Asrār is located 7 km northeast of Qohestān, 1800 m southeast of Barandud village, and 800 m northwest of Zir-e Barandud village of Qohestān district of Darmiān city (Fig. 2). Access to this site is possible via the Qohestān to Zohān asphalt road. This area is located 400 meters south of the intersection of this road, with the road leading to Barandud and just to the west of the main road. Today, this road is a relatively side road with a north-south direction. However, this path seems to have been more important in the past. Evidence of this claim is the existence of inscriptions at the T intersection site (400 meters north of Qal'e Asrar) in the Nasta'liq script of the Safavid period. The surrounding area of this work is in the east of the asphalt

[3] Of course, useful collections of the distribution of Achaemenid sites have recently been collected (for Persian sources, see the special issues of the Bāstānpazhuhi Journal, issues 10-11, 12-13, 14-15 and 18-19, and for Latin, Briant & Boucharlat, 2005; Lhuillier, 2018).

road, in the west of the agricultural lands, and in other aspects of the barren foothills. The historic site of Qal'e Asrar is now perched on top of a natural hill, the bedrock of which is visible in some parts, at the height of about 20 meters above the surrounding land. This hill has a north-south direction.

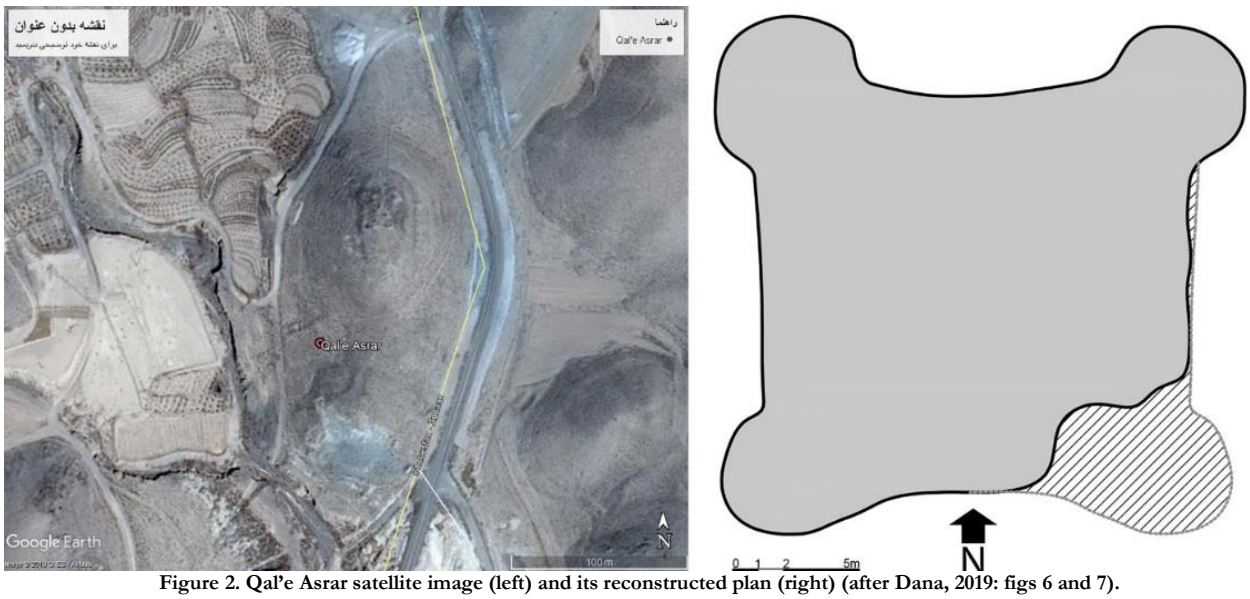

Figure 2. Qal'e Asrar satellite image (left) and its reconstructed plan (right) (after Dana, 2019: figs 6 and 7).

III. Qal'e Asrar Architecture

At the top of the natural hill, the remains of building materials can be seen as scattered stones, which in some parts are accompanied by mud mortar in the form of a short wall. These architectural remnants do not look very cohesive at the area level. Instead, it is easily visible in the satellite imagery as a cohesive architecture. This architectural remnant is an almost square castle with a length of about 20 meters on each side, which has a tower in each corner (Fig. 2). A pivot of the door was also identified among the architectural remains on the surface of the area, which indicates the existence of at least one entrance in this building (Fig. 3). However, there is no evidence of this entry at the area level or in the satellite image. Apart from these, no other architectural remains can be seen on the surface of the compound. These remains are located directly on the bedrock of the hill.

Figure 3. A pivot of the door (by Authors).

IV. Qal'e Asrar Pottery

A large number of potteries were scattered on the surface of the compound.

These potteries were plain and painted, and a small number were glazed. The glazed parts belong to the late Islamic centuries, and due to their small number, they do not seem to belong to the site itself. Islamic pottery may have been transferred from the Mazār-e Čādu Islamic site about 150 meters west of Qal'e Asrar (below Qal'e Asrar) because the other potteries are homogeneous and appear to belong to the same period (Fig.4- 13).

Figure4. Excerpts from the Qal'e Asrar pottery design (by Authors).

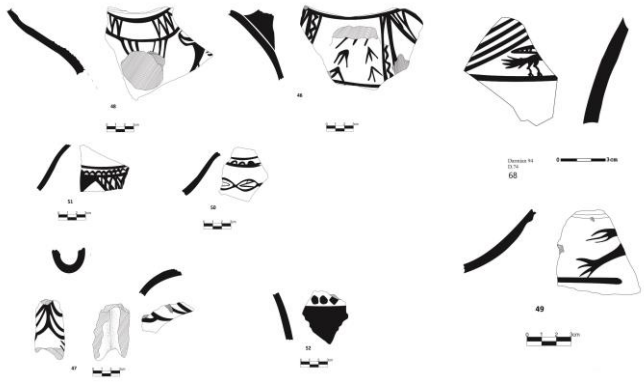

Figure 5. Excerpts from the Qal'e Asrar pottery design (by Authors).

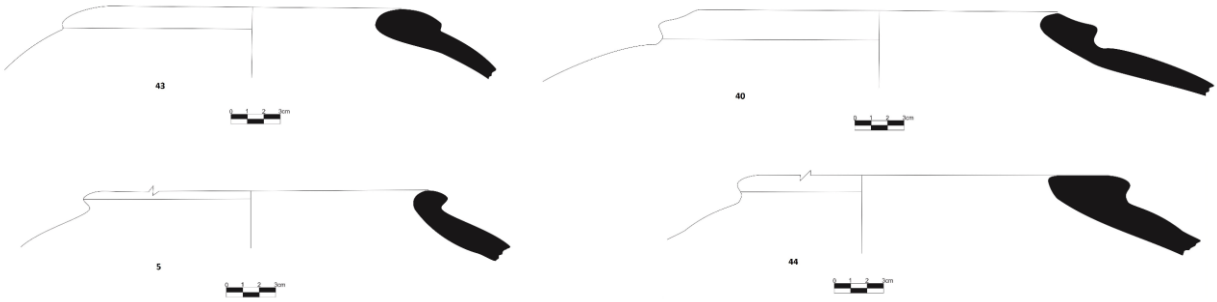

Figure 6. Excerpts from the Qal'e Asrar pottery design (by Authors).

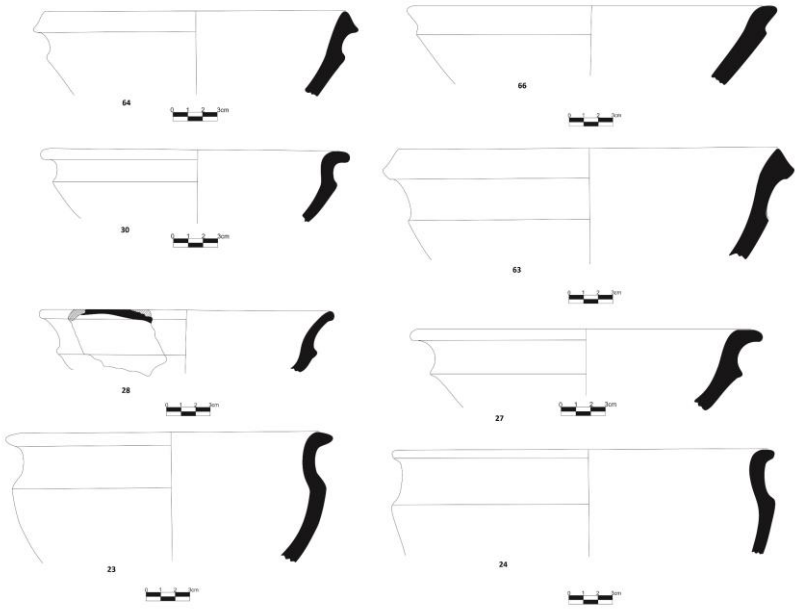

Figure 7. Excerpts from the Qal'e Asrar pottery design (by Authors).

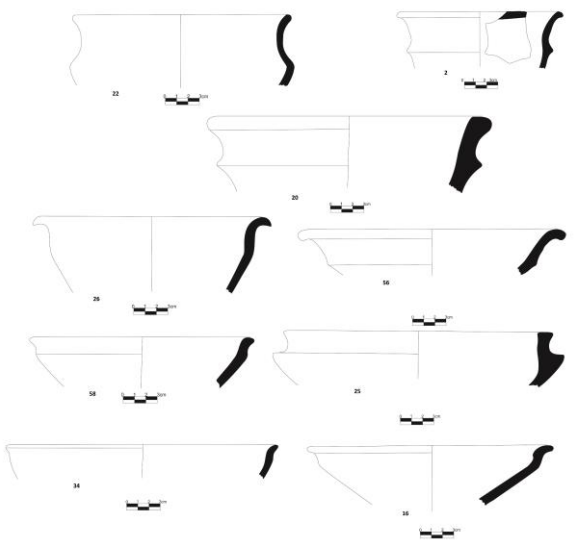

Figure 8. Excerpts from the Qal'e Asrar pottery design (by Authors).

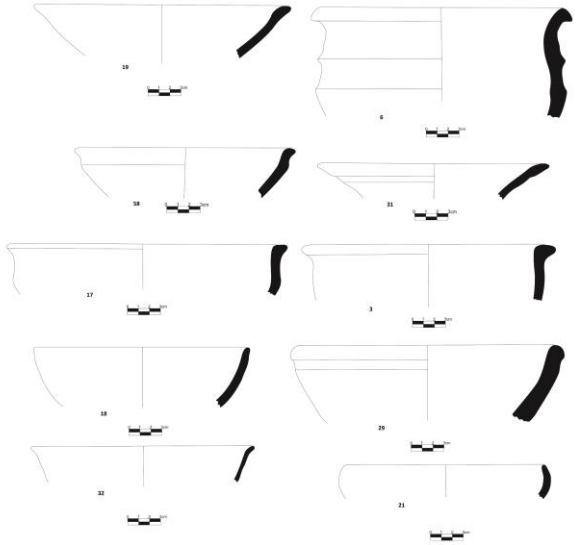

Figure 9. Excerpts from the Qal'e Asrar pottery design (by Authors).

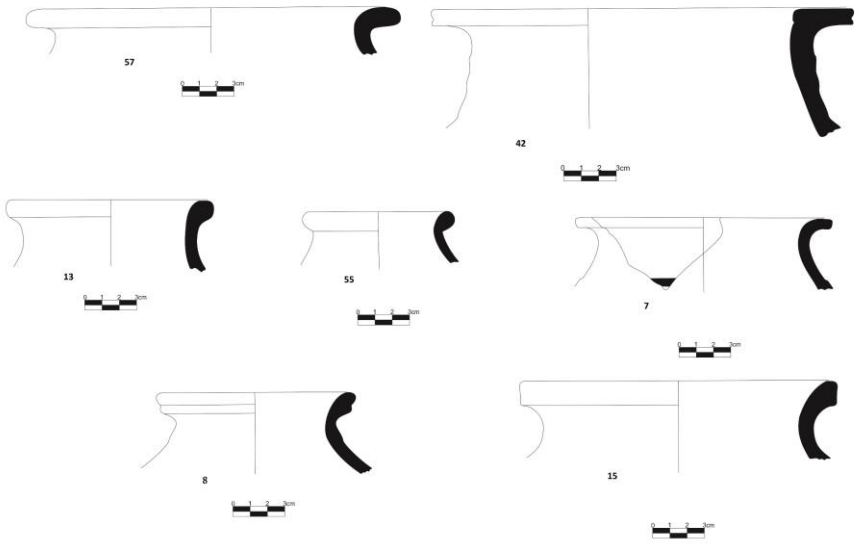

Figure 10. Excerpts from the Qal'e Asrar pottery design (by Authors).

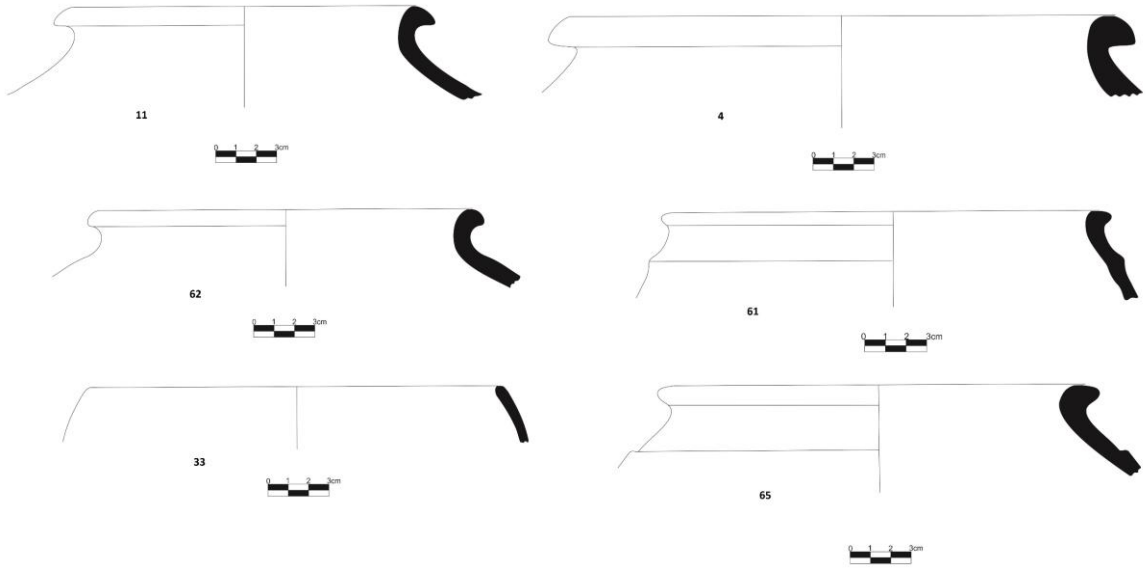

Figure 11. Excerpts from the Qal'e Asrar pottery design (by Authors).

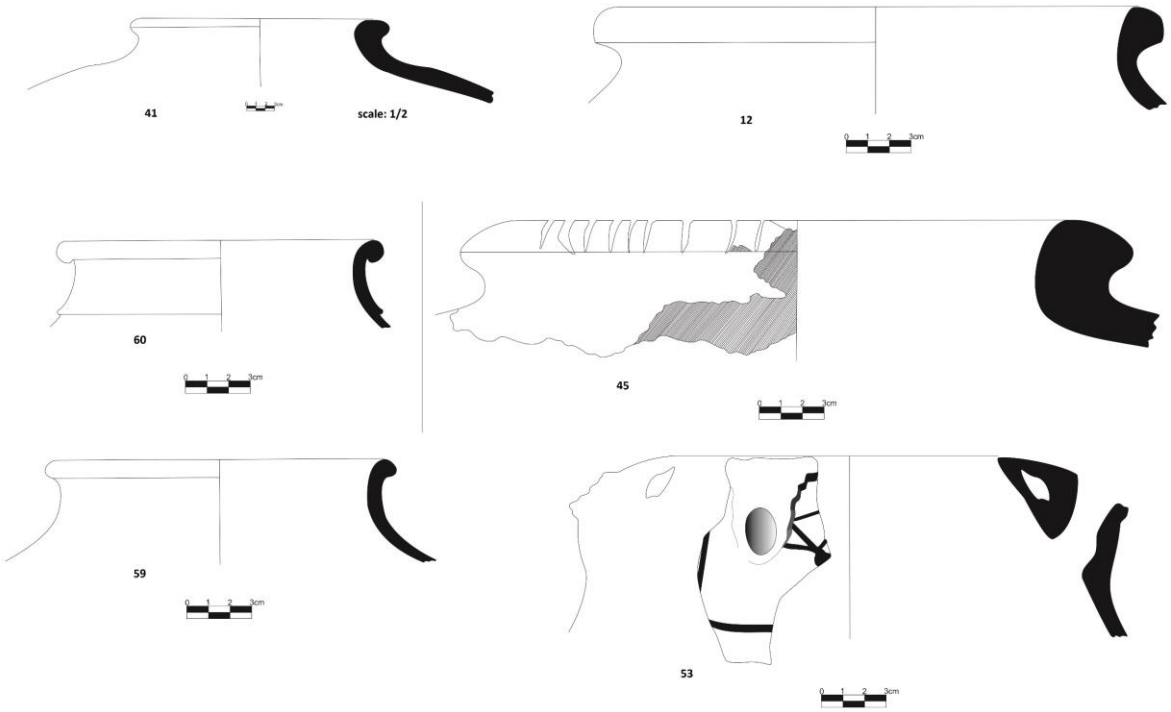

Figure 12. Excerpts from the Qal'e Asrar pottery design (by Authors).

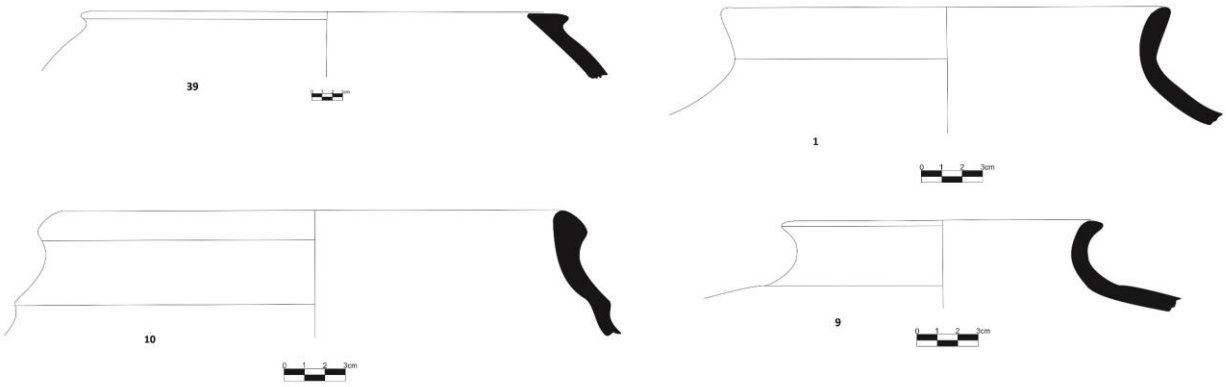

Figure 13. Excerpts from the Qal'e Asrar pottery design by Authors.

A total of 68 pieces of pottery consisting of the edge, body, and pipe were collected from the surface of the yard[4]. 88% of these potteries are edges, 10% are body, and 2% are pipes. Naturally, the statistics of the type of piece cannot be a criterion for the characteristics of the potteries of this area. However, other characteristics of the potteries can be considered as a criterion for the whole Qal'e Asrar potteries collection. The clay is 72% red, 18% buff, 7% gray, and 3% other colors. Interestingly, the color of the coating of these potteries is different from their clay. Thus, 83% of the potteries have a buff coating, 15% a red coating, and 2% a gray coating. Also, 78% of potteries have only an outer cover, 3% only an inner cover, and 16% on both surfaces. Indeed, 3% of potteries also have no cover. Moreover, 56% of these coatings are concentrated mud, 38% are thin mud, 3% are both types of coatings, and 3%, as mentioned, have no coating. The pottery clay comprises gravel (61%) and a combination of sand and gravel (39%). Also, 78% of potteries are well-cooked, 12% undercooked, and 10% overcooked. Moreover, 93% of the potteries are wheel-made, 3% are hand-shaping, and the other 4% are unknown. On the other hand, 78% of the potteries are plain, and 22% are patterned. Patterned potteries have geometric patterns in the form of vertical, upward arrows (Fig. 5: 46), vertical diagonal lines (Fig. 5: 46), zigzag lines (Fig. 5: 48 and 51), curves (Fig. 5: 50 and 51) and the animal patterns are in the form of a bird. Due to the painted

[4] The criterion for collecting these pieces of pottery was that they were significant. Thus, painted edges, floors and bodies were selected from surface pottery.

image and the accuracy of the shape and placement of the toes, as well as the long tail and the end of the striped wing, the engraved bird appears to be a bird of prey resembling a hawk or an Eurasian sparrowhawk[5] (Fig. 5: 48, 49 and 68). The pattern on the pottery is red, maroon, and brown.

V. Qal'e Asrar Sealed pottery

One of the important findings of the survey of the site is the discovery of a sealed piece of pottery with the effect of a cylindrical seal on it, which is very important in dating the pottery collection of the site.

This piece is a buff-ware with dimensions of 11.5×10.5 with a thickness of 0.5 cm and is a part of the body of the container.

The inner part of the pottery is not the actual thickness of the pottery due to weathering and destroying some parts of the thickness, but the evidence shows that this piece belongs to a hand-shaping vessel.

However, due to the curvature of the existing piece, which is small, it seems that this piece of pottery belongs to a jar or any medium-sized pottery and that it is related to the upper part of the body or the part between the body to the neck of the container.

The dimensions of the cylindrical seal are 3 cm wide, and the maximum remaining height is about 2 cm. Unfortunately, the upper part of the seal is broken. The sealing effect has a human, horse, and bird design (Fig. 14).

Figure 14. Sealed pottery Qal'e Asrar (by Authors).

VI. Chronology

Since this area has not been explored and there is no absolute dating for it, cultural materials should be used for relative dating. Unfortunately, the architectural remains do not help much in dating this site. Pottery is usually one of the most important cultural materials for comparison and relative dating. As can be seen, the pottery has homogeneous characteristics, and all seem to belong to a historical period. Unfortunately, pottery comparisons are not very helpful, and except for two pottery pieces, the pottery of this area is not comparable to other periods except the Achaemenid period. In addition, two pieces of pottery on this site are similar to the Achaemenid pottery of Persepolis and Pashto Pasargadae (Fig.7: 8; Fig. 8: 34).

Table 1 details the pottery

Number of potteries	Name of site	Reference	Period
Q.A.34	Persepolis	Ataei, 2004, Tablet 2, No. 9	Achaemenid
Q.A.08	Pasargadae	Stronach, 1978, fig 116, No. 20 Stronach, 1978, fig 118, No. 9	Achaemenid Post- Achaemenid

Dating the site based on two pieces of pottery alone cannot be a criterion for the age of Qal'e Asrar, so in addition to pottery, other criteria must be used for dating. One of the most important criteria for the antiquity of Qal'e Asrar is the presence of pottery designed with bird paintings. This type of pottery is similar to the patterned Taxčar Ābād (Fig. 5: 48 and 68). This type of painted pottery has been introduced in another article as one of the characteristics of the late Iron Age and early Achaemenid period in this part of eastern Iran (Dana, 2019). The most important criterion for dating the Qal'e Asrar site seems to be its sealed pottery. There is a cylindrical seal on this pottery, with human, horse, and bird designs. This sealing effect can be examined in terms of appearance as well as iconography, and based on the designs on it, relative chronology can be suggested. One of the key designs on this seal is the horse. The presence of horses with cultural materials, such as horse reins and related objects, cups, and other metal objects, existed in Iran since the second millennium B.C. However, the design of a horse on a seal of the cylindrical type has been found in only two sites so far.

The first example of Hasanlu's period 4b is obtained in the central Assyrian style (Marcus, 1996, Pl. 79, No. 57). Period of 4b Hasanlu with new dates is dated to the Iron Age 2, equivalent to 800-1050 B.C. (Danti, 2013: 332). From the second site, Sialk, more cylindrical seals with horse designs have been obtained. Three cylindrical seals with a horse design have been discovered in B. Sialk Cemetery (Ghirshman 1939, Pl. 06, No. 1386; Pl. 96, No. 1327; Pl. 96, No. 810). Interestingly, Sialk B Cemetery is one of the few sites in Iran with a horse design on its potteries. Sialk

[5] The study and identification of these animals has been done by Abolghasem Khaleghizadeh, an ornithologist.

B Cemetery Ghirshman first to 1200-1100 B.C. (Ghirshman, 1939: 245) and then dated to 1000 B.C. (Ghirshman, 1964: 280). Medvedeskaya dates it to the 8th century B.C. (Medvedeskaya 1983), and it is also dated to the middle of the 8th century B.C. (Malekzadeh, 2003: 20). In addition to dating Sialk B to about 700 B.C., Dyson considered it part of the triangle ware tradition (Dyson 1965: 200-201, Pl. XLI). Thus, Sialk Cemetery should be classified as the late Iron Age period.

The construction and use of cylindrical seals began in Mesopotamia and simultaneously in the southwest of Iran (Susiana plain) from the fourth millennium B.C. In Iran, the making of such seals is completely obsolete at the end of the Achaemenid period (Talaei, 2013: 154). Interestingly, the use of cylindrical seals in Babylon and Assyria was obsolete before the Achaemenid period and replaced flat seals (Porada, 1965: 252).

Therefore, according to the design of the horse on the seal, this role cannot be older than the 8th century B.C. According to the *terminus ante quem*, this pottery sealed with a cylindrical seal could not be newer than the Achaemenid period. Thus, Qal'e Asrar, according to pottery comparisons, is a type of bird-painted pottery and stamped pottery from the late Iron Age / Achaemenid period.

VII. Conclusion

The Qal'e Asrar site, a site from the late Iron Age and the Achaemenid period, is located in an area that is weak in terms of archaeological studies. Qal'e Asrar, with its most important feature as a monolithic building, can be a criterion for recognizing other contemporaries in the region.

This area as a small castle can indicate its function as a watchtower or road guard. This indicates that a political system ruled in the area in the late Iron Age, which built a fort to monitor and guard the roads. Undoubtedly, future excavations in Qal'e Asrar could pave the way for studying the Iron Age and the Achaemenids of eastern Iran.

References

Azizi Kharanaghi, M. H., M. Abe, S. Jamshidi Yeganeh, A. Akbari, 2021, "Eastern Iran Archaeological Project: First Season of Archaeological Excavations at Kale Kub, South Khorasan Province (2018), Relative and Absolute Chronology", *Journal of Archaeological Studies*, Vol. 12 (4), Serial No. 24, pp. 127- 151.

Basafa, H., 2017. Explaining the Neyshabur plain Iron Age cultures based on Material culture of Tigh-e Mohre, Journal of Historical Sociology 9/1: 1-18 (In Persian).

Briant, P., R. Boucharlat, 2005, *empire achéménide: nouvelles recherches: actes du colloqueorganisé au Collège de France. 21-22 novembre 2003*, Paris: Éditions de Boccard.

Coon C. 1951, *Cave Explorations in Iran,* Philadelphia: University of Pennsylvania Press.

Dana, M., 2014/2015, "Preliminary report of excavation in Takhcharabad hill: an area from the beginning of the historical period in eastern Iran", Modares Archaeological Research, Nos. 12 and 13, pp. 59-72. (In Persian)

Dana, M., 2019, "Late Iron Age and Achaemenid Pottery Traditions in Eastern Iran", Proceedings of the International Conference on Iron Age Archeology in Western Iran and Neighboring Areas, by Yousef Hassanzadeh, Ali Akbar Vahdati and Zahed Karimi, Tehran: General Directorate of Cultural Heritage, Tourism and Handicrafts, pp. 392-410. (In Persian)

Dana, M. and Hozhabri, A. 2019, "The Role of Cultural Factors in Locating of Archaeological Sites: the Settlement Patterns of Prehistoric Sites in Jājarm Khorasan Iran", *Iran*, vol. 57, pp. 123-141.

Dana, M., Nobari, A.H., and Mousavi Kouhpar, M. 2017. "Excavation at Tappe Bimarestan Ashkhaneh; an Iron Age Graveyard in the North of Khorasan", *AMIT*, (2020) 49, pp. 151-167.

Danti, M., 2013, "The Late Bronze Age and Early Iron Age in Northwestern Iran", *The Oxford Handbook of Ancient Iran*, D. T. Potts (ed.), Oxford: University Press, pp. 327-376.

Dyson, R. H., 1965, "Problems of Protohistoric Iran as Seen from Hasanlu", *Journal of Near Eastern Studies*, Vol. 24, No. 3, pp. 193-199.

Farjami, M. and Mahmoodinasab A.A. 2021, "Review of the archaeological researches of South Khorasan in the 1390s", Khorasan Namek, Khorasan archeology, history and architecture articles in the note of the scientific authority of Professor Rajab Ali Labaf Khaniki, with the efforts of Maysham Labaf Khainki and Mohammad Mehdi Amini Qomi. Tehran: House of Humanities Thinkers, pp. 33-70. (In Persian)

Genito, B., 1990, "The most pottery types at Dahan-e Gholaman (Siatan) and their spatial variability", in *South Asian Archaeology, Part 2*, Rome: Institute Italiano per il Medioedestremooriente, vol. LXVI: 587-604.

Ghirshman, R., 1939, *Fouilles de Sialk prés de Kashan 1933, 1934, 1937*, Paris.

Ghirshman, R., 1964, "Invasions des nomades sur le plateau Iranien aux prémiers siécles du I mill. av. J.C.", In: *Dark Ages and Nomads c. 1000 B.C.: Studies in Iranian and Anatolian Archaeology*, R. Ghirshman *et al.* (eds.), Istanbul: Nederland Historisch-Archeologische Institute.

Haerinck, E., 1988, "The Iron Age in Guilan: Proposal for a Chronology", In *Bronze-working Centers of Western Asia c. 1000–539 B.C.*, ed. John Curtis, New York: Kegan Paul International, pp. 63–78.

Helms, S., Yagodin, V. N., 1997, "Excavations at Kazakli-Yatkan in the Tash-Kirman Oasis of Ancient Chorasmia: a Preliminary Report", *Iran*, Vol. 35: pp. 43-66.

Herrmann, G. and Kurbansakhatov, K., 1995. "The International Merv Project. Preliminary Report on the Third Season (1994)", *Iran*, Vol. 33: pp. 31-60.

Jafari, M. J., 2013, "Settlements of the Achaemenid period in northern Khorasan, Iran", Bāsānpazhuhi, New Era, No. 15-15, pp. 52--60 (In Persian).

Jafari, J. & J. Thomalsky, with contributions by M. Farjami, F. Jurcke, J. Lentschke, H. Maass, K. Mohammadkhani, J. Fassbinder and F. Becker, 2016. The Iranian-German Tappe Rivi Project (TRP), North-Khorasan: Report on the 2016 and 2017 Fieldworks, AMIT 48: 77-120.

Khodadoost, J., S. R. Mousavi Haji, Sh. Pouraliyari, A.A. Mahmoudi Nasab, 2015, "Anbazak Hills: The Achaemenid and Parthian Newfound in the East of Khorasan (Iran); Torbat-e-Jam", Quarterly Bulletin of Greater Khorasan: Vol.6, No. 20, pp. 109-122.

Kohl, Ph., 1984, *Central Asia Paleolithic Beginnings to the Iron Age*, Paris.

Kroll, S., 1994, "Habur-Ware im Ostenoder: Der TAVO auf Irrwegenim Iranischen Hochland", In *Beiträgezur Altorientalischen Archäologie und Altertumskunde*, ed. P. Calmeyer, K. Hecker, L. Jakob-Rost, and C. Walker, Wiesbaden: Harrassowitz, pp. 159–66.

Kuz'mina, E. E., 2007, *The Origin of the Indo-Iranians*, Leiden/Boston: Brill.

Leriche, L., 2007, "Bactria, Land of Thousand Cities", in: *After Alexander, Central Asia before Islam.* J. Gribb and G. Hermann (Eds.). pp. 121-148, Leiden.

Lhuillier, J. 2018, "Central Asia during the Achaemenid Period in Archaeological Perspective", Acta Iranica, 58, pp. 257-271.

Malekzadeh, M. 2003, "Zarbolagh stone building of Qom, a shrine (?) from the Median period: A report of the preliminary visit - Fall 2002", Journal of Archeology and History, Volume 17, Number 34, pp. 52—64 (In Persian).

Marcus, M., 1996, *Emblems of Identity and Prestige: The Seals and Sealings from Hasanlu, Iran*, *Hasanlu Special Studies 3*, Philadelphia: University of Pennsylvania Museum.

Masson, V.M., 1959. *Drevnezemledel'cheskaja kul'tura Margiany*, Moscow.

Medvedeskaya, I. N., 1983, "Kosnkiyuborizmogil'nika Sialk V", *Iranica Antiqua*, vol. XVIII, pp. 59-80.

Moradi, H., Sarhaddi-Dadian, H. and Rahman, N.H.S.N.A. 2014, "Development and Decline of the Bampur Valley, Based on the New Archaeological Evidence from Prehistoric Period", *Iranian Studies*, 47, pp. 263-287.

Muscarella, O. W., 1974, "The Iron Age at Dinkha Tepe, Iran", *Metropolitan Museum Journal*, vol. 9, pp. 35- 90.

Perrot, J. (ed.), 2013, *The Palace of Darius at Susa. The Great Royal Residence of Achaemenid Persia*, London: I. B. Tauris.

Porada, E. 1965, *The Art of Ancient Iran, PreIslamic Cultures*, New York

Rezaei, M. H., J. Zanganeh Ebrahimi, H. Basafa, 2018. The Settlement Patterns in Roshtkhar Plain, Northeastern of Iran, *Iran* 57: 1-14.

Scerrato, U., 1996, "Excavations at Dahan-i Gholaman (Sistan- Iran), Preliminary Report (1962-1963)", *East & West*, vol. 16, no.1-2: 9-67.

Schmidt, E., 1953, *Persepolis I: Structures, Reliefs, Inscriptions*, Chicago: The University of Chicago Press.

Schmidt, E., 1957, *Persepolis II: Contents of the Treasury and Other Discoveries*, Chicago: The University of Chicago Press.

Schmidt, E., 1970, *Persepolis III: The Royal Tombs and Other Monuments*, Chicago: The University of Chicago Press.

Shishkina, G. V., 1994, "Ancient Samarkand: Capital of Soghd", *Bulletin of the Asia Institute* 8: pp. 81-99.

Soroush, M. R. and Yousefi S., 2013, "Razeh enclosure, a witness from the settlements of the third millennium to the historical period in South Khorasan", short articles of the 20th annual gathering of Iranian archeology, Tehran: Organization of Cultural Heritage, Handicrafts and Tourism, Cultural Heritage and Tourism Research Institute, pp. 271-273. (In Persian)

Soroush, M. R. and Zarei A.2012, "Archaeological Research in South Khorasan", a collection of articles on eighty years of archeology, by Yousef Hassanzadeh and Sima Miri, Tehran: Pazineh, pp. 159-170. (In Persian)

Stronach, D., 1978, *Pasargadae, A Report on the Excavations Conducted by the British Institute of Persian Studies from 1961 to 1963*, Oxford: Clarendon Press.

Talaei, H. 2013, Seals in Iran from the beginning to the beginning of Islam, Tehran: SAMT (In Persian).

Vahdati, A. A., 2016, "A Preliminary Report on the First Season of Jayran Tepe in the Plain of Esfarayen, Northeastern Iran, 2012", *Iranica Antiqua*, vol. LI, pp. 85-101.

Wu, X. 2017, "Land of the Unrule-ables: Bactria in the Achaemenid Period", in: K.O. Weber, E. Hite, L. Khatchadourian, A.T. Smith (eds.), Fitful Histories and Unruly Publics, Rethinking Temporality and Community in Eurasian Archaeology, Leiden/Boston: Brill, pp. 258-287.

Young, T. C. Jr., 1965, "A Comparative Ceramic Chronology for Western Iran, 1500-500 B.C.", *Iran*, vol. III, pp. 53-83.

Young, T. C. Jr., 1967, "The Iranian Migration into the Zagros", *Iran*, vol. V, pp. 11-34.

Yousefi, S., Anani B. and Shirazi R., 2013, "Kalkob, a site from the Copper and Bronze Age in South Khorasan", a collection of selected articles of the National Conference of Archeology of Iran (Achievements, Opportunities, Damages), with the efforts of Hassan Hashemi Zarjabad and Mohammad Hossein Qureshi. Birjand: Four Trees, pp. 336-355. (In Persian)

Zadneprovsky, Y. A., 1995, "Early Urban Development in Central Asia", *Iran,* Vol. 33: pp. 152-160.

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THE INTERACTIONS BETWEEN SISTAN AND GREAT KHORASAN CULTURE (GKC) IN THE SECOND HALF OF THE THIRD MILLENNIUM BC

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Abstract: The identification of the geographical extent of the Bactria Margiana Archaeological Complex (BMAC) and the interpretation of the spreading map of the related archeological evidence in the ancient sites of the eastern half of Iran is at the beginning stage of its long journey. Several Studies led by many archaeologists from different backgrounds were carried out to define the relationship between the BMAC and the other neighboring cultural areas of the eastern half of Iran such as Dasht Gorgan, Hissar, Kerman, and Baluchistan. Still, the relationship between this culture and the cultural area of Sistan was neglected. According to the continuous excavations that led to the identification of the BMAC pottery, the investigations on the Sistan basin and in the archaeological excavations of Graziani, Taleb Khan, and the fourth period of Shahr-i Sokhta, as well as the identification of miniature columns and stone disks, regarding the similarities between the cultural artifacts of this geographical area and the examples identified in the BMAC such as marble vessels, metal reticular seals, memorial burials, all of these pieces of evidence propose the different hypotheses studying the relationship between these two areas. All the obtained evidence and the available cultural data relating to these two cultural areas tell that they had a mutual relationship during which the BMAC was both influenced by the Shahr-i Sokhta culture and influenced it. This article studies the relationship between these two cultural areas by emphasizing the BMAC pottery samples identified by chance throughout the excavations carried out to examine the Zabol-Zahedan water pipeline.
Keywords: Sistan, Shahr-i Sokhta, GKC, BMAC, Rud-i Biaban.

چکیده: تلاش برای شناخت گستره جغرافیایی و تفسیر پراکندگی یافته‌های فرهنگ بلخی- مروی در نیمه‌شرقی ایران در ابتدای راه خویش قرار دارد. مطالعاتی در ارتباط میان فرهنگ بلخی- مروی با حوزه‌های فرهنگی نیمه شرقی ایران (دشت گرگان، حصار، حوزه فرهنگی کرمان، بلوچستان) صورت پذیرفته ولی ارتباط میان این فرهنگ با حوزه فرهنگی سیستان مغفول مانده است. شناسایی سفال‌های فرهنگ بلخی- مروی در بررسی‌های حوزه سیستان و در کاوش‌های باستان‌شناسی گرازیانی، طالب‌خان و دوره چهارم شهرسوخته و همچنین شناسایی ستون‌های مینیاتوری و دیسک‌های سنگی در این حوزه و شباهت‌های میان آثار فرهنگی این حوزه جغرافیایی با نمونه‌های شناسایی شده در فرهنگ بلخی- مروی (ظروف مرمری، مهرهای مشبک فلزی، تدفین‌های یادمانی)، فرضیه‌های متفاوتی را در زمینه نحوه ارتباط میان این دو حوزه مطرح نموده است. با توجه به شواهد و داده‌های فرهنگی، ارتباط میان این دو حوزه فرهنگی را باید یک ارتباط دو سویه تلقی نمود که در طی آن فرهنگ بلخی- مروی هم از شهرسوخته تأثیر پذیرفته و هم برآن تأثیر گذاشته است. این نوشتار با تأکید بر سفال‌های فرهنگ بلخی- مروی شناسایی شده از بررسی خط لوله انتقال آب زابل به زاهدان به مطالعه ارتباط میان این دو حوزه فرهنگی می‌پردازد.
کلمات کلیدی: سیستان، شهرسوخته، فرهنگ خراسان بزرگ، فرهنگ بلخی- مروی، رود بیابان.

I. Introduction

Bactria Margiana Archaeological Complex (BMAC) refers to all the settlements located in the geographical area of southern Turkmenistan, northeastern Iran, northern Afghanistan, southern Tajikistan, and Uzbekistan, dating back to 2400-1300 BC (Luneau, 2010: 24) (Fig. 1). Distinctive features of this culture consist of the typical forms of pottery (Fig. 2), the use of precious metals objects such as gold and silver, using luxury goods that are made of semiprecious stones, including Lapis lazuli, chlorite, agate, turquoise, and marble. In addition, a collection of unique ritual objects, including miniature marble columns, composed of Bactria figurines, truncheons, ceremonial axes, and, more significantly, the findings related to burial ceremonies and practices, such as animal burial, the variety and abundance of burials, the placement of food within the graves, and memorial tombs, have contributed to the formation of this valuable collection (Luneau, 2014: 150; Lamberg-Karlovsky, 2013: 21-25).

The term BMAC was used by Sarianidi during his excavations in Afghanistan in the late 1970s (Sarianidi, 2002: 86-87). For the first time, Francfort proposed the name of the Oxus civilization because they considered the spread of this culture along the river named Oxus/Amu Darya (Francfort, 1984; 2005: 102; see also Lamberg-Karlovsky, 2013: 21). However, this designation is criticized for being limited to a small terrain of the Amu Darya River basin (Salvatori, 2016: 452). New archaeological data and evidence obtained from the northeastern and southeastern settlements of Iran, collected throughout the archaeological excavations and studies in different locations of Khorasan, Sistan and Baluchestan, and Kerman, represent the new areas that reflect the spread and influence of BMAC in the northeast, east and southeast

parts of Iran. Therefore, Biscione and Vahdati suggested the name Great Khorasan Culture (GKC) to designate these widespread features of the culture (Biscione and Vahdati, 2020: 528).

Figure 1. Geographical distribution of the materials of GKC in the eastern half of the Iranian plateau (After Biscione and Vahdati 2020), The map has changed: small red circle of the study area in Sistan with materials similar to the GKC.

The chronological classification includes three periods for BMAC: Period I: The formation of BMAC in the main and primary nuclei, this period includes two phases Ia (2400/2300 to 2200 BC) and Ib (2200/2250 to 2100-2000 BC), and in total covers the period of2400/2300 to 2100/2000 BC. Period II: The expansion of BMAC to neighboring areas. This period includes two phases IIa (2000/2100 to 1800/1750 BC) and IIb (1750/1800 to 1500/1450 BC), which overall covers a period of 2000/2100 to 1500/1450 BC. Period III: The gradual decline and, finally the end of BMAC. This period includes the period of 1450/1500 to 1400/1300 BC (Cattani *et al.*, 2008: 43; Salvatori, 2010: 245) (Table 2).

II. Evidence of GKC in Iran

Attempts to recognize the GKC or BMAC in Iran and understand its geographical extent as well as the interpretation of the dispersion of its evidence in the eastern half of Iran are taking their first steps. In this regard, the connection between this culture and the Sistan Plain historically was neglected by researchers due to a lack of field research. The identification of BMAC pottery discovered in areas in Sistan Plain (Biscione and Vahdati, 2020; Moradi *et al.*, 2022), and the archaeological excavations in the Graziani region (Kavosh *et al.*, 2019), Tepe Taleb Khan (Kavosh *et al.*, 2020: 140), Burnt Building (Biscione 1979, fig. 8), Building No. 20 (Moradi, 2022a: figs. 23, 34) and the building No. 26 (Seyyed Sajjadi and Moradi, 2016) in Shahr-i Sokhta, reporting the miniature columns and stone disks in Rud-i Biaban area[1] (Dales and Flam; 1969: 22; Tosi, 1970: 48; Posshel *et al.*, 2004: 26; Salvatori, 2008: 89; Moradi *et al.*, 2022: fig. 13) and also some similarities between the artifacts of Sistan and Khorasan area, including marble vessels, metal seals, memorial burials (Tahmasebi Zaveh and Iravani Ghadim, 2016), all propose a different hypothesis about the correlation between these two areas.

Commenting on the similarities between southeastern Iran and the BMAC, Ascalone states that evidence discovered from the Shahr-i Sokhta and Bampur area in Baluchestan shows many similarities between these areas and the southern shores of the Persian Gulf on a new north-south trade axis. This road connects Turkmenistan, Sistan, and Kerman to new areas that in some cases, their movements can be interpreted as migration from the north (Ascalone, 2015: 97). He also states that only some parts of this area were connected to Afghanistan and Turkmenistan, among which the Shahr-i Sokhta had a glimpse into the magnitude of BMAC or Greater Khorasan Cultural Centers.

The lack of available materials and documents from the southeast regions of Iran does not allow the detailed reconstruction of the cultural framework of these areas. However, a cultural geographical expansion can be justified by proving the existence of a limited migration flow from the northern lands probably after the downfall of the distinguished settlements of BMAC centers in the north (Ascalone 2105, 99-100). On the other hand, interpreting the existing similarities, Sarianidi states that it is more correct to consider the similarities of the cultural materials at the excavated Bactriana and Margiana sites with the southeast of Iran as a sign of the development and expansion of the unique features of Iranian culture originated from Baluchi-Kermani artistic core (Sarianidi, 1997, quoted by Ascalone[2], 2015: 97). Simultaneously in the beginning of the period of formation of BMAC (2400/2300 BC), the population at Shahr-i Sokhta faced a population decline (Moradi 2022b: 361-363). The coincidence of the population decline in Shahr-i Sokhta and the expansion in BMAC in both regions of southern Bactriana and Margiana regions, as well as some similarities, prove the background of these materials in Shahr-i Sokhta.

[1] It has also been identified in the studies of Romroud and Rud-i Biaban, which were conducted by Leila Kikha in the summer of 2020 (unpublished).

[2] Since the book is written in Russian, it has to be referred to a second-hand source.

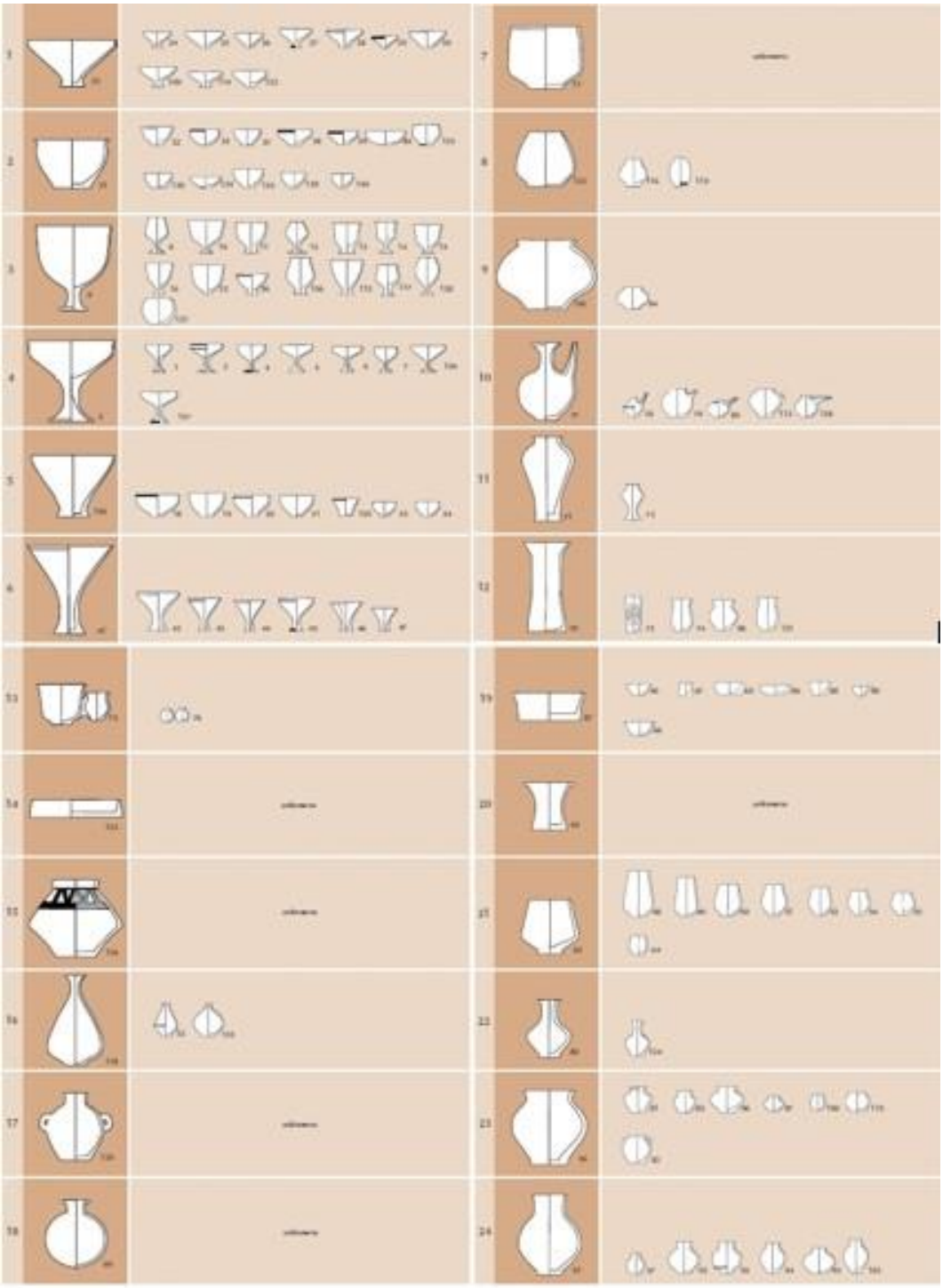


Figure 2. Typology of BMAC pottery in Gonur Tepe (Udemuradov, 2002: 133-136).

Regarding the most important cases, such as the ubiquitous data in hand, we can talk about the impact of the Shahr-i Sokhta on the formation of BMAC (Tahmasebi Zaveh and Iravani Ghadim, 2016). Considering the above reasons, a tenable hypothesis can be proposed to interpret and justify the formation of a part of BMAC as a result of a migration process in the second half of the third millennium BC from Sistan Plain. Added to the above reasons, the identification of BMAC pottery in the Sistan region, especially in the Rud-i Biaban area (Moradi *et al*., 2022), is a reason to prove the existence of human groups forming the BMAC settlements in Sistan.

The BMAC's distinguished pottery, along with the distinguished indigenous pottery of the region, was identified in the comprehensive studies of Sistan conducted by Mousavi, Haji, and Mehrafarin, which were briefly mentioned in Biscione and Vahdati, 2020. Also, the pottery of this culture, found during the archaeological survey of the water transmission line

from Zabul to Zahedan in the east and southeast areas of Shahr-i Sokhta, was recently identified in Moradi *et al.*, 2022: fig. 12 (Fig. 3).

Among 32 different sites identified in these studies, BMAC pottery discovered from sites No.11 (Tepe Taleb Khan), 12 (Tepe Taleb Khan 2), 24 (Rud 1), 26 (Taleb Khan 3), 27 (Taleb Khan 4), 29 (Kope Tepe 1), 30 (Kope Tepe 2), 31 (Kope Tepe 3), 32 (Kope Tepe 4) (Fig. 4). In addition to these cases, the pottery samples of BMAC were documented during the archeological excavations in Tepe Girdi and two areas near this site (Moradi, 2022c). The phase related to this culture is introduced as the Rud-i Biaban phase (Moradi *et al.,* 2022: 30-35).

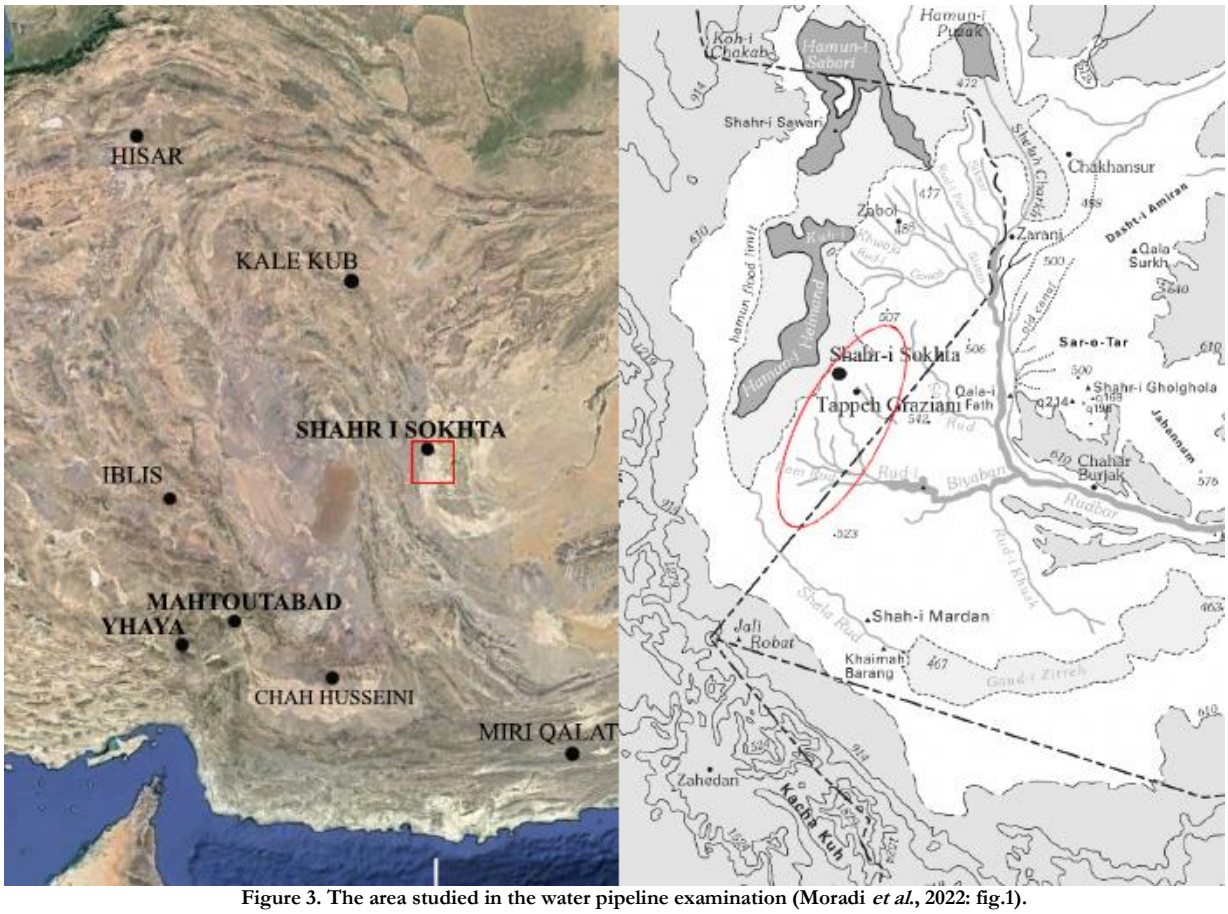


Figure 3. The area studied in the water pipeline examination (Moradi *et al.*, 2022: fig.1).

III. The chronological background:

All the data attributed to the GKC or BMAC in Sistan are the result of superficial studies, and the absolute chronology of this cultural period has not been estimated in Sistan so far. Therefore, to obtain the relative chronology of these findings, we considered elaboration on the typology of pottery, and the use of the chronology of Shahr-i Sokhta and Tepe Graziani as alternatives.

In the studies carried out on the sites with GKC pottery, the periodization of other surface pottery based on the Shahr-i Sokhta chronology has also been given. Among the 11 sites identified in the study of Moradi and his colleagues, 2 sites with Shahr-i Sokhta III pottery, 5 sites with Shahr-i Sokhta IV and RudiRud-i Biaban phase pottery types, 2 with Shahr-i Sokhta III-IV and Rud-i Biaban phase, and 2 were allocated to Rud -i Biaban phase.

Biscione and Vahdati have identified 17 sites with GKC pottery, based on a brief study of the preliminary reports of a survey on Sistan that was conducted by Mehrafarin and Mousavi Haji in 2010. They identified 11 sites with Shahr-i Sokhta period III pottery, 2 with Shahr-i Sokhta period IV pottery, 1 site with Shahr-i Sokhta III-IV pottery, and 3 sites that had only GKC pottery (Biscione and Vahdati, 2020: 539-540). The only area in the Sistan plain that has pottery similar to the GKC and has been excavated and has absolute dating is the Tepe Graziani shows 2350-2300 BC. The absolute dating layers in the Tepe Graziani display the date around 2350-2300 BC (Helwing *et. al.*, 2019: 155). In Shahr-i Sokhta, such pottery was obtained from one of the rooms of the Burnt Building and the upper layers of buildings Nos.20 and 26. In buildings No. 20 and No.26, this pottery sample is of layers that are not related to the main body of the building and indicates the latest and very limited settlement on the ruins of the main building (Moradi *et. al.*, 2022: 251-254).

Table 1. Sites with BMAC pottery, a field study of the Zabol-Zahedan water transmission project

Row	Site code	Site name	Period	Phase	Date
1	11	Tepe Tale	Shahr-i Sokhta IV	Rud-i Biaban 2-3	2400-2000
2	12	Tepe Taleb 2	Shahr-i Sokhta IV	Rud-i Biaban 2-3	2400-2000
3	24	Rudi-i Biaban 1	Shahr-i Sokhta IV	Rud-i Biaban 2-3	2300-2000
4	26	Taleb 3	Shahr-i Sokhta IV	Rud-i Biaban	2300-2000
5	27	Taleb 4	Shahr-i Sokhta IV	Rud-i Biaban	2300-1800
6	29	Kete Tepe 1	Shahr-i Sokhta IV	Rud-i Biaban 1-2	2300-2000
7	30	Kete Tepe 2	Shahr-i Sokhta III-IV	Rud-i Biaban 2-3	2300-2000
8	31	Kete Tepe 3	Shahr-i Sokhta III-IV	Rud-i Biaban 2	2300-2000
9	32	Kete Tepe 4	Shahr-i Sokhta IV	Rud-i Biaban2	2300-1800

The pottery similar to those discovered from the banks of the Rud-i Biaban at Shahr-i Sokhta probably dates back to the latest period, indicating that the Burnt Building was occupied for a short time after the fire, around 2300 to 2200 BC. It should be noted that the date presented for the last settlement phase in the Burnt Building was 1800 BC (Salvatori and Tosi, 2005: fig. 12), which casts doubt on this dating and some. Some older estimations date it back to the second half of the third millennium BC, which considers the end of settlement in Shahr-i Sokhta (Jarrige *et al.*, 2011: 26-29). In the Burnt Building, the chronology presented is very controversial, and the date of 1800 BC is obtained from only one sample, and most of the samples show the dat 2200 to 2000. Therefore, for the samples of the Rud-i Biaban phase, which is similar to the pottery of GKC, the date between 2300 and 2000 BC can be considered more relevant. This date is parallel to the dating related to the period I (phases Ia and Ib) of BMAC in northern areas ogof Great Khorasan (Table 1).

The carbon dating presented for the main construction of Building No.26 is about 2400 to 2300 BC[3], which coincides with the most recently dated layer of Tepe Graziani. From the recently examined samples excavated from Shahr-i Sokhta, which includes all the settlement phases, no dating older than 2300 BC has been obtained, and the dating, 2300 BC, remains constant (personal interview with Seyyed Sajjadi)[4].

Therefore, for this layer, which has the cultural materials of Rud-i Biaban phase and pottery of GKC type at the same time, and due to the similarity of materials in Tepe Graziani and Rud-i Biaban phase in the southern part of Shahr-i Sokhta, Burnt Building as well as buildings 20 and 26, we can consider the date between 2000 to 2400 BC for phase Rud-i Biaban.

IV. The effects of Sistan on the northern part of Great Khorasan

As mentioned earlier, the existence of some similarities and historical background of some products of GKC in Shahr-i Sokhta is the most important thing that can be relied on to determine the impact of Sistan on the formation of BMAC or by recently labeled for this culture, the GKC. For example, the similarity between marble products and the temporal precedence of these productions in Shahr-i Sokhta, the precedence of metal seals, the similarity in some rituals and burial ceremonies between Shahr-i Sokhta and the GKC that the precedence of these burials in Shahr-i Sokhta has already been proven (Tahmasebi Zaveh and Irvani Ghadim, 2016).

Table 2. Chronology of BMAC.

Northern & Eastern Balkh	Southern Balkh	Marv	Date (BC)	Period	
–––––	Tepe Hirdai Dashly3	Layer 1 to 4 North Gonur, Kelleli 1	2300/2400 to 2200	Ia	I
–––––	Dashly 3	Layers 1 to 4 of North Gonur, Royal Cemetery, Gonur Cemetery, Kelleli 3&4	2200 to 2000/2100	Ib	
Sapalli, Djarkutan, Djarkutan 4, Phase B Shorty	Dashly 1-6, 9-14, Dashly Palace and Temple 3	Layer 6 North Gonur Cemetery, South Genor, Togolok 1&21, Togolok Cemeteries 21&24	2000/2100 to 1800/1750	IIa	II
Djarkutan Fazkoz Ali, Molla Ali, Park 4-7 Molla Ali, Djarkutan Temple 6	Dashly 1&3, 5&8, 14 to 17 and 19, Tikar 1&2, Nichkin Farrokhabad oasis	Takhirbai3, South Gonur Surface Layer, Gonur Cemetery, Togolok 21	1800/1750 to 1500/1450	IIb	
–––	Dashly 3, Tikar 1&2	Takhirbai 1&3	1500/1450 to 1400/1300	III	

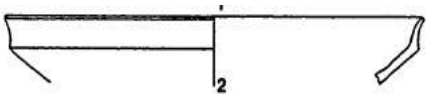
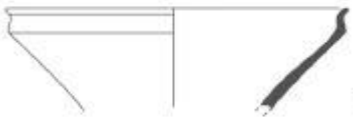
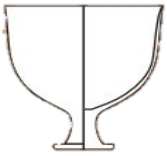
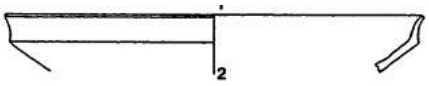
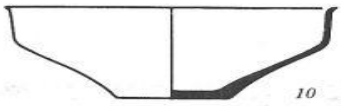
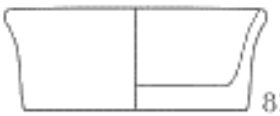
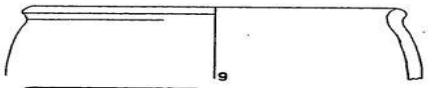
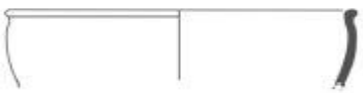
[3] The results of new studies of the Shahr-i Sokhta chronology will be published soon.

[4] About 20 samples of charcoal from new excavations in Shahr-i Sokhta have been tested for absolute dating. See Ascalone and Sajjadi, 2022.

Also, according to the absolute dating on the Tepe Graziani pottery, the pottery of GKC and the collection of concurrent pottery excavated from this site eventually date back to 2350 BC (Helwing *et al.*, 2019: 151-155). On the other hand, the pottery of GKC was identified in some single-period sites along with the pottery of Shahr-i Sokhta period IV, which according to new chronology, is the end of period IV should be considered about 2300 BC (personal interview with Seyyed Sajjad; Ascalone and Sajjadi 2022). This datum proves that the studied pottery had existed in Sistan before the beginning of the spread of BMAC to the southern regions (Table 3).

Another evidence of the influence of Sistan on the pottery of GKC is the type of grooved pottery up to the Bronze Age. In addition to Tepe Graziani, they were identified in areas 23, 27, 29, and 30, as well as Tepe Girdi and its neighbor sites (Moradi, 2022c). And to a limited extent in Gonur Tepe in Turkmenistan (Sarianidi, 2007: 56), as well as a shard of Tepe Toop Derakht and a piece of Tepe Shorcheh in Mashhad plain. Therefore, this type of grooved pottery can be introduced as a type of Bronze Age pottery, and its existence in Khorasan can be considered under the influence of Sistan culture. The historical background, diversity, and multiplicity of this type of pottery in Sistan, along with the limited number of this type of pottery in the GKC, emphasize the nativity of this pottery in Sistan. Therefore, the study of pottery species of this culture in Sistan is of fundamental importance in understanding the formation of the GKC. Consequently, migration from the cultural area of Shahr-i Sokhta to the geographical areas of Khorasan is considered one of the effective external factors in the formation of GKC.

Table 3. Pottery similar to the examples of the GKC in Tepe Graziani.

Tepe Graziani	Comparison reference	GKC	Graziani design number
	Hiebert, 1992: 106.2		136:9
	Sarianidi, 2007, 58:16		117:8
	Hiebert, 1992: p:106.2		123:16
	Masson,1988: XXXII:10		116:21
	Hiebert, 1992: 145:4 Sarianidi, 2007: 61:87		132:2
	Hiebert, 1992: 132,9		128:13

V. GKC pottery in Rud-i Biaban area in Sistan (southern of Shahr-i Sokhta)

The identified pottery of GKC in the Rud-i Biaban basin is located in a collection of sites that have recently been named the Rud-i Biaban phase (Moradi *et al.*, 2022: 30) that's assumed to date back to the period 2300-1800 BC. This type of pottery is found in sites no.11 (Taleb Khan), 12 (Taleb Khan 2), 24 (Rud 1), 26 (Taleb Khan 3), 27 (Taleb Khan 4), 29 (Kete Tepe 1), 30 (Kete Tepe 2), 31 (Kete Tepe 3), 32 (Kete Tepe 4). Also, recently obtained from the excavation of the Tepe Girdi and three other sites around the Shileh River, 60 km south

of the Shahr-i Sokhta. There are two assumptions explaining the existence of this type of pottery: 1- These potteries are a sign of the expansion of trade relations and the influence of GKC in Sistan. 2- These potteries are the sign of a continuation of the pottery traditions that were formed in the period around 2300 BC in Tepe Graziani and Shahr-i Sokhta and the surrounding areas, and with the decline of settlements in these areas, this new pottery tradition in the basin of the Rud-i Biaban continued to use from 2200 to 1800 BC.

Proving or refuting one of the above hypotheses requires more evidence, considering the continuation of the above-mentioned pottery tradition in Sistan, and also the evidence of Sistan's influence on the formation of GKC. Rudi Biaban phase and pottery similar to GKC in this phase can be considered as a continuation of pottery traditions in Sistan, which was formed earlier, in the middle of the third millennium BC in the numbers of sites in Sistan, that provides postulates to explain the foundations for the formation of BMAC that can be named the formation phase of GKC.

VI. Archaeological evidence on the formation phase of GKC in Sistan

VI.1. Site No. 11 (Taleb Khan)

Tepe Taleb Khan with a height of more than 8 meters and an area of half a hectare, is located 15 km southeast of Shahr-i Sokhta, which was excavated by the Department of Archaeology of the University of Zabol for six seasons. According to the pottery typology and related dating, it belongs to the period III and IV of Shahr-i Sokhta (2400-1800 BC) and is divided into two periods; I and II. The identified GKC pottery dates back to the II period (Kavosh *et al.*, 2020: 139).

VI.2. Site No. 12 (Taleb Khan 2 or Tepe Yalda)

Tepe Taleb Khan 2 is located approximately 900 meters northeast of Tepe Taleb Khan1 and is contemporary with time Taleb Khan 1 (Fig. 5a: S.11.1-2).

VI.3. Site No. 24 (Rud-i Biaban 1):

Site No. 24 is located 100 meters west of Tepe Rud-i Biaban with an approximate height of 6 and a diameter of 60 meters. The pottery is parallel with Shahr-i Sokhta period IV or Rud-i Biaban phase with a small number of painted buff-ware pottery.

Surface shards include bowls with angled bodies, bowls with protruding edges, global jars with protruding knobs, and ocher or plain slip, already found on the upper levels of buildings Nos. 20 and 26 in Shahr-i Sokhta, Tepe Taleb Khan 1 and 2, and some satellite sites around Shahr-i Sokhta (Fig. 5b: S.24.3) (Table 4).

VI.4. Site no. 26 (Tepe Taleb Khan 3):

Site No. 26, located 2 km east of Tepe Taleb Khan, is a trapezoidal hill with a height of 8 and a diameter of approximately 150 meters (Fig. 5b: S.26) (Table 5).

VI.5. Site No.27 (Tepe Taleb Khan 4)

Site No. 27 is located near site No. 26 and consists of two small parts next to each other with a height of 4 meters and an approximate diameter of 30 meters. The pottery in this small site is similar to the pottery in the No. 24 in two ranges. Grooved pottery in association with Rud-i Biaban type is remarkable in site No. 27. These potteries with no cover or slip are rougher than the grooved pottery of Kuh-i Khawja, belonging to the Parthian period. On the other hand, paying attention to recent grooved shards excavated in Tepe Girdi, it is clear that these types of pottery have already related to the formation phase of GKC (Fig. 5a: S.27.1-8) (Table 6).

Table 4. GKC Pottery in Rud-i Biaban 1.

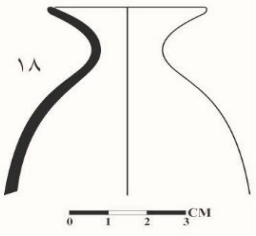
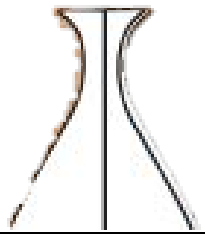
	Rud-i Biaban 1	Reference	GKC
1		Udemuradov, 2002: 136, T:118	

Table 5. Greater Khorasan Culture Pottery on Taleb Khan 3.

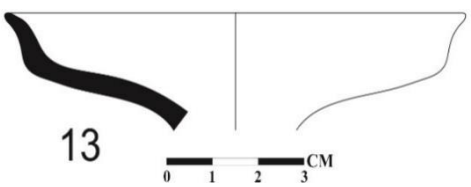
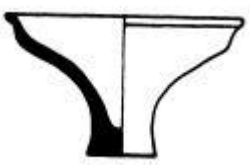
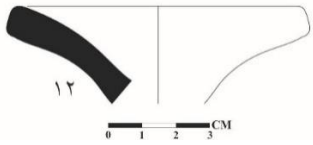
	Tepe Taleb Khan 3	Reference	GKC
1		Sarianidi, 1993: 32	

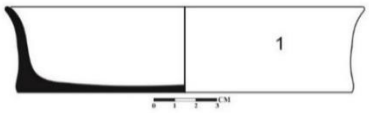
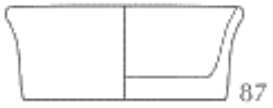
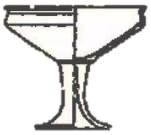
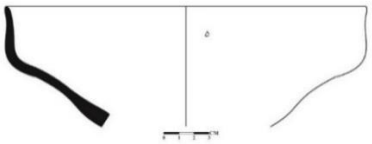
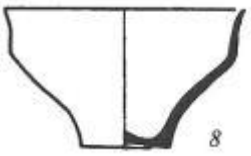
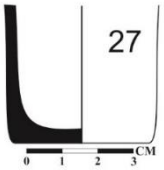
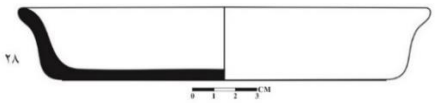
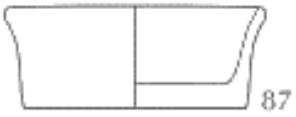
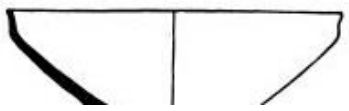
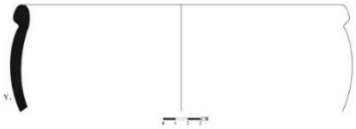
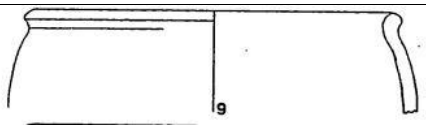
Table 6. Greater Khorasan Culture Pottery on Taleb Khan 4.

	Taleb Khan 4	Reference	GKC
1		Udemuradov, 2002: 136, T:118	

VI. 6. Site No. 29 (Kete Tepe 1)

Site No. 29 is located 15 km southeast of Shahr-i Sokhta and 5 km east of Tepe Taleb Khan. The height of this Site from the surrounding land is about 15 meters, diameter is 150 meters, probably built on one of the biggest Kaluts (yarding) on the edge of the plain. This site is located next to the bed of Rud-i Biaban and has a surface covered with pottery with a considerable dispersion of buff and reddish wares. The pottery is comparable to site No. 24. Among them are engraved examples related to period III of Shahr-i Sokhta. There are also some examples of reddish pottery with dark brown motifs that were not common in the Shahr-i Sokhta pottery tradition. A bronze seal and alabaster vessels are other superficial findings (Fig. 5a: S.29.1-18) (Table 7).

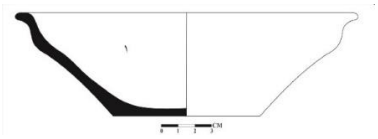
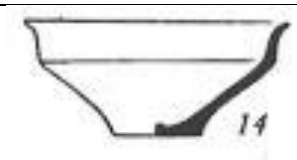
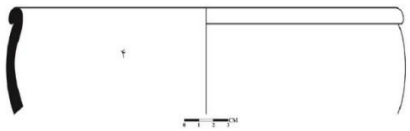
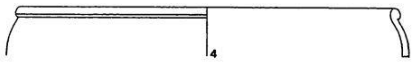
Table 7. Greater Khorasan Culture Pottery in Kete Tepe 1.

	Kete Tepe 1	Reference	GKC
1		Udemuradov, 2002: 136, T:87	 1
2		Udemuradov, 2002: 136, T:2	 2
3		Masson, 1981: pl.: XXXII8	 3
4		Udemuradov, 2002: 136, T:70/ Sarianidi, 1993: 31	 4
5		Udemuradov, 2002: 139, T:87	 5
6		Sarianidi, 1993: 32	 6
7		Hiebert, 1992: 114,4	 7

VI.7. Site No. 30 (Kete Tepe 2)

Site No. 30 is located 30 km southeast of Shahr-i Sokhta in the Rud-i Biaban basin, a trapezoidal mound stretched from north to south with a height of about 8 meters. It has two ridges on its north and south sides and based on surface materials, it seems to belong to the period III and early IV period, as well as the Rud-i Biaban phase. The pained pottery samples were divided into two spectra of unadorned buff-ware and reddish (Fig. 5a: S.30.1-8) (Table 8).

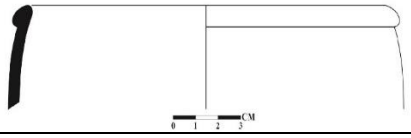
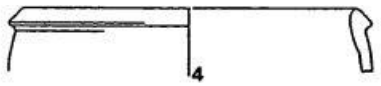
Table 8. GKC Pottery in Kete Tepe 2.

	Kete Tepe 2	Reference	GKC
1		Udemuradov, 2002: 136, T:30	 1
2		Hiebert 1994: 114,4	 2

VI. 8. Site No. 31 (Kete Tepe 3)

Site No. 31, 4 meters high and 70 meters in diameter, was located the north of Site No. 30. The pottery of this site is classified into two spectra of buff, and reddish ware that the painted wares belong to the buff-ware tradition and chronologically are comparable to the Phase 3 of period III, dating back to 2500 BC. Unadorned potteries in sites Nos. 29 and 30 are comparable to samples belonging to the Shahr-i Sokhta IV and Rud-i Biaban phase (Fig. 5b: S.31) (Table 9).

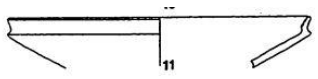
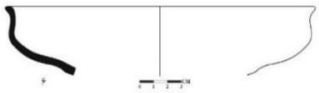
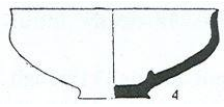
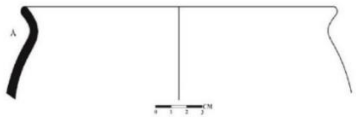
Table 9. The pottery of GKC in Kete Tepe 3.

	Kete Tepe 3	Reference	GKC
1		Hiebert, 1994:134,4	 1

VI. 9. Site No. 32 (Kete Tepe 4)

This site is also a small semicircular mound with a height of about 4 meters above the ground. The pottery of this site, like site No. 31, follows the same tradition, but most of the pottery of the site can be attributed to the Shahr-i Sokhta IV and the Rud-i Biaban phase (Fig. 5a: S.32.1-4) (Table 10).

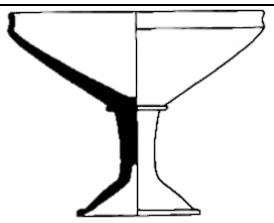
Table 10. GKC Pottery in Kete Tepe 4.

	Kete Tepe 4	Reference	GKC
1		Hiebert, 1994: 106, 11.	
2		Hiebert, 1994: 105.4	
3		Udemuradov, 2002: 137, T:56	

VI. 10. Tepe Girdi and surrounding areas:

Tepe Girdi (No. 273) with approximate dimensions of 100 × 100 meters, and a height of 3 meters is located 60 km south of Shahr-i Sokhta and 4 km north of the Shila River (Shala Rud) (Fig.6). This site is the southernmost site of Shahr-i Sokhta, which has been excavated so far. Four trenches were excavated on this site under the direction of H. Moradi, and two of them had GKC materials. Remains related to GKC excavated from the trenches along the site, which was MU on the western edge, was a pit or garbage pit, and NY1 on the southern edge of the site, which seems to be a depot or dump in which a large number of pottery pieces of GKC can also be seen. Some shards that are similar to the mentioned culture have also been found from the surface survey of the site (Moradi, 2022c). Also, similar pottery was found in several areas around the site, which include area No. 1, two kilometers south of the site, area No. 2, one kilometer south of the site, and area No. 3, 100 meters in the north (*Ibid*) (Table 11).

Table 11. Greater Khorasan Culture Pottery on Tepe Girdi.

	Tepe Girdi	Reference	GKC
1		Sarianidi, 1993: 32	
2		Udemuradov, 2002: 136, T:33 Masson, 1981 :XXXII8	
3		Udemuradov, 2002: 136, T:134	

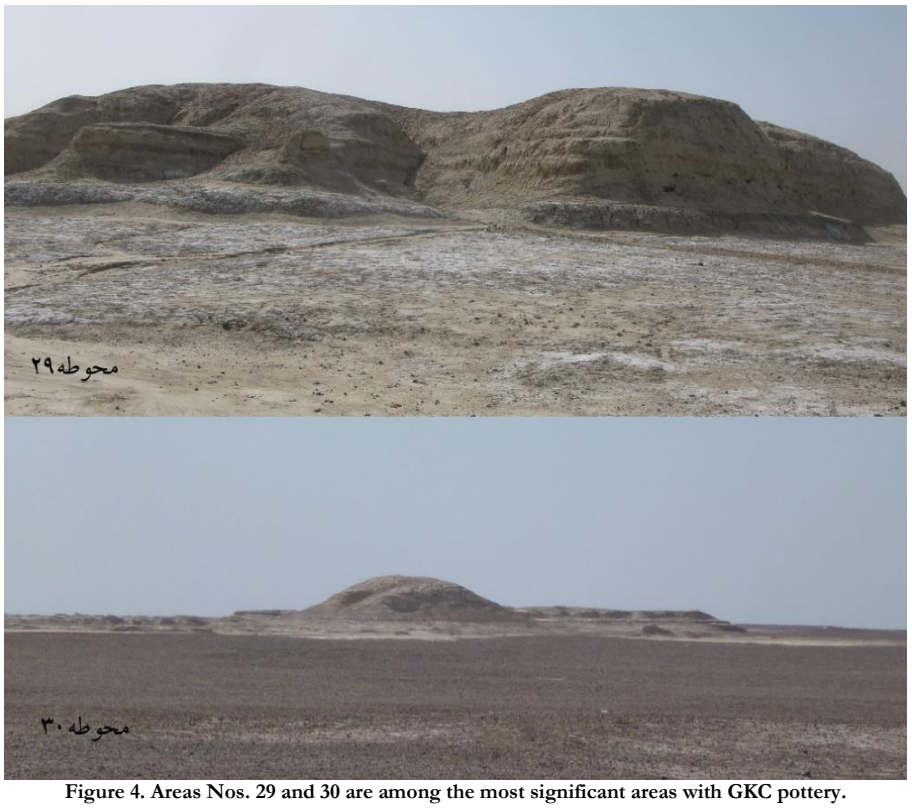


Figure 4. Areas Nos. 29 and 30 are among the most significant areas with GKC pottery.

VII. Sistan's influence on the forming of Great Khorasan Culture

It should be noted that the influence of Sistan in the formation of GKC in Khorasan areas should not be considered the abandonment of Sistan in this period. Identification of some distinguished works of GKC indicates the cultural exchanges between these two regions from 2200 to 1800 BC. Some of the significant works of GKC, including miniature columns in Sistan (miniature columns found during archeological excavations and studies in the Sistan region of Afghanistan by Godari Shah (Possehl *et al.*, 2004: 26, fig: 13), Chahe Ismaeil (Salvatori, 2008: 89; Tosi, 1970: 48), Shele river (Dales and Flam, 1969: 22), from Abdali Tepe in Iranian Sistan (Salvatori, 2008: 89; Tosi, 1970: 48). All samples indicate cultural exchanges between these two areas during the period 2200-1800 BC, maybe shortly after the environmental crisis in Sistan around 2300 BC.

Figure 5a. Photo of GKC pottery of survey sites in the Rud-i Biaban area (Moradi *et al.*, 2022: Fig. 12).

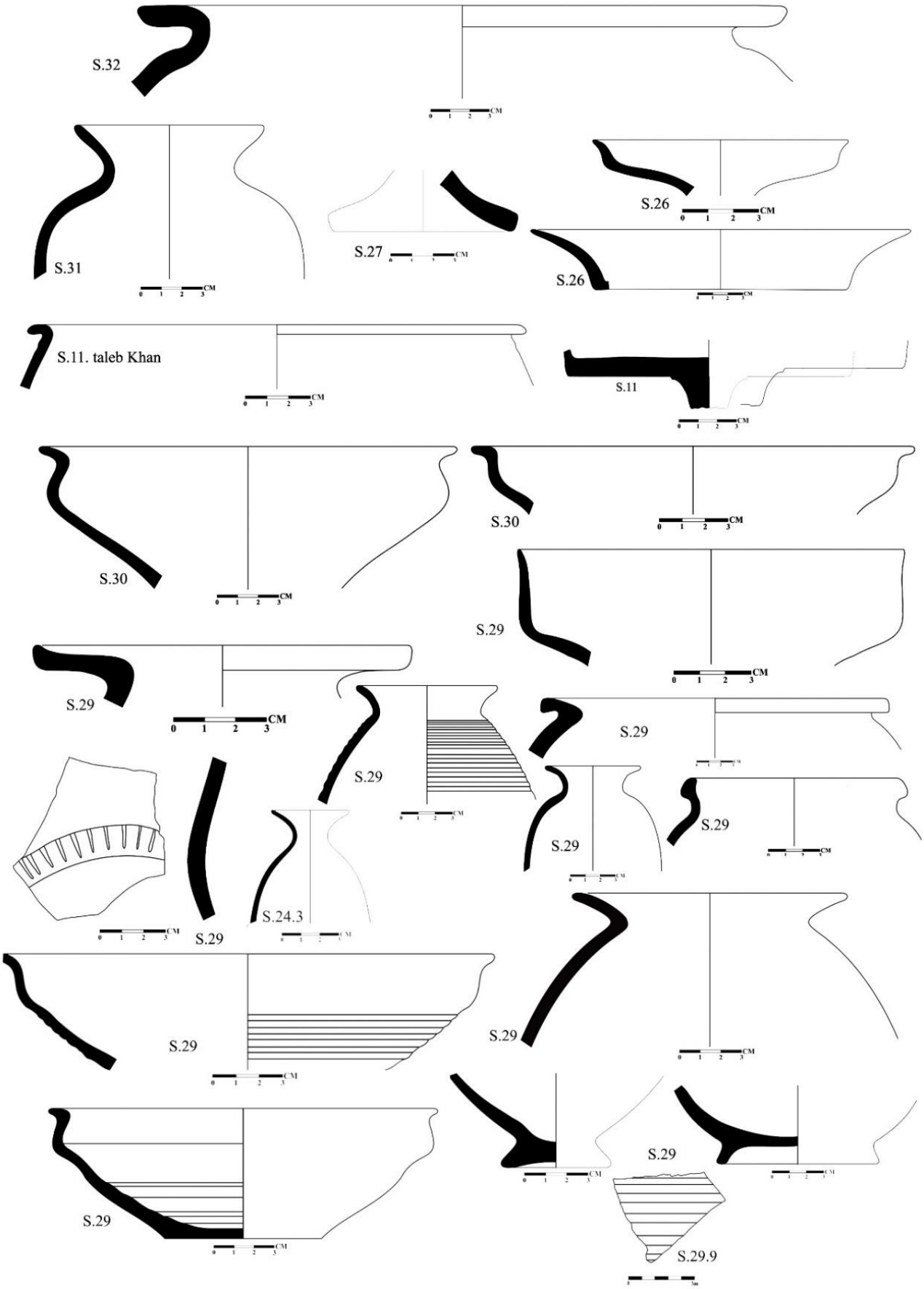


Figure 5b. Pottery design of the GKC (Moradi *et al.*, 2022: Fig.11).

It can be considered that the development of GKC in the eastern half of Iran has been carried out by human groups related to this culture pursuing their prior commercial and economic goals in the Sistan region and especially in the Rud-i Biaban basin.

Previously, many studies have documented the presence of immigrant human groups of this culture in southeastern Iran. In Shahdad (Ascalone, 2015: 99-100), (Hiebert and Lamberg-Karlovsky 1992: 1), Nisa in Bam Cemetery in Bam area (Tahmasebi Zaveh and Irvani Ghadim, 2016) in Kerman, Khurab (Lamberg-Karlovsky and Schmandt-Besserat, 1977: 126; Sajjadi, 1995: 174, 1374), Tepe Rajab or Cemetery No. 14 (Saeidpour *et al.*, 2022: fig. 6) and Damin (Tosi, 1970: 9-50; Sajjadi, 1995: 173) in the Bampur valley in Baluchestan.

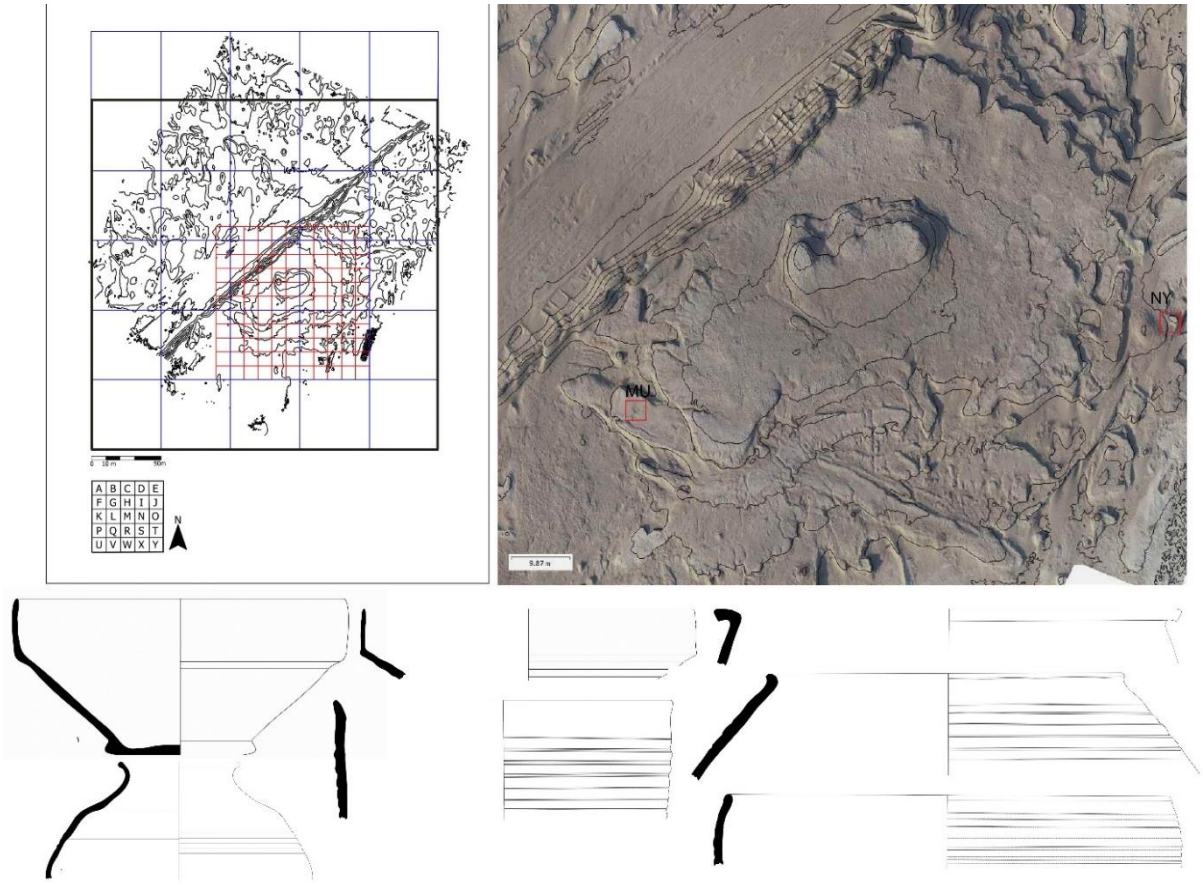


Figure 6. Tepe Girdi, the location of trenches from which the pottery of the GKC has been obtained and the design of pottery (Moradi, 2022c).

VIII. Conclusion

As a result, based on the new data from archaeological excavations in Sistan such as the excavation at Shahr-i Sokhta since 1999 that states that the population declined in Shahr-i Sokhta from 2300 BC onward, and also the pottery findings from Buildings Nos. 20 and 26, an absolute chronology of the layer GKC in Tepe Graziani, different random surveys in this area that show the existence of some GKC or BMAC products in the Sistan region such as the grooved pottery of the Bronze Age, itt can be stated that Sistan played a key role in the formation of GKC by a possible migration in 2400-2300 BC from south to north. On the other hand, after such influence, relying on documents such as miniature columns and stone slabs identified in Sistan, we can talk about the influence of GKC on the Sistan, especially the area of Rud-i Biaban in the later time around 2200 BC or later.

References

Ascalone, E. (2015). Archaeology of ancient Iranian societies in the third millennium BC. (Translated by S.M. Seyyed Sajjadi). Tehran: *The Organization for Researching and Composing University textbooks in the Humanities (SAMT)*, (in Persian).

Biscione, R. (1979). The Burnt Building of Shahr-i Sokhta IV An attempt of functional analysis from the distribution of pottery types*, Iranica*, a curca di G. Gnoli, A. Rossi, Napoli: pp. 291-306.

Biscione, R. and Vahdati, A. A. (2020). The BMAC Presence in Eastern Iran: State of Affairs in December 2018.

Towards the Greater Khorasan Civilization? In: *The World of the Oxus Civilization*, B. Lyonnet and Dubova (eds.), New York: Routledge, pp. 527-550.

Cattani, M., Cerasetti, B., Salvatori, S. and Tosi, M. (2008). The Murghab Delta in Central Asia 1990-2001: The GIS from Research Resource to a Reasoning Tool for the Study of Settlement Change in Long-Term Fluctuations. *The archaeological map of the Murghab Delta III. The Bronze Age and early Iron Age in the Margiana lowlands: facts and methodological proposal for a redefinition of the research strategies*. Salvatori, S. and Tosi, M. (Eds). Oxford. pp. 39-45.

Dales, G. and Falm, L. (1969). On Tracking woolly kullis and the like. *Expedition. Fall*. pp. 15-23.

Francfort, H., P. (1984). The Early Periods at Shortugai (Harappan) and the Western Bactrian Culture of Dashly. In: B. Allchin (ed.), *South Asia Archaeology 1981*, Cambridge, Cambridge University Press, pp. 170-175.

Francfort, H.P. (2005). L`art De La Civilazation DE L`Oxus a l`age du Bronze (1700-2300). *Et ses relations aves les regions voisines*, pp. 102-127.

Helwing., B, M. Vidale and H. Fazeli Nashli, (2019), Radiocarbon dates and absolute chronology, in H. A Kavosh, Massimo Vidale and Hassan Fazeli Nashli (eds), *PREHISTORIC SISTAN 2: Tappeh Graziani, Sistan, Iran*: *stratigraphy, formation processes and chronology of a suburban site of Shahr-i Sokhta*, SERIE ORIENTALE ROMA, 18, NUOVA SERIE, ROMA, ISMEO, 2019.

Hiebert, F. (1994). Origins of the Bronze Age Oasis Civilization in Central Asia. *Peabody Museum of Archaeology and Ethnology*, Harvard University, Cambridge.

Hiebert, F. and Lamberg-Karlovsky, C. C. (1992). Central Asia and the Indo-Iranian borderlands. *Iran*, *30*(1), pp.1-15.

Jarrige. J.-F. A. Didier and Quivron. G. (2011). Shahr -i Sokhta and the Chronology of the Indo-Iranian Regions, *Paléorient*. 37(2) pp. 7-34.

Kavosh, H. A., Shirazi, Z. and Naseri. R. (2020). Archaeological Plant Studies of Tepe Taleb Khan, Sistan, Southeastern Iran (2300-2500 BC). *Archeometry Research. The sixth year*. No.1, P. 137-154, (in Persian).

Kavosh, H.A., Vidale M., and Fazeli Nashli, H. (2019). *PREHISTORIC SISTAN 2: Tappeh Graziani, Sistan, Iran: stratigraphy, formation processes and chronology of a suburban site of Shahr-i Sokht*a, SERIE ORIENTALE, 2019.

Lamberg-Karlovsky, C.C. (2013). The Oxus Civilization. *Cupauam*. Vol, 39, pp. 21-63.

Lamberg-Karlovsky, C.C. and Besserat, D.S., (1977). An Evaluation of the Bampur, Khurab, and Chah Hosseini Collections in the Peabody Museum and Relations with Tepe Yahya. *Mountains and lowlands*, pp.113-134.

Luneau, E. (2010). L'Âge du Bronze Final en Asie Centrale (1750-1450/1500 Avanrt N.E.): La fin de la Civilisation de L`Oxus. *These de Doctorat Presentee et Soutenue Publiquement* le 27 Novemebre 2010. Universite Paris- Sorbonne.

Masson, V. (1988). Altyn-depe. Translated by Henry N.M: Chal. *The university museum*. University of Pennsylvania Philadelphia.

Moradi, H. (2022a). Workshop No. 20: A Public House at Shahr-i Sokhta, *Excavation and Researches at Shahr-i Sokhta 3*, E. Ascalone and S.M Seyyed Sajjadi(eds), Pishin Pajouh, Tehran, Iran. pp. 107-142.

Moradi, H. (2022b). The Development and Expansion of Shahr-i Sokhta during Period IV, *Excavation and Researches at Shahr-i Sokhta 2*, E. Ascalone and S.M. Seyyed Sajjadi (eds), Pishin Pajouh, Tehran, Iran. pp. 339-368.

Moradi, H. (2022c). Tepe Girdi No.273: Savage excavation in Dashtak Zabol gas transmission line in Sistan and Baluchestan province, *Cultural Heritage Research Institute, Archive of the Archaeological Research Institute*. 2022, (in Persian).

Moradi, H., Sarhaddi Dadian H., Saadatian, M., Marashi M.J. and Keikha M. (2022). Archaeological Survey on the East and Southeast Areas of Shahr-i Sokhta: Some Evidence for Making Chronology during the Third and Early Second Millennium BC, *Excavation and Researches at Shahr-i Sokhta 3*, E. Ascalone and S.M. Seyyed Sajjadi (eds), Pishin Pajouh, Tehran, Iran. pp. 233-266.

Posshel, L. Shinde, V. and Ameri, M. (2004). The Ahar-Banas complex and the BMAC. *Man & Environment XXIX*. pp. 18-29.

Saeidpour, Y., Alibeigi, S. and Rahbar, M. (2022), Bampur 14: a late fourth- to early-second millennium BC cemetery in south-eastern Iran, *Antiquity* 2022: pp. 1-10 (Project Gallery)

Salvatori, S. (2008). "Cultural Variability in the Bronze Age Oxus Civilisation and its Relations with the Surrounding Regions of Central Asia and Iran". In The Archaeological Map of the Murghab Delta II. The Bronze Age and Early Iron Age in the Margiana Lowlands: Facts and Methodological Proposal for a Redefinition of the Research Strategies, S. Salvatori and M. Tosi (eds). *BAR International Series 1806*. Oxford: Archaeopress, pp. 75-98.

Salvatori, S. (2016). Bactria-Margiana Archaeological complex: how terminology hides historical processes. Transactions of Margiana Archaeological Expedition. *To the memory of Professor Victor Sarianid*i. Ed Dubova. Moscow, 2016. Vol, 6. pp. 449-460.

Salvatori, S. (2010). Thinking Around Grave 3245 in the "Royal Graveyard" of Gonur (Murghab Delta, Turkmenistan). *On the Track of Uncovering a Civilisation. A volume in honor of the 80th anniversary of Victor Sarianidi,* 2010.

Salvatori, S. and Tosi, M. (2005). Shahr-i Sokhta revised the sequence. *South Asian Archaeology 2001*. Jarrige and Lefevre *(eds)*. pp. 281—292.

Sarianidi, V. (1993). Excavations at southern Gonur. *Iran31*. pp. 25-37.

Sarianidi, V. (2002). Margush ancient oriental kingdom in the old delta of the Murghab River. *Ashgabat*.

Sarianidi, V. (2007). Necropolis of Gonur. *Capon*.

Seyyed Sajjadi, S.M. and H. Moradi, (2014). Excavation at buildings nos. 1& 20 at shahr-i sokhta. *International Journal of the Society of Iranian Archaeologists*, vol. 1, no.1. pp.77-90.

Seyyed Sajjadi, S.M. and Moradi, H. (2016). Shahr-i Sokhta 2014-2015 Excavations. The New Results in Areas 1, 20, 26 and 28. *Studi di Aerotopografia Archeologica 9/15*: pp. 149-167.

Tahmasebi Zaveh, H. and Iravani Qadim, F. (2016). Interpretation of the Similarities between BMAC and Shahr-i Sokhta. Specialized quarterly. *journals of restoration knowledge and cultural heritage*. Spring and Summer No.7, 2016. pp. 19-33, (in Persian).

Tosi, M. (1970). A Tomb from Damin and the problem of the Bampur sequence in the Third Millennium BC. *East & West*. Vol, 20. No1-2. pp. 9-50.

Udemuradov, B. (2002). Ceramic material from Gonur-depe Necropolis. In the Margiana Gonur-depe Necropolis *(10 years of excavations by Ligabue study and research centre)*, Rossi-osmida (ed). pp. 133-143.

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BIZDAN POTTERY: NEW EVIDENCE FROM THE NEOLITHIC PERIOD AT FORG, SOUTHEAST FARS, IRAN

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Abstract: In the Fars cultural Zone settlements of the Neolithic period emerged from the middle of the eighth millennium BC. In the early seventh millennium BC, societies in this cultural zone, like other societies in Southwest Asia, achieved the technology of pottery production. According to the results of excavations and surveys that have been obtained from the Neolithic Sites of Fars, from the second half of the seventh millennium BC, different pottery styles have emerged in this region. In the northern half of this area, Mushki and Jari pottery styles were common, in the southern part, three distinct pottery styles were obtained: Qasr Ahmad pottery in the Kavar region, Jalyan type in Fasa, and Bizdan pottery in Darab. Understanding the characteristics of the Neolithic period was one of the main goals of the author's archeological survey in Forg Plain, which was conducted in 2019. In this article, based on the surface cultural materials obtained from this region, an attempt is made to study the cultural characteristics of the Neolithic period in southern Iran. The most important questions are: What is the oldest evidence of settlement in Forg? and the common pottery style in this area is influenced by which culture zone? According to the survey, Neolithic painted pottery was obtained from the surface of the two sites, which shows that this plain was under the influence and spread of Bizdan pottery in the Neolithic period. The existence of fertile lands and rivers in Forg can be considered as one of the most important reasons for the attraction of human societies in the Neolithic period.

Keywords: Fars Cultural Zone, Neolithic period, Bizdan pottery, stone tools.

چکیده: در حوزه فرهنگی فارس از حدود اواسط هزاره هشتم پیش از میلاد، شاهد استقرارهای دوره نوسنگی هستیم و در اوایل هزاره هفتم قبل از میلاد جوامع این حوزه فرهنگی، به مانند سایر جوامع جنوب غرب آسیا به تکنولوژی ساخت سفال دست پیدا می‌کنند. با توجه به نتایج کاوش‌ها و بررسی‌هایی که تا کنون از محوطه‌های نوسنگی فارس به دست آمده، از نیمه دوم هزاره هفتم پ.م شاهد شکل‌گیری فرهنگ‌های سفالی مختلفی در این حوزه فرهنگی هستیم. در نیمه شمالی این حوزه، فرهنگ‌های سفالی موشکی و جری، در منطقه کوار سفال‌های نوع قصراحمد، در فسا سفال نوع جلیان و در داراب سفال نوع بیزدان رایج بوده است. شناخت شاخصه‌های فرهنگ‌های دوره نوسنگی، یکی از اهداف اصلی بررسی باستان‌شناسی نگارنده در فرگ بود که در سال ۲۰۱۹ انجام شد. در این مقاله سعی بر آن است تا بر اساس یافته‌های فرهنگی سطحی به دست آمده از این منطقه به بررسی شاخصه‌های فرهنگی دوره نوسنگی در جنوب ایران پرداخته شود. مهمترین سوالات عبارتند از اینکه قدیمی‌ترین شواهد از یکجانشینی در فرگ مربوط به چه دوره‌ای است؟ و فرهنگ سفالی رایج در این بخش متأثر از کدام فرهنگ سفالی است؟ با توجه به بررسی صورت گرفته از سطح دو محوطه سفال‌های منقوش نوسنگی به دست آمد که نشان می‌دهد که این دشت در دوره نوسنگی تحت نفوذ و گسترش فرهنگ سفالی نوع بیزدان قرار داشته است. وجود زمین‌های حاصلخیز و رودخانه موجود در فرگ را می‌توان از مهمترین دلایل جذب جوامع انسانی در دوره نوسنگی دانست.

واژگان کلیدی: حوزه فرهنگی فارس، دوره نوسنگی، فرهنگ سفالی بیزدان، ابزار سنگی.

I. Introduction

Taking into account the rather long history of the Neolithic period studies in the Fars cultural zone, there remain some substantial unanswered questions. Recent excavations by Azizi Kharanaghi in the two sites of Rahmat Abad (Azizi Kharanaghi *et al*., 2012a; Azizi Kharanaghi and Khanipour, 2014; Azizi Kharanaghi *et al*., 2013; 2014) and Qasr-e Ahmad Kavar (Azizi Kharanaghi *et al*., 2012b) and by Author at Tol-e Sangi in Morghab plain (Khanipour *et al*., 2021a) revealed some evidence from pre-pottery Neolithic and also the early pottery Neolithic in Fars. According to the excavations, it was revealed that at about the middle of the eighth millennium BC, Fars was inhabited by people with agronomical -and more probably with an early herding subsistence economy. For the Fars region, the pre-pottery has been introduced as the Rahmat Abad phase since based on absolute dating data derived from Rahmat Abad, Azizi Kharanaghi proposed date of ca. 7450 to ca.7000 B.C. for the earliest phase of Rahmat Abad Tape (Azizi Kharanaghi and Khanipour, 2014; Azizi Kharanaghi *et al*., 2013; 2014). After that, the early phase of Rahmat Abad data was manipulated to have been as the commencing period of Neolithization in the entire Fars region. Soon after it became a criticism against the previous belief that regarded the Mushki pottery as the oldest in the Kur River Basin of the Fars region. In the excavation of the Tol-e Sangi in the pre-pottery Neolithic layers and without any gap, we see the appearance of pottery along with other cultural materials, the pottery obtained from the Tol-e Sangi is generally plain with organic temper.

A period of about 6350 to 5600 BC in the northern half of Fars is introduced as the Mushki and Jari phases. The chronological relations between the two cultural phases of Mushki and Jari have given rise to many arguments from the 1950s to the recent time (Vanden Berghe, 1953-54; Fukai *et al*., 1973; Sumner, 1977; Maeda, 1986; Alizadeh, 2006; Alizadeh *et al*., 2004; Nishiaki, 2010a, b; Pollock *et al*., 2010; Khanipour *et al*., 2021b). The identified sites are generally small settlements that are less than one hectare in area and are

mostly located in plains or valleys. The number of Neolithic sites in the Fars region considerably increased during the pottery Neolithic period. for this period, we cannot solely rely on Kur River Basin (KRB) and its adjacent regions, but rather on the settlements that are located in other regions of Fars as well (Weeks *et al.*, 2006).

Pottery was discovered in the Kur river basin (Vanden Berghe, 1953-54; Fukai *et al.*, 1973; Sumner, 1972; 1977), Kazerun and Shiraz (Sumner, 1977), Arsanjan (Ikeda, 1979), Mamasani region (Weeks *et al.*, 2006; Weeks, 2013), Qara Aghaj River Basin (Azizi Kharanghi *et al.*, 2012b; Bernbeck *et al.*, 2005) and Fasa and Darab Plains (de Miroschedji, 1973; Khanipour, 2020) show a wide variety of painted pottery, basic similarities in the technical process of production and limitations in the form of pottery. Due to the diversity of pottery styles, Alizadeh has considered the northern part of Fars under the domain of the development of Mushki and Jari cultures, and the southern part of Fars dominated by Qasr-e Ahmad culture (Alizadeh, 2021). The author and Azizi Kharanaghi have considered four distinct pottery cultures for the Fars cultural zone during the Neolithic period (Khanipour and Azizi Kharanaghi in press).

Until now most archaeological studies and research, conducted in the Fars region, have been focused on the KRB and Marvdasht Plain in particular. Regarding the diversity of the Fars region landscapes, composed of various valleys and plains with different environmental characteristics, more comprehensive studies, as well as surveys and excavations in other regions, are required to present a more accurate analysis of the Neolithic period in Fars. The results of the studies conducted in the region demonstrate different Neolithic cultures in the southern Fars. According to these studies, the regions such as Fasa and Darab of the southern Qara Aghaj river basin had a different pottery style from that of northern Fars (Khanipour *et al.*, 2021b). Due to this fact, some regions, such as Darab and Forg plains remain almost unknown. Due to the importance of the area, the author surveyed Darab County in 2019. One of the most important objectives of this survey was the identification of the Neolithic settlements and to describe the cultural features of this period. In this article, according to the surface findings, the settlements of the Neolithic period of Forg are studied. According to the objectives, the most important questions are: What is the oldest evidence of settlement in Forg? and the common pottery style in this area is influenced by which culture zone? In this article, while studying the pottery cultures of the Fars in the Neolithic period, the surface findings of the Neolithic period in the Forg will be introduced.

II. Research Background, Neolithic period in Fars

For the first time, some archaeological evidence from Neolithic settlements in Fars is known from Stein's survey (Stein, 1936: pl.XXIII.93, 95–100). Simultaneously with archaeological excavations in Persepolis, the excavation of Tol-e Bakun can be considered the first excavation of a Neolithic site in Fars. During the excavation of this site, coarse plain potteries related to the last phase of the Neolithic period were obtained (Langsdorff and McCown, 1942: 23). Vanden Berghe excavated several sites in the Marvdasht plain, including Tol-e Mushki and Tol-e Jari, and suggested the first chronological sequence of Fars (1951-s1952). After that, the Japanese team conducted excavations at Tol-e Mushki (Fukai *et al.*, 1973), Tol-e Jari A and B (Egami *et al.*, 1977; Egami, 1967), and Tol-e Bakun B (Egami and Masuda, 1962). Vanden Berghe had no success in correctly distinct the two phases of Tol-e-Mushki and Jari, however, he proposed the Jari phase to have been older (Vanden Berghe, 1951-1952: 212-213; 1953-1954). Through the Japanese excavation in the deeper cultural deposits of Tol-e Jari, many Mushki potteries were discovered (Egami, 1967: 2939) but whether these potteries have been associated with Jari's pottery is not yet clear. The excavators believed that the Mushki pottery style is older than that of the Jari (Fukai *et al.*, 1973: 77). William Sumner based on the surveys on the Kur River Basin started comprehensive studies about the Neolithic period in Fars (Sumner, 1972). Also, he introduced Tol-e Kutahi, Tol-e Morge, and also Sarvestan sites (Sumner, 1972: Pl.III. A-H; N-Q; IV.W; III.V; Sumner, 1977: 295-299). Likewise, Miroschedji had limited surveys in the Fasa and Darab plains and introduced Jalyan and Bizdan pottery styles (de Miroschedji, 1973).

After the revolution in Iran and after years of lack of field activities in the Fars Neolithic period, Alizadeh conducted surveys in the Kur River basin in 1995, which led to the discovery of several Neolithic sites (Alizadeh, 2003). He re-excavated five major prehistoric sites including Tol-e Bakun A, Tol-e Bakun B, Tol-e Jari A, Tol-e Jari B, and Tol-e Mushki (Alizadeh *et al.*, 2004). Other studies include excavations at Tang-e Bolaghi (Tsuneki and Zeidi, 2008; Tsuneki, 2013), Tol-e Bashi (Bernbeck *et al.*, 2004, Pollock *et al.*, 2010), a systematic survey on the Koshk-e Hezar (Alden *et al.*, 2004), Tol-e Nurabad in Mamassani (Potts and Roustaei, 2006), Tape RahmatAbad in Passargade county (Bernbeck *et al.*, 2008; Azizi Kharanaghi and Khanipour, 2014; Azizi Kharanaghi *et al.*, 2012a, 2013 and 2014), Qasr-e Ahmad in Qara Aghaj river basin (Azizi Kharanaghi *et al.*, 2012b), Tape Mianroud (Ebrahimi *et al.*, 2014), Hormangan site (Khanipour, 2018; Khanipour *et al.*, 2018), Tol-e Sangi in Morghab plain (Khanipour *et al.*, 2021a) and Tape Pustchi in Shiraz (Sardari & Arab,

2020). During the Neyriz survey, led by Moradi, pre-pottery Neolithic sites were identified (Nikzad *et al.*, 2018). Also, during the author's survey, several Neolithic sites in Darab (Khanipour, 2020) and one Neolithic site in Tojredi district of Fars province (Khanipour and Molaei Kordshooli, 2021) were identified.

III. Darab County, Forg district

Darab County consists of four districts Markazi, Fasaroud, Rustaq, and Forg. Forg district is a subtropical region and is located in the southeastern of Fars province, with Rustaq district to the north, Larestan to the south, Hormozgan province to the east, and Zarrin Dasht County to the west. Before the author's archeological survey, no archeological activities had been carried out in this area and only a few of its significant historical sites had been registered by the Administration of Cultural Heritage, Tourism, and Handicrafts of Fars Province. Due to the importance of the region in terms of archeology and the completion of the archaeological atlas of the country, Darab County was surveyed by the author in 2019. Due to its extent, a complete survey of this county was not possible in one season, so part of the county was not surveyed, and a small area was surveyed in the Forg district. As a result of the survey in Forg, sites from pre-history to the Islamic era were identified, among which two sites of Neolithic painted pottery of the Bizdan type and two sites of coarse Neolithic pottery were identified. In this article, two sites with Bezdan pottery will be introduced.

IV. Tol-e Fadaei 1

Tol-e Fadaei 1 is located in Forg (Fig. 1) and at a distance of 1600 meters from Doborji city and 1000 meters from Shah Marz village. The site is about 170 cm high and its dimensions are 90 x 70 meters. Of course, it seems that the above site extends to the north, which is unfortunately leveled by farmers, cultural materials can be seen in abundance on the surface of agricultural lands up to a distance of about 50 meters. Due to the distribution of cultural materials, the site probably had an area of about 8,000 square meters, but today about 5000 square meters remain intact. The site leads to agricultural lands with a gentle slope from four sides (Fig. 2 and 3) and on its surface, there is a lot of distribution of cultural materials including pottery, stone vessels, ground stone, and stone tools.

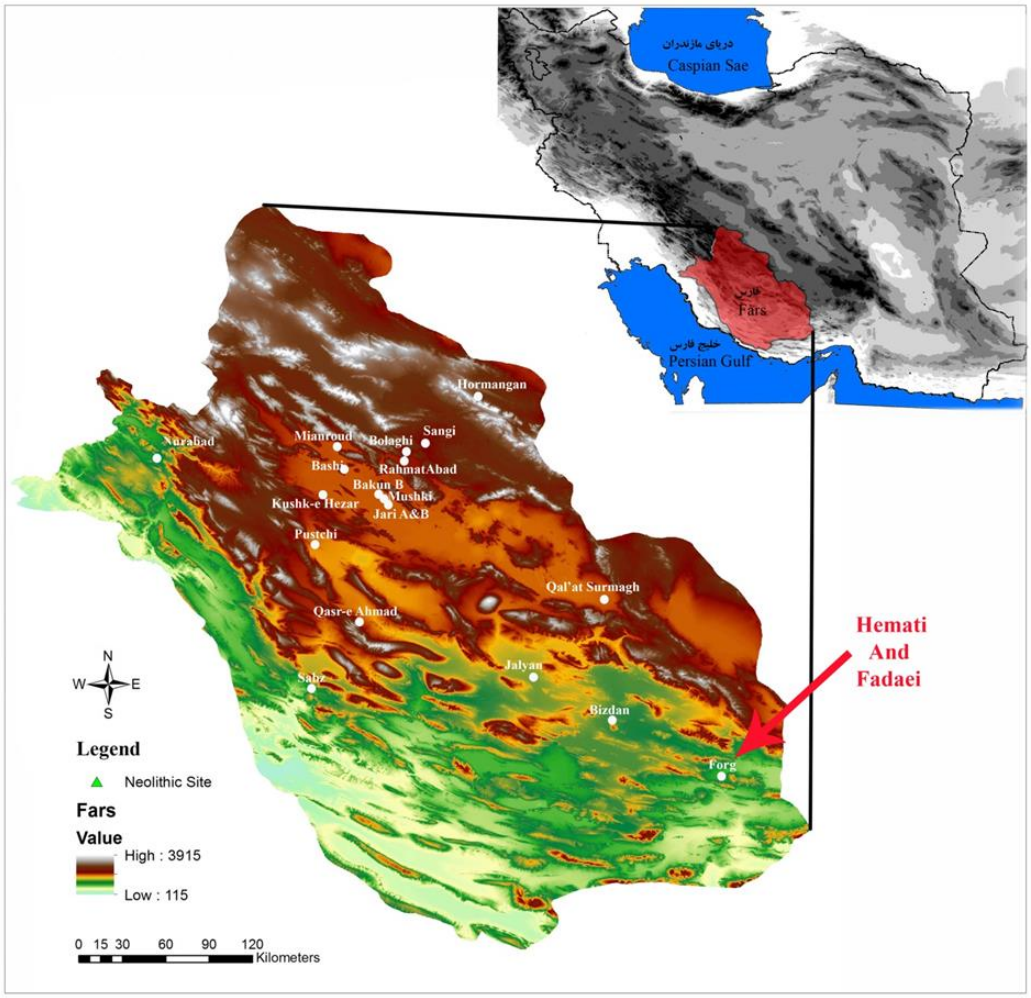

Figure 1. Map of the Neolithic Sites in Fars, showing the location of Tol-e Hemati and Fadaei 1.

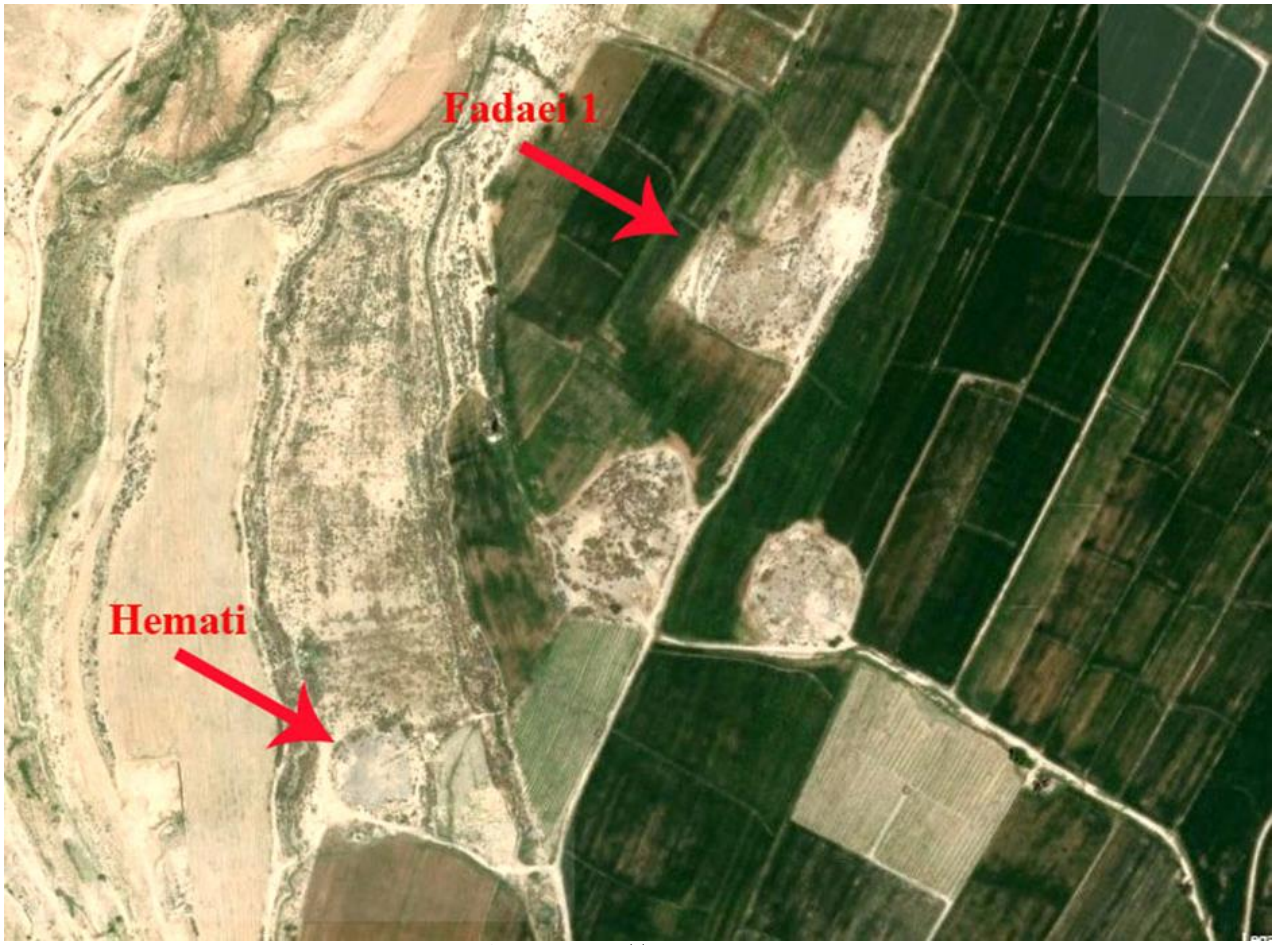

Figure 2. Satellite image, Tol-e Hemati and Fadaei 1.

Figure 3. View of Tol-e Fadaei 1.

VI.1. Pottery of Fadaei 1

During the survey, 24 pieces of pottery were collected from the surface, which is related to two periods. Here, only Neolithic period pottery will be discussed. Six pieces are plain and unpainted, and 1 rim and 9 pieces of body painted related to the Neolithic

period were collected from the surface. The above potteries can be divided into two categories in terms of fabric color: buff and red, although red pottery is rarely seen on the surface. Both types of buff and red pottery can be divided into plain and painted, and in terms of quality, into two groups: medium and coarse pottery. The patterns on all the pottery are of geometric type, which are drawn in black on buff, or red. Patterns usually include lozenges, squares, or zigzag frames that are filled with vertical or diagonal parallel lines. The temper of all potteries is vegetable, although in some samples traces of minerals including fine sand or fine white grains can be seen. The size of the organic tempers also varied, so that on the surface and in the paste of some sherds, especially the coarse samples of depressions that indicate the vegetable temper can be seen.

Although the firing of pottery was sufficient, the non-uniformity of the exterior color of the pottery, such as pottery No. 1, 2, and 3, was an indication of firing in open kilns and the lack of control over the kiln temperature. The outer surface and some inner surfaces of the pottery are well polished. The outer and inner surface of Pottery No. 4 is well polished, but its surface has several vertical and horizontal cracks. Pottery No. 12 is buff-colored, but the inner surface has a thick red slip and is completely polished, and the outer surface has geometric patterns. Pottery No. 7 is the only example of the rim of this collection, which has diagonal lines on its outer surface and a thin horizontal band inside, the inner surface of this pottery is well polished and the inner color in the upper part of the buff and its extension to the bottom is gray. The two pieces of pottery No. 9 and 11, which have a carination form, indicate that in this pottery form, the pattern was probably only drawn on the upper part. The outer surface of pottery No. 13 has a thick buff slip, the surface of which is well polished, and then black patterns are drawn on it, but the inner surface, although polished, has several cracks (Fig. 4). The above pottery is comparable to the pottery introduced as Bizdan type pottery by de Miroschedji from Darab plain (de Miroschedji, 1973: fig. 2, no.1–10).

Figure 4. Neolithic pottery from the Tol-e Fadaei 1.

IV.2. Stone tools

During the survey seven pieces of stone tools related to the Neolithic period were obtained from the surface, including 3 blades, 4 bladeled, 2 Scraper, 5 Flake, 2 debitage, and 3 blade cores, all of which were made of chert stone and their color was in a range of dark and light browns and gray (Fig. 5). The tools are all made with the technique of blade pressure flaking.

Figure 5. chipped stone artifacts from the Tol-e Fadaei 1.

IV.3. Ground Stone

Groundstone is among the most significant discoveries in prehistoric sites. Despite the importance of these finds in the archeology literature, in Iranian archeology, they are often considered very superficially. Stone tools were utilized parallel with the commencement of agriculture and to prepare food, which makes them an integrated part of prehistoric archeological evidence (Wright, 1994; Hole, 1977). Besides the issue of livelihoods and food production, studying them can provide us with useful information about their special functions, social hierarchies, and women's role in ancient communities (Darabi, 2016: 7). The Ground Stone discovered in Tol-e Fadaei 1 includes hand mill, pounders (Fig. 6), and grindstone, made of limestone which has the minimum of corrosion and erosion when it is used for grinding and preparing plant debris.

There are also signs of red pigment of Ochre on the surface of one of the pounders (Fig. 7), the presence of the pigment of Ochre indicates that here the ground stone probably had multiple functions. Previously, in some sites such as Sarab (McDonald, 1979: 305), Chogha Golan (Conard and Zeidi, 2013: 371), and Hormangan (Khanipour, 2018), the red pigment of Ochre has been seen on the ground stones. According to what has been said, a dual function can be considered for the ground stones from Fadaei 1, including the softening of food and preparation of the color pigment.

Figure 6. Pounder from the Tol-e Fadaei 1.

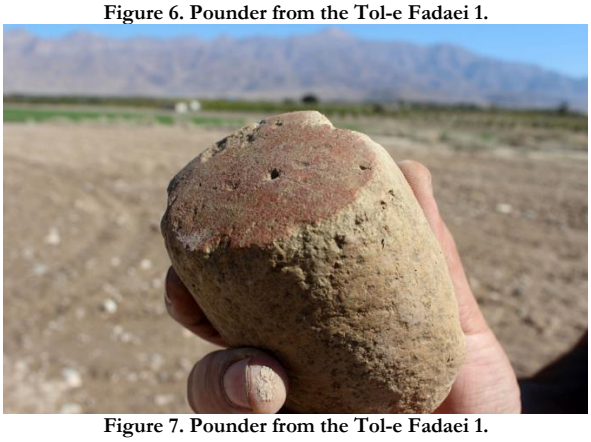

Figure 7. Pounder from the Tol-e Fadaei 1.

V. Tol-e Hemati

Tol-e Hemati is located in Forg (Fig. 1) and at a distance of 1900 meters from Doborji city and 320 meters from Tol-e Fadaei 1. The site is about 250 cm high and its dimensions are 60 × 70 meters. The site probably has an area of about 3500 square meters. On the north and south side of this site, there are agricultural lands and on the west side, there is a riverbed. Unfortunately, on the northeast side of the site, big man-made destruction about 30 meters long and 2 meters deep has been seen, which has destroyed the cultural deposits of this part of the site (Fig. 2 and 8) and on its surface, there is a lot of distribution of cultural materials including pottery, stone object, and stone tools.

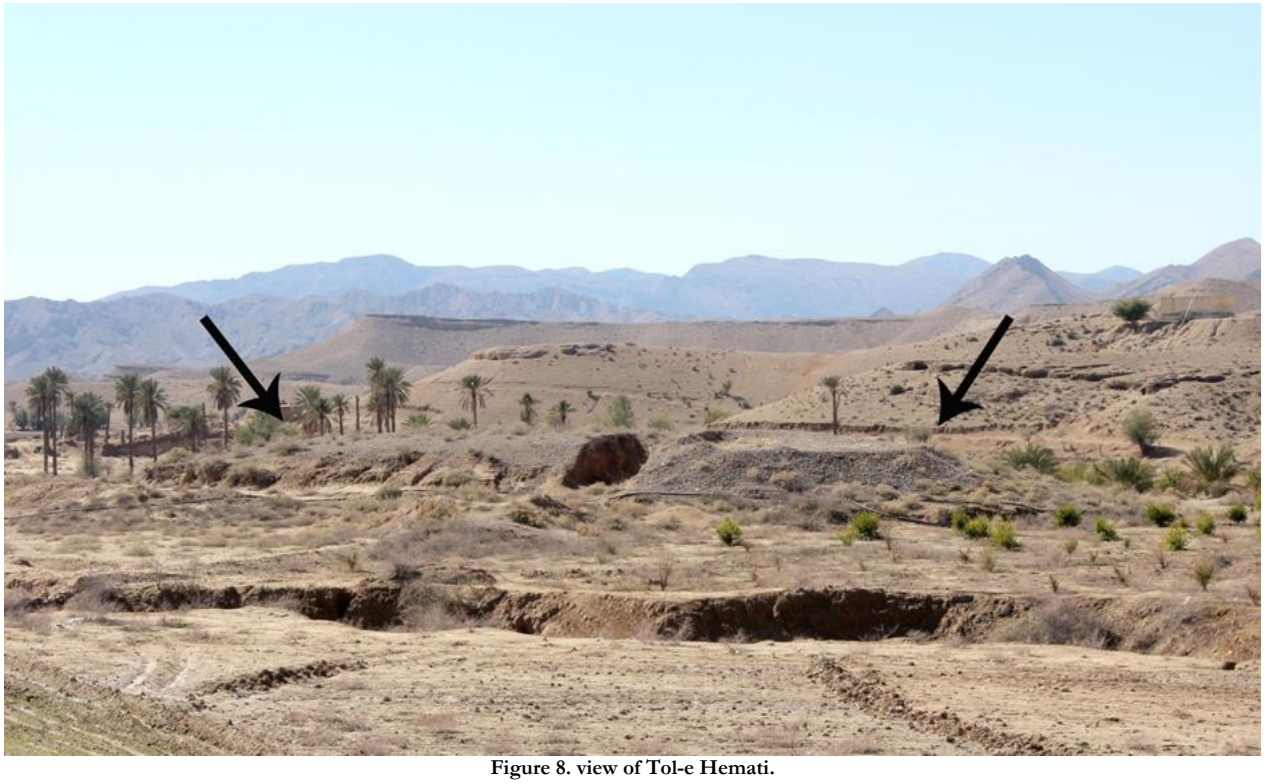

Figure 8. view of Tol-e Hemati.

V.1. Pottery of Tol-e Hemati

During the survey of this site, 16 pieces of pottery were collected, of which 4 pieces are related to the Bakun period and 12 pieces include 6 pieces of the rim, 4 pieces of the body, and 2 pieces of the base are related to the Neolithic period (Fig. 9). The above potteries can be divided into two categories in terms of fabric Color: buff and red, although red pottery is rarely seen on the surface. Both types of buff and red pottery can be divided into plain and painted, and in terms of quality, into two groups: medium and coarse pottery. In terms of characteristics such as manufacture, firing, Fabric color (ext./int./core), temper, finish (ext./int.), exterior coating and treatment, interior coating and treatment, and Decoration of this site is quite similar to the pottery of Fadaei 1. The base of the vessel was not found at Fadaei 1, but two bases obtained from Hemati show that the bases are flat (no. 12) and concave (no. 11). The outer surface of pottery No. 1 is polished and then decorated with geometric patterns, the pattern of which consists of two rows of interconnected horizontal lozenge filled with parallel vertical lines inside them and a zigzag frame which inside this frame is also filled with horizontal parallel lines so that the surface of the sherd is almost completely covered with the patterns. Pottery number eight is red in fabric and on the inner surface, on the outer surface of which there is a thick buff slip, and geometric patterns are drawn on it. Pottery No. 12 also has a buff fabric color, the inner surface of which has a red slip, and the inner surface is well polished, but the outer surface is not polished. The above pottery is comparable to the pottery introduced as Bizdan-type pottery by de Miroschedji from Darab Plain (de Miroschedji, 1973: fig. 2, no.1–10).

Figure 9. Neolithic pottery from the Tol-e Hemati.

V.2. Stone tools

During the surface survey of 24 pieces of stone tools related to the Neolithic period, including 5 blades, 3 bladeled, 1 crested blade, 1 borer, 3 blade core, 1 Flake core, 2 side scraper, 2 end scraper, and 6 Flake, all of which were made of chert and their color was in a range of dark and light browns and cream (Fig. 10). The tools are all made with the technique of blade pressure flaking.

Figure 10. chipped stone from the Tol-e Hemati.

V.3. Stone object

Other surface findings of this site include a stone object with dimensions of 5.8×4.9 cm, in the middle of which there is a depression, which is similar to the excavations of the Hormangan site and Tol-e Mushki (Fig. 11) it was found that the Japanese team referred to this stone object as "rubstone" (Fukai *el al.*, 1973 PL. XXVI).

Figure 11. rubstone from the Tol-e Hemati (a), Hormangan site (b), and Tol-e Mushki (c).

VI. Conclusion

Miroschedji found two types of pottery, different from the Kur River basin, in Darab and Fasa, which he introduced with the Bizdan and Jalyan pottery. Before the author's survey in Darab, our knowledge of the Bizdan pottery style was only the photographs of a few pieces of pottery that were mentioned from two sites in Darab. Unlike Mushki and jari pottery styles, from which various sites have been excavated and a lot of information has been obtained today, the study of Bizdan culture is in its early stages, so in terms of the extent, settlement pattern, absolute dating, and the subsistent, no information is available. During the archeological survey, the author identified two sites with Bizdan pottery in Forg, which shows that this pottery style was used in other plains as well, except in the central plain of Darab. The pottery is all handmade with organic temper, most of which is polished. The designs of all the potteries are of geometric type, which are drawn in black on a buff or red. Patterns usually include lozenges, squares, or zigzag frames that are filled with vertical or diagonal parallel lines. The stone tools obtained from both sites are made by pressure technique and the presence of debitage a blade core and cortical tools indicates the production of stone tools in these sites. Chert has been used to produce stone tools, all of which seem to have used a local stone source. Several ground stones were obtained from the surface of Fadaei 1, a dual function can be considered for the ground stones, including the softening of food and preparation of the color pigment. This article only discussed the expansion of the geographical area of the Bizdan pottery style in the Forg plain. It is necessary to excavate one of the key sites of this period to analyze the economic and social structures of the Neolithic period in Darab and the south of Iran.

References

Alden. J., Abdi, K., Azadi, A., Biglari, F., and Heydari, S. (2004). Kushk-E Hezar: A Mushki/Jari Period Site in the Kur River Basin, Fars, Iran. *Iran* 42: 25- 45.

Alizadeh, A. (2003). Some Observations Based on the Nomadic Character of Fars Prehistoric Cultural Development. In *Yeki ud, Yeki nabud, Essays on The Archaeology Of Iran In Honar Of William M. Sumner*. Miller N. and Abdi K. (Eds.). Cotsen Institute of Archaeology University of California, Los Angeles. Pp. 83-97.

Alizadeh, A. (2006). *The Origins of State Organizations in Prehistoric Highland Fars, Southern Iran, Excavations at Tall-e Bakun*. Oriental Institute Publication, 128. Chicago: Oriental Institute Publications.

Alizadeh, A. (2021). Review and Synthesis of the Neolithic Cultural Development in Fars, Southern Iran. *JNA* 23: 1–27.

Alizadeh, A., Zeidi, M., Askari, A., Niakan, L., and Atabaki, A. (2004). Excavations at Tall-e Bakun A and B, Jari A and B, and Mushki: Reconstruction of the Prehistoric Environments in Marv Dasht. *The Oriental Institute, Annual Report 2003–2004*: 94–106.

Azizi Kharanaghi, H. M., Fazeli Nashli, H. and Nishiaki, Y. (2013). Tepe Rahmat Abad: a Pre-Pottery and Pottery Neolithic Site in Fars Province. In *Neolithisation of Iran –The Formation of New Societies*, Matthews R. and Fazeli Nashli H. (Eds.). Oxford: Oxbow Books. Pp. 108–123.

Azizi Kharanaghi, H. M., Fazeli Nashli, H. and Nishiaki, Y. (2014). The Second Season of Excavations at Tepe Rahmat Abad, Southern Iran: The Absolute and Relative Chronology. *Ancient Near Eastern Studies* 51: 1-32.

Azizi Kharanaghi, M. H., Khaloei, F. and Khanipour, M. (2012b). Excavations at Tape Qasr-e Ahmad, in *Abstracts the*

11th Annual Symposium of Iranian Archaeology, Tehran: ICAR: P. 321.

Azizi Kharanaghi, M. H., Nishiaki, Y. and Khanipour, M. (2012a). Tepe Rahmat Abad, Pasargadae: The Absolute and Relative Chronology. *Iran Nameh* 27: 78-101.

Azizi Kharanghi, M. H. and Khanipour, M. (2014). New Evidence from the Neolithic and Bakun Period Based on the Third Season of Archaeological Excavations at Tape Rahmat Abad, Pasargadae. In *Proceedings of The International Congress of Young Archaeologists*, Azizi Kharanaghi M. H., Khanipour M. and Naseri R. (Eds.). Tehran: University of Tehran Press. Pp. 67-86.

Bernbeck, R., Abdi, K. and Gregg, M. (2005). A Note on the Neolithic of Qara Aghaj Valley, Fars Province. *Archaeological Reports of the Iranian Center for Archaeological Research* 4: 27–36.

Bernbeck, R., Pollock, S. and Fazeli Nashli, H. (2008). Rahmat Abad: dating the Aceramic Neolithic in Fars Province, Iran. *NeoLithic* 1/08: 37–39.

Bernbeck, R., Pollock, S. and Abdi, K. (2004). Reconsidering the Neolithic at Toll-e Bashi (Iran). *Near Eastern Archaeology* 66: 76-78.

Conard N. J. and Zeidi, M. (2013). The Ground Stone Tools from the Aceramic Neolithic Site of Chogha Golan, Ilam Province, Western Iran. In *Stone Tools in Transition: From Hunter-Gatherers to Farming Societies in the Near East*, Borrell, F., Ibanez J. J. and Molist M. (Eds.). Bellaterra (Barcelona): Universitat Autonoma de Barcelona, Servei de Publicacions. Pp. 365-75.

Darabi, H. (2016). Ground Stone Tools and the Issue of Food Production and Preparation at Neolithic Site of East Chia Sabz, Seimarreh Dam. *Pashoheshhaye Bastanshenasi Iran* 10: 7-26.

de Miroschedji, P. (1973). Prospections Archéologiques Dans Les Vallées de Fasa et de Darab. In *Proceedings of the 1st Annual Symposium on Archaeological Research in Iran, 1972*. F. Bagherzadeh (Ed). Tehran: Iranian Center for Archaeological Research. Pp. 1–7.

Ebrahimi, S., Zare, M., Abolahrar, A. and Aminpour, B. (2014). Primary Report of the Three Season Excavation Tol-e Mianrod, in *Proceedings of The International Congress of Young Archaeologists,* Azizi Kharanaghi, M. H., Khanipour M. and Naseri R. (Eds.). Tehran: University of Tehran Press. Pp. 78-98.

Egami, N. (1967). Excavations at Two Prehistoric Sites Tepe Djari A and B in the Marv-Dasht Basin. In *A Survey of Persian Art: from Prehistoric Times to the Present, XIV*, U. Pope (Ed). London: Oxford University Press. Pp. 2936-2939.

Egami, N. and Masuda, S. (1962). *Marv-Dasht I: The Excavation at Tal-i-Bakun 1956, Tokyo University Iraq-Iran Archaeological Expedition Reports*, 2, Institute of Oriental Culture of the University of Tokyo.

Egami, N., Masuda, S. and Gotoh, T. (1977). Tal-i Jarri A: A Preliminary Report of the Excavations in Marv Dasht, 1961 and 1971. *Orient* 8: 1-14.

Fukai S., Horiuchi, K. and Matsutani, T. (1973). *Marv Dasht III: Excavations at Tall-I-Mushki, 1965 (Tokyo University Iraq-Iran Archaeological Expedition Reports 14)*. Tokyo: Institute of Oriental Culture of the University of Tokyo.

Hole, F. (1977). *Studies in the Archaeological History of the Deh Luran Plain: The Excavation of Chogha Sefid*, Memoirs of the Museum of Anthropology 9, Ann Arbor. The University of Michigan Press.

Ikeda, (1979). Preliminary Report of an Archaeological Survey in Arsanjan Area, Fars Province, Iran, 1977 (Tokyo 1979).

Khanipour, M. (2018). *Fars Regional Interaction in the Pottery Neolithic Period Based on Hormangan Site Excavation*. Ph.D. Thesis, University of Tehran.

Khanipour, M., Niknami, K. and Abe, M. (2021b). Challenges of the Fars Neolithic Chronology: An Appraisal. *Radiocarbon* 63 (2): 693–712.

Khanipour, M., Zare Kordshooli F. and Karami, H. (2021a). Archeological Excavations at Tol-e Sangi in Fars Province, Iran. *Persica Antiqua* 1 (1): 97-104.

Khanipour, M., Emadi, H. and Akbari, A. (2018). Hormangan site: New evidence for Neolithic Occupations in the southern Zagros, Iran. *Neo-lithic* 18: 17-23.

Khanipour, M. and Azizi Kharanaghi M. H. (in press). Fars was a multi-cultural zone during the Neolithic period. In Proceedings of the Revisiting the Hilly Flanks conference.

Khanipour, M. (2020). The first season of archaeological survey at Darab county, Fars province. *In Proceedings of the 17th Annual Symposium on the Iranian Archaeology*. Tehran: ICAR.

Khanipour, M. and Molaei Kordshooli, H. (2021). The archaeological survey at Harat Dam. *In Proceedings of the 19th Annual Symposium on the Iranian Archaeology*. Tehran: ICAR.

Langsdorff, A. and McCown, D. E. (1942). *Tall-i-Bakun A: Season of 1932*. Oriental Institute Publications, Vol. 59. Chicago: Chicago University Press.

Mc Donald, M.M.A. (1979). *An examination of mid-Holocene settlement patterns in the Central Zagros region of western Iran*, Ph.D. Dissertation, Department of Anthropology, University of Toronto.

Nikzad, M., Moradi, H. and Emadi, H. (2018). Qal'at Surmagh: A Pre-Pottery Neolithic Site from Neyriz Plain, Eastern Fars, Iran. *Neo-lithic* 18: 12-16.

Nishiaki, Y. (2010a). A Radiocarbon Chronology of the Neolithic Settlement of Tall-i Mushki, Marv Dasht plain, Fars, Iran. *Iran* 48: 1–10.

Nishiaki, Y. (2010b). The Development of Architecture and Pottery at the Neolithic Settlement of Tall-i Jari B, Marv Dasht, Southwest Iran. *AMIT* 42: 113-127.

Pollock, S., Bernbeck, R. and Abdi, K. (2010). *The 2003 Excavations at Tol-e Baši, Iran: Social Life in a Neolithic Village*. Archäologie in Iran Und Turan, 10. Mainz am Rhein: Deutsche Archäologisches Institut, Eurasien Abteilung.

Potts, D. T. and Roustaei K. (2006). *The Mamasani Archaeological Project Stage One: A Report on the First Two Seasons of the ICAR-University of Sydney Expedition to the Mamasani District, Fars Province, Iran*. Tehran: Iranian Centre for Archaeological Research.

Sardari, A. and Arab, H. (2020). Third Season of Archaeological excavation in Pustchi, Shiraz, In *Proceedings of the 17th Annual Symposium on the Iranian Archaeology*. Tehran: ICAR. Pp. 648-655.

Stein, A. (1936). An Archaeological Tour in the Ancient Persis. *Iraq* III: 111-230.

Sumner, W. M. (1972). *Cultural Development in the Kur River Basin, Iran: An Archaeological Analysis of Settlement Patterns*. Ph.D. Thesis, University of Pennsylvania.

Sumner, W. M. (1977). Early Settlements in Fars Province, Iran. In *Mountains and Lowlands: Essays in the*

Archaeology of Greater Mesopotamia, Levine L. D. and Young T. C. (Eds.). Biblioteca Mesopotamica. Pp. 291–305.

Tsuneki, A. (2013). Proto-Neolithic Caves and Neolithisation in the Southern Zagros. In *Neolithisation of Iran –The Formation of New Societies*, Matthews R. and Fazeli Nashli H. (Eds.). Oxford: Oxbow Books. Pp. 84–96.

Tsuneki, A. and Zeidi, M. (2008). *Tang-e Bolaghi. The Iran-Japan Archaeological Project for the Sivand Dam Salvage Area*. Tsukuba: University of Tsukuba.

Vanden Berghe, L. (1951–52). Archaeologische opzoekingen in de Marv Dasht vlakte (Iran). *Jaarbericht Ex Oriente Lux* 12: 211–220.

Vanden Berghe, L. (1953–54). Archaeologische Navorsingen in de Omstreken van Persepolis. *Jaarbericht Ex Oriente Lux* 13: 394–408.

Weeks, L. (2013). The Neolithisation of Fars, Iran. In *Neolithisation of Iran –The Formation of New Societies*, Matthews R. and Fazeli Nashli H. Oxford: Oxbow Books. Pp. 97–107.

Weeks, L., Alizadeh K., Niakan, L., Alamdari, K., Zeidi, M., Khosrozadeh, A. and McCall, B. (2006). The Neolithic Settlement of Highland SW Iran: New Evidence from the Mamasani District. *Iran* 44: 1–32.

Wright K. I. (1994). Ground Stone Tools and Hunter-Gatherer Subsistence in Southwest Asia: Implications for the Transition to Farming, *American Antiquity* 59 (2): 238-263.

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STRUCTURAL AND LABORATORY STUDY OF A FEW GRAY PAINTED POTTERIES FROM SHAHR-I SOKHTA

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Abstract: Shahr-i Sokhta is one of Iran's biggest prehistoric ancient sites, located in the southeast of Iran, near Zabol. Early settlements of the site date to the 4th millennium BC. Archaeological excavations over the past few decades in this area have revealed the existence of four different settlement periods from 3200 BC to 1800 BC, including eleven cultural layers. The continuation of excavations over the decades has led to thousands of valuable ancient finds with fantastic variety. Valuable cultural findings and discoveries from Shahr-i Sokhta caused the registration of the site as a UNESCO World Heritage in 2014, the 17th Iranian historical piece. Historical pottery is the most numerous findings from the site, consisting of three main groups of buff, red, and grey paste wares. Grey wares are one of the most important pottery findings of the site, which itself classifies into two plain and painted subclasses. In this study, three samples of gray painted pottery discovered from the burned city were studied experimentally using various laboratory methods, such as X-ray diffraction (XRD) and X-ray fluorescence (XRF), to identify the structure and mineralogical composition of these valuable pottery samples, to be determined the importance and impact of the elements and compounds that make up the pottery body in metamorphosis and change their color during the firing stage to gray. Structural study and analysis of the chemical composition of gray pottery samples in this study showed that the presence of silicate phases and the use of clay soils with a high percentage of iron oxide, along with the use of reducing atmosphere and high furnace temperature during firing, are the most important factors in durability and creation of gray color in this group of pottery of the Shahr-i Sokhta has been.
Keywords: Shahr-i Sokhta, grey ware, XRD, XRF.

چکیده: محوطه باستانی شهر سوخته یکی از بزرگترین محوطه‌های باستانی دوران آغاز تاریخی ایران است که در جنوب شرق کشور در استان سیستان و بلوچستان و در نزدیکی شهرستان زابل واقع شده است. تاریخ آغاز سکونت در این محوطه باستانی به هزاره چهارم قبل از میلاد بازمی‌گردد. کاوش‌های باستان‌شناختی در طی چند دهه گذشته در این محوطه، حاکی از وجود چهار دوره استقراری مختلف از ۳۲۰۰ ق.م تا ۱۸۰۰ ق.م است که در مجموع شامل یازده لایه فرهنگی است. تداوم کاوش‌های باستان‌شناسی در این محوطه در طول چند دهه، منجر به کشف هزاران یافته ارزشمند باستانی با تنوع فوق‌العاده شده است. کشفیات و یافته‌های ارزشمند فرهنگی که در طول کاوش‌های باستان شناختی شهر سوخته بدست آمده است، موجب شد که در سال ۱۳۹۳ این محوطه باستانی به عنوان هفدهمین اثر تاریخی ایران در فهرست میراث جهانی یونسکو به ثبت برسد. فراوان‌ترین یافته‌های فرهنگی که از این شهر باستانی در طول کاوش‌های باستان‌شناسی بدست آمده، سفالینه‌های تاریخی است که شامل سه گروه اصلی: نخودی، قرمز و خاکستری است. یکی از مهمترین انواع سفال‌های بدست آمده از شهرسوخته، سفالینه‌های خاکستری است که می‌توان آنها را به دو گروه ساده و منقوش طبقه‌بندی نمود. در این پژوهش سه نمونه از ظروف سفالی خاکستری منقوش مکشوفه از شهرسوخته به روش تجربی و با استفاده از روش‌های آزمایشگاهی مختلف، همچون: پراش پرتوی ایکس، فلورسانس اشعه ایکس، مورد بررسی و مطالعه قرار گرفته است تا ضمن شناخت ساختار و ترکیب کانی شناختی این نمونه‌های ارزشمند سفالی، اهمیت و تاثیر عناصر و ترکیبات تشکیل دهنده بدنه سفال در دگرگونی و تغییر رنگ بدنه در طی مرحله پخت به رنگ خاکستری روشن و مشخص گردد. مطالعه ساختاری و آنالیز ترکیب شیمیایی نمونه سفال‌های خاکستری در این پژوهش، نشان داد که وجود فازهای سیلیکاتی و استفاده از خاک‌های رسی با درصد بالایی از اکسید آهن به همراه استفاده توامان از اتمسفر احیاء و دمای بالای کوره در هنگام پخت، مهمترین عوامل موثر در دوام و ایجاد رنگ خاکستری در این گروه از سفال‌های شهر سوخته بوده است.
کلمات کلیدی: شهرسوخته، سفال خاکستری، آنالیز سفال، پراش پرتوی ایکس (XRD)، فلورسانس اشعه ایکس (XRF).

I. Introduction

Shahr-i Sokhta archaeological site, which is one of the largest archaeological sites in the southeastern part of Iran, is located in Sistan and Baluchestan province, near the city of Zabol, which is a large site with an irregular design (Tosi, 1976, 1983). At the end of the Chalcolithic Age, between the years 3200-4000 BC, in this region, thanks to the Helmand River and due to the favorable climatic conditions, the Indo-European people founded a city with an area of about 5 hectares that we know today as Shahr-i Sokhta (Costantini, 1979: 88).

Archaeological excavations over the past few decades in this area showed that the area of this ancient city is 151 hectares (Seyed Sajjadi, 1995: 169) and has four different settlement periods from 3200 BC to 1800 BC. It includes a total of eleven cultural layers (Tosi, 1973: 68-80). Continued archaeological excavations in this archaeological site over several decades have led to the discovery of thousands of valuable archaeological finds of great diversity, which the discovery of large volumes of pottery and stone artifacts and pieces of marble and Lapis lazuli indicate that this ancient city was the center for the construction and distribution of such works. The geographical location of Shahr-i Sokhta on the route of trade and commercial routes (Tosi, 1978: 55), has caused a tremendous impact of this important ancient site on the ancient areas around it.

The commercial and cultural relations of Shahr-i Sokhteh with its neighbors in different areas can be well

observed and studied according to the archaeological artifacts and findings obtained in these areas. These discoveries indicate that Shahr-i Sokhta has connections with its foreign neighbors, in southern Turkmenistan southern Afghanistan, and Pakistan (Biscioneh, 1974: 134). It is also communicating with its internal neighbors, such as Bampur in Baluchistan, the ancient site of Tappe Yahya (Lamberg-Karlovsky and Tosi, 1989: 21), and Shahdad.

Valuable cultural discoveries and findings were obtained during the archaeological excavations of Shahr-i Sokhta. In 2014, this ancient site was registered as the seventeenth historical monument of Iran on the UNESCO World Heritage List. Historical pottery is the most abundant culture found in this ancient city during archaeological excavations, which includes three main groups: buff, red, and grey. One of the most important types of pottery obtained from Shahr-i Sokhta is grey ware, which can be classified into two groups: plain ware and painted ware.

Buff-colored ware and grey ware can be found in all settlement periods of Shahr-i Sokhta, usually in various forms, including cups, bowls, and jars, but redware, to a limited extent, is sometimes found in excavations. (Seyed Sajjadi, 2009: 192)

One of the most important indicators of the Old and Middle Bronze Ages in the plateau of Iran in the field of pottery is the emergence and popularity of grey ware in the historical geography of Iran (Talaei, 2009: 49). Grey ware, based on the historical period, can be classified and divided into two different groups as follows: The first group: is grey ware of the third millennium BC, which is called Yanighi grey ware, and the second group: is grey ware of the first millennium BC, which is known as the grey ware of the Iron Age (Karimi Mansoub and Mohammadifar, 2019: 40).

Shahr-i Sokhta grey wares are a special type of pottery mostly made in bowls, small cups, and horned vessels. The grey wares of this ancient site are sometimes severely burned and blackened. In Shahr-i Sokhta, almost all the grey wares made in the shape of a bowl are painted, while among cups of this group of pottery, there are also unpainted vessels. In the group of grey bowls, usually inside and outside bowls were decorated with beautiful designs (Seyed Sajjadi, 2009: 192). There are various theories about the method of making grey wares and how to process them, which can be mentioned in a general summary of these theories as follows. The reason for the grey color of the body of these wares is their different firing method compared to buff and red wares. In other words, the firing process of these wares is in the atmosphere of reduction condition, which causes the color of the body of this ware to change from light grey to black .

Majidzadeh considers the cause of the greying of these wares as the presence of elements such as oxygen, iron, and carbon in the structure of pottery (Majidzadeh, 1991: 7-9), while the presence of these elements in all pottery is obvious because the source and the raw material for making all pottery is clay, which is rich in these elements. However, Kambakhsh Fard considers the main reason for the greying of the body of these wares to be the firing of pottery in the conditions of reduction (Kambakhsh Fard, 2010: 296).

Other studies on greyware have shown that Bronze Age grey ware is very different from Iron Age specimens. The study of grey ware of these two groups in comparison with each other shows that the greyware of the Iron Age in the first millennium BC in terms of firing was more developed in terms of reduction and had better and more complete firing in the atmosphere of furnace reduction than Bronze Age grey ware in the third millennium BC, which was the first examples and early experiences of potters in achieving this type of pottery (Karimi Mansoub and Mohammadifar, 2019: 41).

II. Materials and methods

In this applied research development, experimental-analytical research methods have been used, and research data collection has been collected using various techniques, such as library study, field study, and laboratory study. In this study, three samples of gray painted pottery discovered from the burnt city (Fig. 1-6), experimentally and using various laboratory methods, such as X-ray diffraction (XRD) and X-ray fluorescence (XRF), were examined and studied to identify the structure and mineralogical composition of these valuable pottery specimens, to be determined of the importance and impact of the elements and compounds that make up the pottery body in metamorphosis and their color changes during the baking stage in the kiln in the conditions of reduction in gray color.

III. Results

The results of examining samples of greyware discovered from Shahr-i Sokhta by various laboratory methods and analyzing the structure and chemical composition of these potteries in various instrumental methods are as follows:

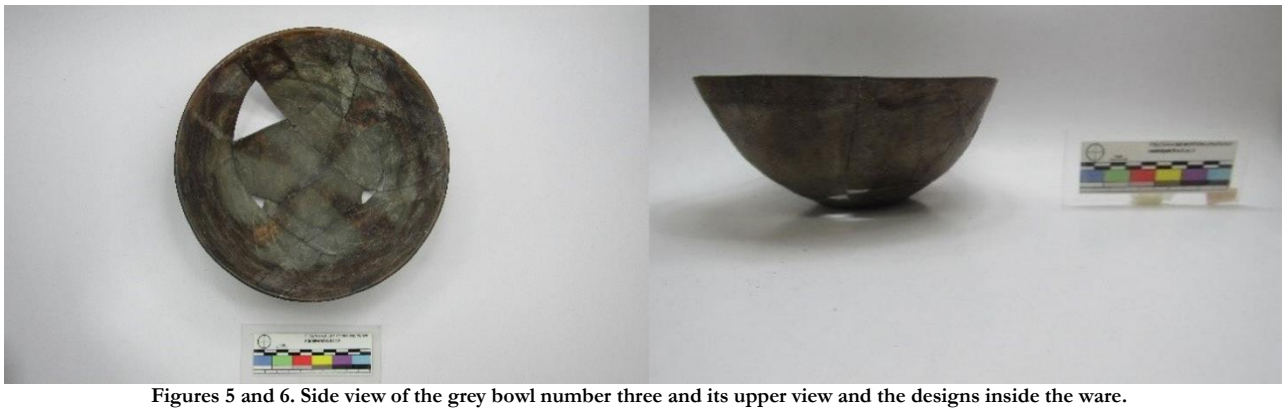
IV. External observations and sampling

The pottery studied in this research included three samples of greyware discovered from Shahre-i Sokhta, two of which were in the shape of a semicircular bowl and one in the shape of a small jar (Fig. 1-6). The motifs of these wares are geometric and symbolic, and their use was probably ritual. The color used to decorate the pottery with the mentioned patterns is dark brown. Due to the discovery of these pottery wares from the area of Shahr-i Sokhta cemetery and their location under the

soil for thousands of years, as well as environmental conditions, burial in the cemetery, the soil pressure resulting from burial, and the presence of soluble salts in the soil of the burial environment, over time and the effect of various environmental damaging factors on these wares, various damages in various forms are observed, including ware fractures, deficiencies, surface paleness of the ware, and salt deposition. In Table 1, the specifications of the pottery wares are written. To study the pottery in the laboratory, very small samples were taken from its different parts to be studied and examined with the help of device analysis methods. To study the structure and mineralogical composition of the pottery body, as well as elemental analysis of the chemical composition of the pottery, a small amount of sampling was selected. The body color of gray pottery number one and number two was slightly lighter, but the third gray pottery was darker. The texture and structure of the body in all three pottery were perfectly cohesive and very hard, and this hardness was slightly higher in the third sample. All three grey ware were made by wheel-making. In the body of all three samples, soft and fine-grained sand was used as a filler or temper, and the thickness of the body in all three pottery samples, especially in bowls number two and three, was very low.

Figure 1 and 2. Greyware number one and details of geometric patterns on the shoulder of the vessel.

Figure 3 and 4. Side view of the grey bowl number two and its upper view and the designs inside the ware.



Figures 5 and 6. Side view of the grey bowl number three and its upper view and the designs inside the ware.

Table 1. Characteristics of the studied grey ware, discovered from Shahr-i Sokhta.

		Grey ware number one	Grey ware number two	Grey ware number three
Ware Code		86 Trench NHF surface (2)	76 Trench 2703(2)	81 Trench 3400(6)
Place of discovery		Shahr-i Sokhta Cemetery	Shahr-i Sokhta Cemetery	Shahr-i Sokhta Cemetery
Year of discovery		2007	1997	2002
Trench number and code		Trench NHF	Trench HRT	Trench NFH
Shape of the dish		Small jar	Bowl	Bowl
Type of ware		Painted grey ware	Painted grey ware	Painted grey ware
Type of motif		Geometric	Geometric and symbolic	Geometric and symbolic
Place of motif		The rim and shoulder of the vessel	Inside and outside the bowl	Inside and outside the bowl
Dimensions of the vessel in millimeters	height	142	90	95
	Rim diameter	101	186	185
	Maximum diameter	165	180	181
	Base diameter	65	64	53
Pottery shaping method		Wheel maker	Wheel maker	Wheel maker

V. Structural study of pottery body by X-ray diffraction (XRD) method

To identify the mineralogical composition and phases in the body of grey wares studied in this research and to analyze their structure, samples taken from the body of each grey ware discovered from Shahr-i Sokhta were tested and analyzed by X-ray diffraction (XRD). In Fig 7-9 and Table 2, the results of the analysis of the pottery body are presented by using this method of instrumental analysis and diffraction spectra of the samples.

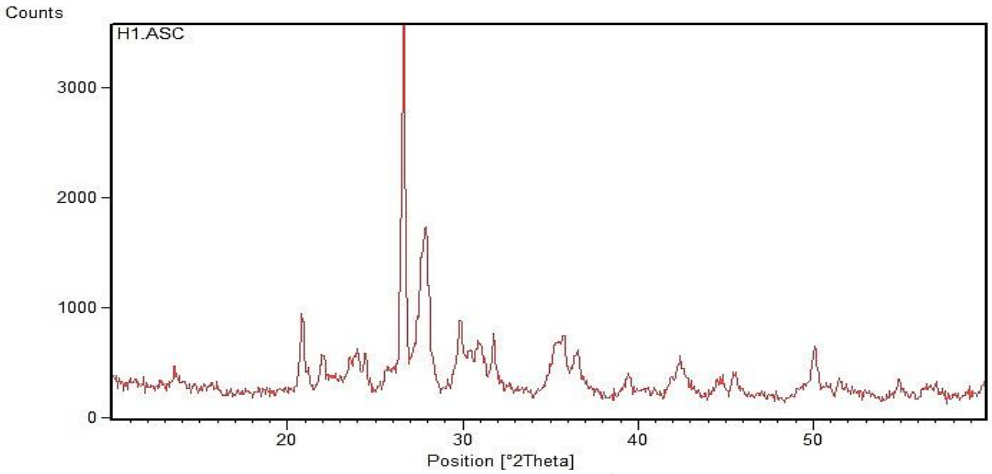


Figure 7. X-ray diffraction spectroscopy (XRD) of grey ware number one.

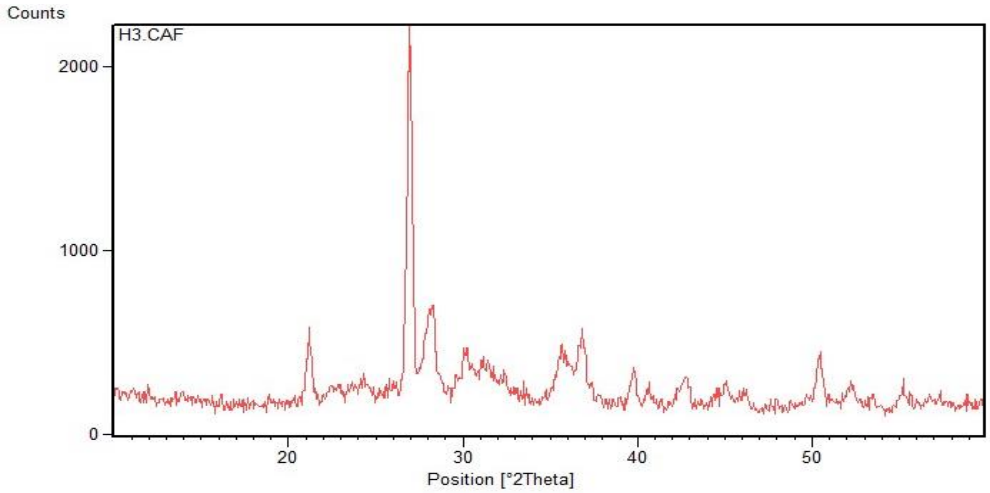


Figure 8. X-ray diffraction spectroscopy (XRD) of grey ware number two.

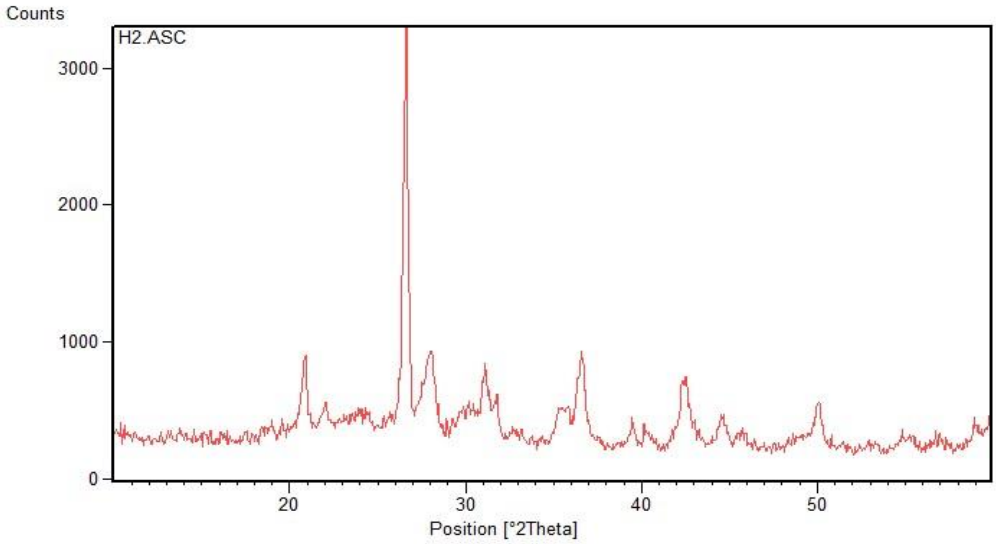


Figure 9. X-ray diffraction spectroscopy (XRD) of grey ware number three.

Table 2- Results of a structural study of grey ware body of Shahr-i Sokhta by X-ray diffraction (XRD) method.

Pottery number	Mineralogical composition and identified phases	Chemical properties of phases
Grey ware number one	Quartz	SiO_2
	Albite	$Na\ Al\ Si_3O_8$
	Anorthite	$CaAl_2\ Si_3O_8$
Grey ware number two	Quartz	SiO_2
	Anorthite	$CaAl_2Si_2O_8$
	Augite	$CaMg(Si_2O_6)$
	Albite	$CaAl_2Si_3O_8$
Grey ware number three	Quartz	SiO_2
	Enstatite	$Mg_2(Si_2O_6)$
	Ferrosilite	$FeSiO_3$

The study of the mineralogical structure of three samples of grey ware discovered from Shahr-i Sokhta by the X-ray diffraction method shows that the body structure of these three types of pottery is very similar to each other such that, in all three samples, according to the results obtained in Table 2, common silicate phases were observed. The most important phases identified in Pottery Number One are Quartz, Albite, and Anorthite, and in Pottery Number Two, the Augite phase has been added to these three previous phases. In pottery number three, in addition to quartz, we encounter phases of Enstatite and Ferrosilite, which also have a silicate structure (Table 2).

VI. Analysis of the chemical composition of pottery body elements by X-ray fluorescence (XRF) method

To identify and analyze the qualitative and quantitative composition of the elements of the body of grey wares discovered in Shahr-i Sokhta, studied in this paper, and to study their chemical composition, by X-ray fluorescence (XRF), samples taken from the body of each grey ware were analyzed. Tables 3 and 4 present the results of the pottery body analysis with this device element analysis method.

Table 3. Results of elemental analysis of the body of grey wares of Shahr-I Sokhta by X-ray fluorescence (XRF) method (wt. % oxides).

wt.%	Grey ware number one	Grey ware number two	Grey ware number three
SiO_2	56/635%	59/539%	60/361%
Al_2O_3	12/34%	12/182%	14/584%
Fe_2O_3	7/259%	7/105%	7/697%
CaO	4/949%	3/022%	5/594%
Na_2O	3/185%	1/972%	2/025%
MgO	3/88%	3/755%	4/441%
K_2O	2/275%	2/562%	2/14%
TiO_2	0/7%	0/722%	0/698%
MnO	0/074%	0/053%	0/107%
P_2O_5	0/102%	0/117%	0/109%

Table 4. Results of elemental analysis of trace elements in the body of grey wares of Shahr-i Sokhta by X-ray fluorescence (XRF) method.

	Grey ware number three		Grey ware number two		Grey ware number one	
Cl	-------	ppm	720	ppm	939	ppm
S	364	ppm	N	ppm	707	ppm
As	9	ppm	17	ppm	8	ppm
Ba	290	ppm	193	ppm	356	ppm
Ce	83	ppm	63	ppm	110	ppm
Co	15	ppm	17	ppm	18	ppm
Cr	95	ppm	110	ppm	153	ppm
Cu	747	ppm	3179	ppm	N	ppm
Nb	N	ppm	N	ppm	N	ppm
Ni	94	ppm	153	ppm	140	ppm
Pb	82	ppm	178	ppm	56	ppm
Rb	84	ppm	88	ppm	75	ppm
Sr	240	ppm	95	ppm	158	ppm
V	76	ppm	72	ppm	78	ppm

The results of elemental analysis of the chemical composition of the body of grey wares tested by X-ray fluorescence (XRF) showed that results of elemental analysis of the chemical composition of the body of grey wares tested by X-ray fluorescence (XRF) showed that the clay soil used to make the body of these gray pottery was of very high quality and the amount of impurity low. As the results of the analysis show, the average amount of aluminum oxide (Al2O3) in the body of all three samples of grey pottery wares is above 12% (Table 3). On the other hand, the presence of a high percentage of silica (SiO2), 56 to 60% in the body of this pottery, has been caused by baking the body of gray pottery in a high-temperature furnace, by sintering and creating a phase Glass, gray pottery body finds great strength, hardness, and durability. The results of qualitative and quantitative analysis of chemical elements in the grey wares of Shahr-i Sokhta indicate that to reduce the firing temperature, calcium oxide, sodium oxide, magnesium oxide, and potassium oxide have been used in the composition of the body of these pottery wares. Calcium oxides with 3 to 5 weight percent and sodium and potassium oxides with 2 to 3 weight percent, respectively, have the highest and lowest levels (Table 3). Calcium oxide, in addition to being present in the pottery body as a flux, in combination with silica oxide in the body of gray pottery, has increased the strength and durability of the pottery body. Also, the presence of about 7% by weight of iron oxide indicates a high percentage of iron cation III in the body of grey ware (Table 3).

The importance of a high percentage of iron cation III in the structure and chemical composition of gray pottery is very important and key due to the important role of this element in the process of darkening and blackening the pottery color during firing in the kiln, which is due to the placement of pottery paste in the reduction in atmospheric conditions as well as the conversion of red iron oxide III (Fe2O3) to black iron oxide II (FeO).

VII. Discussion

Quartz mineral is observed in the structure of all three pottery samples. It is one of the most abundant minerals that can be seen in the texture of historical pottery, which is either in the form of gravel or sand in the soil used to build the pottery body. Its presence in the pottery body may be accidental or intentional and conscious as an additive to improve the composition of the pottery body (Sterba *et al.*, 2009: 1583). Due to the high percentage of silica in the body of all three studied gray pottery, based on the analysis of the chemical composition of their body, it seems that the use of a high percentage of silica in the body of these gray pottery, intentionally and consciously to strengthen and their body has been more durable after firing. On the other hand, the study of the mineralogical composition of three samples of grey wares pottery shows that due to the absence of calcite phase in their structure, the firing temperature of these samples should be more than 800 degrees Celsius. Calcite mineral is very important in the "study" of historical pottery, as it disappears at 800 ° C (Emami and Trettin 2010; Rathossi and Pontikes 2010). Other high-temperature phases in the composition of the body of these pottery wares can be referred to as the anorthite phase, having an index peak of 2θ between 27 to 30 degrees in the graph, which is observed in the diffraction spectrum of samples of grey wares number one and two.

The spectra obtained from diffraction analysis in all samples of grey wares studied from Shahr-i Sokhta indicate the presence of a quartz phase that, according to the quartz phase exchanges at different temperatures, namely alpha quartz and beta quartz, the former is stable below 573° C and the latter between 573° C and 870 ° C. Due to the absence of high-temperature phases of quartz such as tridymite and cristobalite, it can be said that the firing temperature of these samples of grey wares should be 850 degrees Celsius. On the other hand, in the body of pottery, there exist albite and anorthite feldspar minerals. Considering the stability of

the albite phase in the monoclinic system at 980 ° C and also the presence of the enstatite phase that is stable up to 985 ° C, it can be said that the firing temperature of this sample of grey ware is probably about 950 ° C.

Qualitative and quantitative analysis of the composition of the body elements of grey wares by X-ray fluorescence method shows a high percentage of silica and alumina with important flux compounds such as calcium, magnesium, potassium, and sodium oxides in the body composition of three samples of grey wares discovered from Shahr-i Sokhta. However, iron oxide III plays a very key and important role among all the elements identified in the body composition of the studied grey wares. The presence of a high percentage of iron oxide III in the composition of the body of all samples that is above 7%, along with the above-mentioned flux agents, at a temperature above 900 ° C, hard and solid structure in the form of grey wares in the conditions of reducing firing in the kiln, has created. In addition to the grey to black color of the pottery body due to chemical reactions caused by the conversion of red iron oxide at a temperature above 850 ° C to black iron oxide II, the presence of iron causes the durability and strength of such pottery.

VIII. Conclusion

The study of the mineralogical structure and chemical composition of the elements of the body of three samples of gray pottery discovered from Shahr-i Sokhta, by various methods of instrumental analysis based on the use of X-rays, showed that the structure and crystal composition of minerals in all three samples of gray pottery studied in this research is similar to each other and has similar phases. This similarity indicates the use of the same resources and earth mines in supplying the necessary raw materials for constructing this ancient pottery in Shahr-i Sokhta. The most important minerals identified in the gray pottery samples studied in this research are silicate phases that can be justified according to the geological structure of the Sistan Plain and alluvial sediments from water resources in the region. The results of elemental analysis of the chemical composition of the body of grey ware have good coordination and compliance with the results of diffraction analysis and minerals identified in the structure of the pottery, and according to the percentage of different elements in the body of samples, it can be said that the soil used as a raw material for making these gray pottery had very few impurities and had a good quality for preparing the pottery produced in this ancient city. Considering the structural study of the pottery body Sokhta by the X-ray diffraction method and the presence of high-temperature phases in the structure of pottery, such as albite feldspar minerals next to quartz and the absence of calcite phase, it seems that the firing temperature of these samples of grey wares was probably 950 degrees Celsius. Therefore, according to the results of laboratory studies performed on the body of the samples of grey ware discovered from Shahr-i Sokhta, it was clear that firing this pottery at such a high temperature has led to the high strength and durability of the grey ware body that due to the presence of effective flux compounds, such as calcium oxide, sodium oxide, magnesium oxide, and potassium oxide in the structure of the body of grey wares, has been possible. Laboratory studies have also shown that the presence of iron compounds, such as iron oxide III in high amounts (above 7% by weight) in this pottery body during firing in the kiln, has been a key point in their manufacturing and processing techniques. The potters of Shahr-i Sokhta fired this pottery in special pottery kilns with a reduction atmosphere at a temperature above 900 degrees Celsius. During firing, chemical exchanges and reactions under reduction conditions in the kiln were completed by converting red iron oxide III to black iron oxide II, the process of gray and blackening of the paste of this pottery. Although in the process of making gray pottery, such as discovered samples from Shahr-I Sokhta, the atmospheric conditions of the pottery kiln are very important, this study showed that in addition to the reduction conditions during firing in the kiln, the presence of a high percentage of iron compounds in the body of pottery products also seems necessary to make gray pottery. It can be said that in the Bronze Age in Shahr-i Sokhta, due to the existence of large and numerous industrial workshops that were engaged in the production of pottery products, the local potters of Shahr-i Sokhta, based on their experiences over the years, had found out for what purpose to use each of the rich clay mines and deposits in the Sistan Plain to produce what kind of pottery products.

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References

Biscioneh, R. (1974). *Relative chronology and pottery connections between Shahr-I Sokhta and Mondigak, Eastern Iran*, Istituto Italiano di PaleontologiaUmana, VoI. II: 131-145.

Costantini, L. (1979). "Wood remains from Shahr-i-Sokhta: A source of information for the ancient environment and technology in protohistoric Sistan". In: M. Taddei) ed. (*South Asian Archaeology*, 1977: Pp. 87-121.

Emami, M., & Trettin, R. (2010). Mineralogical and Chemical Investigations on the Ceramic Technology in Čoġā Zanbil,) Iran, 1250 B.C., *Periodico di Mineralogia* 81, 3, 359-377.

Kambakhsh Fard, S. (2010). *Pottery art and pottery in Iran from the beginning of the Neolithic to the contemporary era*. Fourth Edition, Tehran, Phoenix (In Persian).

Karimi Mansoub, M. and Mohammadifar, Y. (2019). "Study and reconstruction of grey pottery baking techniques during the third to first millennium BC in the eastern regions of the Central Zagros", *Parseh Archaeological Studies*, 3 (9), 39-58 (In Persian).

Lamberg-Karlovsky, C.C. and Tosi, M. (1989). Several scholars (Alden 1982; Lamberg-Karlovsky. In *South Asian Archaeology 1985: Papers from the Eighth International Conference of South Asian Archaeologists in Western Europe* held at Moesgaard Museum, Denmark, 1-5 July 1985 (Vol. 4, p. 104). Routledge.

Majidzadeh, Y. (1991). Archeology and Pottery, *Archeology and History*, 5 (2), 7-14 (In Persian).

Rathossi, C. and Pontikes, Y., (2010). Effect of firing temperature and atmosphere on ceramics made of NW Peloponnese clay sediments. Part I: Reaction paths, crystalline phases, microstructure, and color. *Journal of the European Ceramic Society*, 30(9), pp.1841-1851.

Seyed Sajjadi, S. M., (1995). Archeology and History of Balochistan (Eight Speeches), Tehran, Cultural Heritage Organization (In Persian).

Seyed Sajjadi, S.M. (2009). *Collection of Articles of Shahr Sokhteh*, Tehran, Cultural Heritage, Handicrafts and Tourism Organization (In Persian).

Sterba, Johannes H., Hans Mommsen, Georg Steinhauser & Max Bichler. (2009). The Influence of Different Tempers on the Composition of Pottery, *Journal of Archaeological Science* 36, 1582–1589.

Talaei, H. (2009). *Bronze Age in Iran*, third edition, Tehran, Samt (In Persian).

Tosi, M., (1973). The Cultural Sequence of Shahr I Sokhta. *Bull. Asia Instit. Pahlavi Univ*., 3: 64-80.

Tosi, M. (1976). A topographical and stratigraphical periplus of Sahr-e Suxteh, *Proceedings of the IVth Annual Symposium on Archaeological Research in Iran*, pp. 130-158.

Tosi, M. (1978). The development of urban societies in Turan and the Mesopotamian trade with the East: the evidence from Shahr-Sokhta, *Mesopotamien und seine nachbarn: politische und kulturelle wechselbeziehungen im alten vorderasien vom 4. bis 1. Jahrta usend v. Chr.*, Bd 1, pp. 57-77.

Tosi, M. (Ed.). (1983). *Prehistoric Sistan*. Its. Italiano per il Medio ed Estremo Oriente.

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ANTHROPOLOGICAL STUDY OF FOLK MUSIC IN QESHM ISLANDS, IRAN

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Abstract: Qeshm folk music is associated with different traditions, customs, rituals, and ceremonies delivering different manifestations. This music, as a collection of meaningful sounds and melodies rooted in the culture of the native people of this region, represents the culture of the people of the Persian Gulf. The variety of forms of these sounds and melodies over the years as cultural and ritual symbols have caused the differentiation of ethnic groups in different regions. The research method in this article is ethnographic. Applying this method through participatory observation and field studies, we studied the anthropology of Qeshm music. Our research outcomes indicate that folk music, plays, sounds, and songs of the natives living in the Persian Gulf and Qeshm region are mixed with the ordinary mood of the people. Natives of Qeshm Island have their own instruments to play their specific music. Qeshm folk music alone can introduce the special cultural features of this island that are effective in introducing and attracting tourism to this region.
Keywords: rites, Qeshm, culture, ethnography, folk music.

چکیده: سرزمین ایران یکی از متنوع‌ترین اجتماعات فرهنگی، قومی را در خویش جای داده است. این اجتماع متنوع فرهنگی، در عین حال با رشته‌های نامرئی خصوصیات جمعی ایرانیان، به یکدیگر متصل شده‌اند. از مهمترین عوامل پیوند این حوزه‌های متنوع، وجوه مشترک عناصر تشکیل دهنده فرهنگ و نیز باورهای مشترک قومی و اعتقادات آیینی است. موسیقی از مهمترین این عناصر است. فرهنگ موسیقی با سنت‌ها، آداب و رسوم،آئین و مناسک مختلف پیوند یافته و در هر منطقه فرهنگی در ایران، جلوه و نمود متفاوتی یافته است. موسیقی می‌تواند به عنوان آوا و نواهای معناداری که ریشه‌ای عمیق در فرهنگ مردم دارد تعریف شود. موسیقی در کنار آیین‌ها، اسطوره‌ها، باورهای مردمی و عناصر فرهنگی متنوع باعث مانایی سرزمین‌ها می‌شود. موسیقی توسط انسان سازماندهی شده و دارای ابزار فیزیکی و ویژگی‌های فیزیولوژیکی، روانشناختی، اجتماعی و فرهنگی آن مردم است. آواها و نواها در طی گذر سالیان با عنوان نمادی فرهنگی و آیینی باعث تمایز مناطق مختلف از یکدیگر شده‌اند. مردم ساکن جزیره قشم برای خود ابزار و وسایلی دارند که با آن‌ها موسیقی‌های خاص خود را به اجرا می‌گذارند. موسیقی بومی قشم توانایی معرفی این جزیره را با ویژگی‌های فرهنگی خاص خود داراست. موسیقی این منطقه با توجه به ویژگی‌های خود، بازتاب فرهنگ مردمان قشم است. موسیقی بومی، نمایش‌ها، آواها و آوازها از جمله هنرهایی است که در میان مردم ساکن خلیج فارس و قشم با خلق و خوی مردم عجین شده است. در این نوشتار با روش مردم نگاری به بررسی و معرفی این مقوله درجزیره قشم پرداخته‌ایم.
کلمات کلیدی: آواها، قشم، موسیقی بومی، نمایش، فرهنگ، مردم‌نگاری.

I. Introduction

Iran has one of the most varied ethnic-cultural communities within its population. This diverse cultural community is the product of intertwined invisible strands of Iranian collective characteristics. One of the most important factors linking together these various anthropological areas is the commonalities of the cultural elements, as well as the common ethnic beliefs and rituals.

Music, along with various rituals, myths, popular beliefs, and cultural elements, contributes to the stability of cultures. It is organized by human beings and conveys the physiological, psychological, social, and cultural characteristics of those people.

Local music is deeply concomitant with rituals among Iranian ethnic groups. Studying Iranian ethnography, we face a significant diversity in music, both quantitatively and qualitatively. Music and instruments that express ethnic characteristics also reflect the cultural characteristics of Iran. Iran, with its ancient history and vastness, has accommodated different ethnic groups such as Lors and Kurds, Baluchis, Gilanis, etc. The cultural characteristics and, in particular, the music of these ethnic groups exhibit reciprocal influences, comparable in some respects. Although the cultural characteristics and especially the music of these ethnic groups are similar in some ways and display mutual influences, each one has its own specific characteristics. Undoubtedly, the diversity of local music in Iran and its multiplicity is consistent with the cultural characteristics of these regions (Masoudieh, 2012: 19). The cultural characteristics of each region are also effective in preserving or contrasting the disappearance of musical features of a region. Therefore, music is one of the effective factors in recognizing the ethnic culture and also tracing the social and cultural changes of a region. On the other hand, in the cultural atmosphere of neighboring nations, music is a means of reclaiming the common roots of demographic changes and economic and cultural exchanges. Explaining and examining the reasons for these changes along with the study of cultural and geographical factors in the emergence of music and its persistence and expansion in a cultural and geographical area are the important issues in understanding the populaces of a region. Today, a large part of Iranian music includes many folk melodies that have been introduced to this system through local music. Furthermore, at a glance, one can

understand the breadth and beauty of local music. All cultures have local music that reflects the mentality of the people and belongs to all individual and social aspects of their lives. One of the characteristics of folk music is its simplicity and unpretentiousness. In Iranian folk music, the role of early art, beliefs, feelings, and generally past life can be reconfigured.

The main component of local music is folk songs. Many of these songs highlight familiar local myths and legends. The music of the southern regions of Iran, from the distant past to the present, is inspired by the nature and warm weather of these regions, which are full of passion and warmth. This type of music is common in the southern states of Iran. In this type of music, which has a happy rhythm, in Bushehr and Khuzestan provinces, it is mostly used by flutes called Ney Hambo, and in Hormozgan province, it is used mostly by Lute and to some extent by Ney Hambo.

What seems to be most important in the study of southern music, especially Hormozgan is the demographic composition of this region. In addition to the locals living in the area, there were other tribes, including very old African immigrants, who influenced the quality and style of music in these areas.

Qeshm is the largest island in Iran and the Persian Gulf, located in the Strait of Hormuz. People living on Qeshm Island have their music with a special place in their culture. Plays, songs, and chants are among the arts mixed with the mood of the people of this region. The local music of Qeshm Island, despite its beauty and potential, remains unknown. In this article, based on the ethnographic method, we try to introduce the native music of Qeshm Island (Fig. 1).

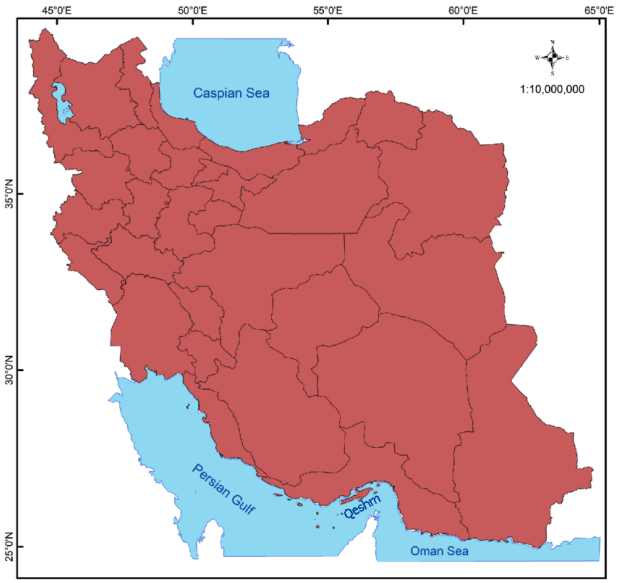

Figure 1. Qeshm Island

II. Research method

The research design covers almost all aspects of research, from the most detailed data collection to the selection of data analysis techniques (Uwe, 2018, 150).

The method of this research is grounded on consistent field studies. Field study is a type of research strategy that allows scientists to study the cultural, social, and biological characteristics of a given community. The researcher, as a person individually involved in the life of the study community, by participatory observation, collects data and gains insight and a close look at the investigated community through first-hand involvement with the subjects. The participatory observation method is the main basis of field study (Murchison, 2010: 117). Malinowski's famous statement expresses the fact that participatory observation is a crucial process for any effective fieldwork (Creswell, 2015 :92).

III. Background to the research

The written history of Iranian music is a quick look at music on the Iranian plateau and neighboring areas with a common cultural history. Iranian music can be historically divided into two periods: ancient and Islamic periods, each period, according to the requirements of that time, endured different conditions and has always been on the ups and downs. However, music is always a cultural component that introduces the culture of a country or ethnicity to others in any situation. We do not know much about the music of the Persian Gulf. Therefore, we cannot talk in detail about its quality and quantity. Little attention is paid to music in these areas. Among the urban and rural classes, musical performances are limited to individual presentations.

It is publicly used, mostly prepared for weddings, circumcision, special rituals, feasts, and requiems (Ahmadi Rishhari, 2003: 4). Southern Iranian music and songs are motivated by a special passion. The remaining couplets and folk songs of these regions evoke the songs of antiquity, which express the thoughts of the spiritual and moral characteristics and the feelings and emotions of its poets and singers (Afshar Sistani, 1999: 326). It is not known exactly when these instruments were used in these areas, but these musical instruments likely reached these areas from Mesopotamia. In their music, the Babylonian people had various musical instruments such as metal Flute, Harp, black Reed, Drum, Trumpet, and Daf (Durant, 1964: 381). As a result, it can be seen that the use of these instruments among the people of southern Iran has a long history, and their use has been passed down from generation to generation for many years, but no research that deals directly with Qeshm music is available. However, in limited research, exploring special rituals such as exorcism and

the role of music in it have been mentioned as periphery subjects. Researchers in the field of music, exploring different regions of Iran, mention the Iranian musical styles and how it is taught, focusing on an encyclopedic view of music. This research is one of the first anthropological researches that describes the role of music in the culture of the local people of the Persian Gulf and Qeshm regions.

IV. Musical instruments on Qeshm Island

Any instrument that produces sound defined in a musical range is a musical instrument. By the same token, the word instrument, which specifically means tool, applies to musical instruments. A musical instrument is essentially a source of sound production used to produce a musical sound. The production of sound depends on the cultural norms of each nation and each culture. Cultural norms have their definitions in each period of history and in each nation (Hajjarian, 2008: 329). In fact, the production of the sound of an instrument is formed in an intertwined set of cultural characteristics, especially in connection with the language and dialect of each region.

The musical instrument in any culture is one of the main factors and characteristics of that culture. In any society, musical instruments interact with the cultural set. The sound of each instrument in each culture has its aesthetics. This aesthetic is extremely effective even in shaping the structure, appearance, and morphology of the instrument. Instruments have been created according to the desires of musical culture in history and naturally formed to meet the needs of the distinguished musical culture (Eftekhari and Darvish, 2004: 93). In a broad spectrum, it can be said that instruments in the evolution of human life have always been formed in harmony with the characteristics of the life of each nation, tribe or group, and humans community, and they are established on the necessities of their communities and naturally reflect the path of evolution. Carefully in the construction and history of each instrument, we find that each was a symbol of a specific work or a specific message. Simple tools used to make the original instruments and primitive songs of various peoples, such as sirens made of horns or oysters, a bow that may have been a hunting bow one day, threshing rhythms, reaping, and songs, each played on a special occasion, so all are evidence for our claim (Saremi and Emami, 1994: 7). The study of Qeshm Island folk music shows that its music and instruments have been able to convey the deepest cultural values and ideas of Qeshm Island. By identifying the instruments, we can understand the importance of the musical heritage of this region, the beliefs, and the way of ordinary life among the native community on Qeshm Island. In this region, music is closely related to ceremonies and rituals, such as Nowruz, fishing, requiems, and exorcism.

Many academics believe that instrumental music originated from rituals, as some ceremonies and rituals require a device that could produce special sounds. This is why we accept the fact that the musical and vocal styles of each nation are different. Based on this argument, in addition to their important role in the study of ethnic musicology, instruments depict the movement of primitive human societies as well as the spread and interplay of different human cultures. On the other hand, the appearance and morphology of the instruments, which indicate the cultural roots and origins of the instruments, are of special importance. In this way, musical instruments, in addition to their harmonious sounds and melodies, display special functions establishing various research processes in historiography, archaeology, semiotics, and especially anthropology. In some classifications, instruments are divided into two categories: the first group of instruments that determine the rhythm, such as drums with different sizes and shapes, and the second category includes instruments that play the melody, such as various types of stringed instruments, flute, and metallophone (Masoudieh, 2010: 229).

Another classification based on the assessment of the communal value of instruments remains stable among Iranian folk music to this day. This division is grounded on the ritual and religious value of musical instruments among Iranian ethnic groups. Next, we exemplify some of the ways instrument classification based on religious values influences Iranian folk music. For example, 1) The sacredness of the tambourine instrument among the people of Ahle Haq in Kermanshah, 2) the distinctive ritual features of the Daf instrument distinguish it from other instruments among the Qaderi clans of Kurdistan, 3) the Tanbire Noban instrument played in Khuzestan during rituals, 4) the importance of Sench and Dammam compared to other instruments in Bushehr region attending the religious ceremony of Ashura, and 5) five-string Rabab and in general "Rabab" Ahle Tariqat clans in Chishti and Naqshbandi clans in Balochistan. Musical styles and musical instruments can be classified according to their functional role relevant to religious symbols and metaphysical beliefs common in distinctive cultures. Every indigenous culture has succeeded in such a traditional classification gradually. The large military drums of the Ashura ceremony are also present in the Armed Forces Band. Some musical instruments also find a special social character, such as in-court instruments that show a prominent social identity of the instrument. In different cultures, the functions of instruments, in addition to the musical application, usually have a special meaning. Therefore, the study of instruments naturally comes arm in arm with

ethnomusicology with respect to the symbolism of instruments. In ancient cultures, instruments represented the presence of complex technological advances of that culture. Due to the role and importance of music in the physical and spiritual life of human beings, these cultures expended extraordinary energy on making instruments that are valuable in other artistic fields besides music (Darvish, 2001, 187). Due to the important place of music in the life of the native people of Qeshm, it is necessary to know the local music and instruments of that region.

V. Traditional musical instruments on Qeshm Island

V.1. Sema

Sema is a kind of Daf, and its percussion surface is made of tanned goat skin attached to a circular wooden frame. This wooden frame changes the rhythm while playing Sema. There are at least three Daf players in a local musical band. Sama is used in rituals, ceremonies, and exorcism. In an exorcism ceremony, one to five and sometimes more of these instruments are used (Afshar Sistani, 1999: 332) (Fig. 2).

Figure 2. Sema (Archive of Anthropological Research Center).

V.1.a. Dohol

Dohol is a percussion instrument, the main body is made of the mango tree stump, Tamarisk, or Cedrus. The original type of Dohol was brought from Africa, but later in Iran, it was modified and prepared from mango, Tamarisk, and Cedar stumps. On one side is the tanned skin of a goat and on the other side is the tanned skin of a cow. The side that is beaten with a wooden stick is made of cow skin, and the other side that is beaten with hand blows is made of goat skin.

The tool for beating is a piece of palm wood. Usually, in a musician group, a large Dohol, two medium sizes, and a small one are used together (Falsafi Mayab, 2000: 415). Dohol is usually accompanied by Kaser and Pipa, which group of percussion instruments usually follow the big Dohol providing a polyrhythmic composition. The mainstream rhythm in this accompaniment is played by Dohol, and performing music begins after initiating the sound of the Jofti instrument (Afshar Sistani, 1999: 332) (Fig. 3).

Figure 3. Dohol (Archive of Anthropological Research Center).

V.1.b. Types of Dohols

1. Marsar or Gap Dohol is a two-sided skin percussion, slightly bigger than Dohol, which is a common instrument in the southern regions of Iran. This drum is played with a wooden stick on one side and by hand on the other and is usually accompanied by a Sorna and preserves the rhythm base (*ibid*) (Fig 4).

2. Medium-sized drum, which in the local dialect is called Sayer Dohol.

3. Small-sized drum, which is called Kaser Dohol in the local dialect of Gisher (Field Observation, Salimi, 2015).

Figure 4. Gap Dohol (Archive of Anthropological Research Center).

V.1.c. Joorah

It is a kind of drum, smaller than Marsav (Gap Dohol), accompanying other instruments and Marsar. It is used only in joyful ceremonies (Afshar Sistani, 1999: 332).

V.1.d. Tonbak

This instrument, accompanied by Sorna, is a complement to Joorah, and its structure is similar to traditional Tonbak, which is prepared a little rougher. Therefore, the set of instruments (Sorna), Gab Dohol, Joorah, and Tonbak form a group that always plays together at weddings (Filsafi Falsafi Mayab, 2000, 416).

V.1.e. Kaser

This instrument, which also means a small or deducted short instrument of Dohol, is similar to Dohol with two sides covered with skin, which is usually played on one side by both hands. The task of the Kaser player is to create rhythmic variations and break the rhythms of Dohol and Pipa. This is the order in which these instruments are performed in a group: Firstly, the Jofti instrument determines the rhythm and speed of the song, then enters the Dohol, then the Pipa drum comes in, and finally, the Kaser drum follows the band (Afshar Sistani, 1999: 332).

V.1.f. Pipa

This instrument is similar to the Dolol with two sides covered with skin, one side of which is usually played with a wooden stick. The sound of the Pipa is in the boundary between the big drum and the Kaser, and with the accompaniment of other drums in the band, the rhythm of the Maqam is regulated harmonically. The pipe conducts the rhythm beat by beat. Seemingly, it is thought that Pipa later joined Dohol and Kaser (Falsafi Mayab, 2000: 415).

V.1.g. Tus

It is a kind of Cymbal but smaller in size, which is made of brass metal with a diameter of 20 cm, a sound is heard when two brass plates collide with each other, and it is usually beaten once when the singer passes the verse (Field Observation, Salimi, 2015) (Fig. 5).

Figure 5. Tus and Jofti (Archive of Anthropological Research Center).

V.1.h. Jofti

It is a pair of reeds with a narrow mouth producing musical sounds that can be heard blowing on it. The basic type of Jofti is called "Kalam" and has been used previously as a simple single reed, and apparently, this instrument has been doubled in Hormozgan. It is called Duzele in Kurdish-speaking regions. This musical instrument is never used in ceremonies related to mourning (Afshar Sistani, 1999: 332). In a piece of local music, firstly, the Jofti is played, then the Dohol comes in, and after Dohol, Pipa, and Kaser are played, respectively. In fact, the last three instruments complete the rhythm of the music, and at the end of the verses, the Cymbal is played once (Fig. 5).

V.1.i. Haftband

A piece of Reed is designed in seven connected frames making seven straps at their joints. It is less than half a meter long and sometimes up to 70 cm long and is played by three fingers of the right hand and four fingers of the left hand. Today, this reed has lost its social function and place among other instruments. Haftband or Neylabk was sometimes played by artist musicians with friends for fun or in funeral ceremonies to accompany mourners by playing relevant melodies. Haftband convoy more the sad feelings.

V.1. j. Sorna

Sorena, which is more common in all parts of Iran than similar examples, is in the category of wind instruments that are played with drums regularly. Sorna construction is ancient, and its sound echoes ancient times. In the poems of Iranian poets, the name Sorna or Sornay is mentioned many times. Sorna and Dohol are mostly played during celebrations, and it is also used in mourning ceremonies. Sometimes this instrument was used in Taziyeh (Afshar Sistani, 1999: 332; Sharifi and Hossein Hashemi, 2015: 111) (Fig. 6).

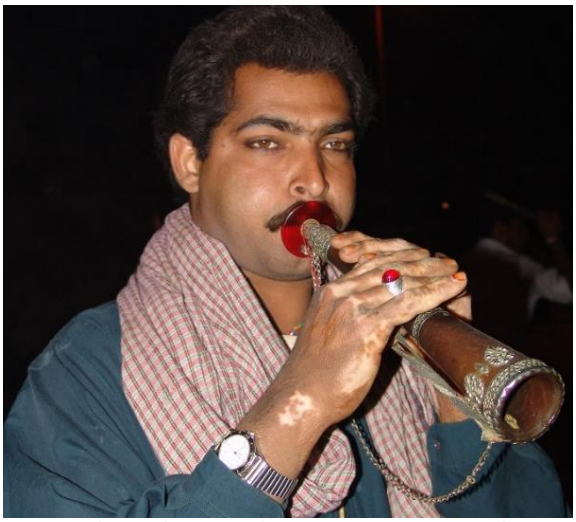

Figure 6. Sorna (Archive of Anthropological Research Center).

V.1.k. Ney Hambo

This musical instrument consists of an en bloc tanned sheepskin and two 20 cm long reeds attached to the end of the skin. At the mouth of each reed, a wooden whistle called a Piko is installed, which vibrates when the puffed air comes out and produces sound. It has a hole in the upper part from where the puffed air enters into the en bloc skin of the instrument by the musician. The musician puts the fingers of both hands on the holes of the reed, and by pressing the inflated skin on his chest, the air escapes from the part of the handle where the reeds are installed. The musician performs the desired song by moving his fingers on the reed holes (Hassani, 2003: 618).

Ney Hambo is played during Celebrations and ceremonies such as weddings, circumcisions, national and religious holidays, cultural and artistic ceremonies, and recreational activities (*ibid*., 619).

This instrument is also known as the "black reed" among the Turks. Turks call it Ghara Ney. The original name of the instrument, however, is taken from Anban which is a Persian word. The difference that can be mentioned in comparison of Ney Hambo with the double reed or Jofti is that it has an attached musk. Ney Hambo has an ancient history and is linked to the Babylonian civilization and most likely originated from the land of Mesopotamia and then spread to the southern regions of Iran (Ahmadi Rishhari, 2003: 155).

Examples of folk music that are mostly Maghami or local songs played by double reed and Ney Hambo players are as follows: 1- Robabe: While playing, the singer recites, "Robabe Robabe, Robabe, I am dying for you Robabe, oh my dear Robabe," the listeners clap and sing with him, and the other one bangs the drum providing the proper rhythm (*ibid*). 2- Bandari: Singer recites "Sahele Darya", which means the sea shore. 3- Banoo Banoo: The original lyric can be translated to "O lady my lady sit down please on my Knee". 4- Special songs performed in harmony with dancers carrying wooden sticks, played together at weddings. 5- Ahay Abooza: "O Aboozar, kill me from afar, until the flowers bloom, I won't be a groom."

Sorrowful songs called Sherve are also sung with and without reeds in mourning ceremonies and during some evening gatherings. Sherveh is sung to perform a local song called Dashti. To perform it, Fayez and Maftoon's poems and Baba Taher couplets are played. Usually, a Sherve performance begins with a prologue whose lyrics are by Rumi and the lyrics of most of the other songs are from Fayez and Maftoon. The reed that is played with Sherve has six holes (Shams al-Dini, 1991: 263) (Table 1).

Table 1. Sample of Poetry from Sherveh

«به گلشن تا زگل نام و نشانست
حدیث بلبل و گل در میانست
جهان تا هست ذکر شعر فایز
میان دوستان این داستانست
اگر صد تیر ناز از دلبر آید
مکن باور که آه از دل برآید
پس از صد سال بعد از فوت فایز
هنوز آواز دلبر دلبر آید.»

V.1. l. Ney Hambo and Mokhtak

Made from tanned sheepskin, it has a reed at the top of the skin that is called Fikak, which has four holes. When air fills in the en bloc skin and moves out, Fikak vibrates and produces a sound that is loud and joyful. Tonbak is also played with Ney Hambo, and sometimes, a little Daf called Dayre follows the rhythm. It is accompanied by a pair of reads called Bili bun, each with six holes. This music is performed at weddings, birthdays, circumcision ceremonies, and celebrations for those who are returning from military service. Dancing and playing with wooden sticks also follow the music played by this affecting instrument (Mansourizadeh, 2001: 256).

V.1. m. Tambooreh

A stringed instrument, the strings of which are made of deer intestine, the wooden trunk of which is made of Tamarisk, and is played with gentle strokes using a small piece of metal called a Zakhme, which means wound. The tambourine is one of the most important musical instruments played only by Mama Zar or Baba Zar during an exorcism. Zar music is a common type of music therapy performed during an exorcism in the Persian Gulf and Qeshm, which is played by a collection of instruments such as a tambourine, a big drum, and a smaller drum called Liwa (Falsafi Mayab, 2000: 416) (Fig. 7). Azwa music is played at weddings, circumcision ceremonies, and natural and religious holidays. This musical composition is accompanied by large, small, and medium drums. Currently, Jofti is also used in celebrations.

Figure 7. Tambooreh (Archive of Anthropological Research Center).

VI. Types of local music used in Qeshm Island

1- Bandari music: Beach music played by reciting some couplets and songs with affecting rhythms common among locals living in the coastal areas of the Persian Gulf.

2- Azwa Music: This type of music is a legacy of the surviving African immigrants, which has been mixed with Arabic themes and African musical instruments and has taken on an Islamic-Iranian native color (Table 2).

3- Liwa music: It is one of the primitive instruments belonging to blacks, among the percussion instruments. Liwa's music presentation has a sad melody. Even today, the sailors' chants on the boats are sung with the same rhythm (*ibid.*,414).

In Azwa music, which is the traditional music of the region under study, four types of local music were identified, such as 1- Harbi, 2- Hejazi, 3- Liwa, and 4- Mowloudi (*ibid.*, 417).

In Harbi music, which is battle music, only one person dances in front of a bass drum while other dancers in the group move their sticks in rhythmic movements up and down and to the right or left (*ibid.*, 419). In Liwa music, which is performed at the end of a joyful ceremony, almost all the men bend and stand with the band in rhythmic movements and continue singing. In the surveyed areas, women dance and sing using tambourines in separate women's gatherings. Today, in urban and rural areas, despite the convenience of using cassette tapes and tape recorders, people tend to use tambourines in their celebrations.

Table 2. Sample of Poetry from Azwa

نحن مسلمانون تابع الدين نبی
تابع مذهب، امام شافعی
مکه رویم، به خدا خدا
زیارت کنیم قبر مصطفی
اول کلامی صلات النبی
اُذکُر محمد
ابو عم علی

During those special two-day celebrations at the wedding ceremony intended to visit the groom's house, the women escort the groom's family to the chamber by playing the tambourine. Along the way, they also sing couplets called Basnak/Wasnak, which praise and describe the bride and groom (*ibid*). In this ceremony, a woman sings on the seventh day of the wedding until the day the bride goes to her husband's house, which is called the Song of the Road.

The songs performed on the way are sung by women in groups of three or four, sung by one group, and other groups recite and answer them until they reach the house of the mother-in-law. At present, Basnaks and Road songs are left only in the minds of the elderly, and the bride or groom goes to the husband's house following the crowds clapping and applauding while listening to the recorded songs (*ibid.*, 420).

VII. Local musical forms

VII. 1. Sobalo

One of the most common forms of folk music in the southern regions is called Sabalo, which is a song said to be performed by singers sitting in a circle. The singers shook their shoulders to the right and left in harmony with the music while performing the Sobalo. This type of music has probably been influenced by Arabic and African music (Masoudieh, 1977: 15) (Fig. 8a & 8b).

Figure 8a. Sobalo (Archive of Anthropological Research Center).

Figure 8b. Sobalo (Archive of Anthropological Research Center).

VII.2. Yazleh

Another common type of music in these areas is a type of music known as Yazleh. Yazleh is a type of band music performed by novice and non-professional singers that is accompanied only by clapping. In

performing Yazleh, playing the melody and rhythm are more important than forms of other cases, and the text of the poem is not given much importance (Masoudieh, 2010: 16).

VII.3. Sherveh

Sherveh is also one of the well-known forms of music in southern parts of Iran. Sherveh, which is known as Dashti or Dastestani song, is a mournful song that is sung presenting the Dashti theme. The poems used in Sherveh are usually couplets selected from works composed by Southern poets. Apart from its unhappy songs, Sherveh's beauty refers to the emotional theme of the couplets. It is sometimes used in poetry and prose to mean singing, and sometimes it is interpreted as equal to the word foot, and any slow voice with different pronunciations such as Sherafang, Sherfeh and Sherfak, Sherafalang, Sherafak, and Sherafang (Moin, 1992: 2041; Amid, 1984: 793).

In some cases, in addition to its meaning that it equals footsteps, it is only used to mean the sound of yelling. In Safwa al-Safa book written by Ibn Bazzaz, the word Sherveh equals glory and honour. During the Sassanid era, Sherveh was called "Cherveh" and "Cherook" and played in Dashi themes (Ibn Bazzaz, 1997: 34). However, the Sherveh, which is often sung more with a deep-toned voice, has a long history. The original homeland of Sherveh is considered to be the Dashti, Dashtestani, and Tangestan regions of Iran. In these areas, it was sometimes called Hajiani Sherveh or Shanbeyi (Masoudieh, 1977: 17).

VII. 4. Dance

In our study, dance is art always accompanied by music. In this regard, all types of collective dances common among the locals originate from and are linked to local music. The names of the collective dances in the studied areas are known by the type of their local music and location, which includes Azva dance, Razifi, Shabouri, Lafti, and Fijiri. When dancing, dancers use different tools such as palm wood, sword, and hookah wood, according to their interests. (*Ibid*). The type of dance performed at weddings and celebrations is called Azwa. Usually, a 14-member dance performer will accompany the musical band to parties. In a musical band, about three drummers (alternately six people), a cymbalist, and a singer who sings couplets called Shaleh work together. After the band has performed the rhythm of the music, the exclusively male dance troupe, will face each other in two rows of seven members while holding a sword or wooden stick in their hands. They hold each other's belts in a circular motion, tapping their feet on the ground as they play the drums.

Then the singer sings a stanza of a couplet and a group of dancers on one side repeat the song while their bodies bent forward, and the other group of dancers stand up, and after the end of the first stanza, they exchange their position, bending their bodies forward, and recite with the singer.

They stomp, shaking their shoulders, harmoniously dancing around the musical band. In some cases, during the dance, the standing group leans back to the second standing group while slowly moving the wooden sticks up and down (*ibid.*, 418).

VII. 5. Shah Vazir Dance

In Shahbazi dance, two dancers dance amid the crowd, sitting in a circle and clapping their hands with the song of the tambourine and the drum. Dancers carry swords and try to carry out a combat performance (*ibid*).

VII.6. Stick dance

In stick dance, sometimes two people start dancing while each holding a wooden stick, and in an instant, one of them tries to aim at the opponent's foot with his stick. The other person also holds his stick vertically in front of his foot to target the opponent's stick. The other person also holds his stick vertically in front of his foot so that the opponent's stick does not hit him (Hassani, 2003: 621) (Fig. 9).

Figure 9. Stick dance (Archive of Anthropological Research Center).

VII.7. Dastmal Bazi Dance

The Dastmal Bazi (handkerchief play) dance is performed at the wedding ceremony together with the relevant local music. In every play, each person takes two handkerchiefs and raises one of the opposite arms and legs in a group at the same time and coordinates with the Ney Hambo and Dohol performance.

VII.8. Bandari Dance

Bandar (beach) dance, sometimes referred to as black dance, is performed mostly by men and sometimes by women. The dancer shakes his hips and shoulders in harmony with the sound of the fast rhythm of played music. This dance is performed in ceremonies such as weddings and circumcision (*ibid.*, 622) (Fig. 10).

VII.9. Collective dance

It is a group dance in which people hold each other's hands and dance in rows, and sometimes they sing together while tapping one foot on the ground (Mansourizadeh, 2001: 258).

VII.10. Drama

At weddings, comic shows for laughter are held by those who have blackened themselves and used sticks

instead of hands, dressed in long clothes, and put a pot instead of a hat and dance (ibid).

Figure 10. Wedding ceremony, Qeshm (Photog by Shahin Borhan Zehi).

VII.11. Taziyeh

Recitation of Taziyeh is dedicated to the month of Muharram and Safar and mourning for the martyrdom of the family of the Prophet. Shabih is also one of the ceremonies of Muharram, which is performed by the locals. The ritual is a play inspired by the Ashura event and based on the rich roots of Iranian and Islamic culture that emerged during the evolution of Imam Hussein's mourning rituals.

VIII. The influence of African music on the music of the southern regions of Iran

The ancient trade routes between the southern regions of Iran and Zanzibar in Africa and the voyages between the two destinies, in addition to the delivery of commercial goods to the shores of Hormozgan, African sailors brought in some elements, especially African music, of the East African culture to southern Iran. Much of this cultural movement was carried out by people of African descent, who were brought to the southern region in various forms and remained there. Many of these people were brought by Iranian and Omani merchants to work in various ports and services as free and semi-free human beings and sometimes as enslaved people. The other part was used by Portuguese, British, and Dutch forces to work on their ships or in ports for public services. However, when the colonial forces were forced to leave the area, many of these Africans were forced to stay and live with the indigenous people of the region. After many years, this population of African descent has become part of the population of southern regions of Iran (Afshar Sistani, 1999: 327). The richness of the culture of the southern regions of Iran, especially its music sector, is due to the active presence of this group.

Qeshm music plays an important role in forming the region's rituals, which are influenced by the cultures of neighboring and African regions.

IX. Nowruz fishing ritual

Every year in July, an ancient festival is held among the coastal residents of southern Iran. All the fishers of this region gather in the Salkh village on Qeshm Island and stop all kinds of fishing on this day. The sea, which provides them with all their sustenance takes rest for a day, as the coastal inhabitants' thanksgiving for this great divine blessing. On this day, in addition to the Thanksgiving ceremony, the fishers also celebrate, dance, swim, and play other sports collectively on the beach. The people of Qeshm believe that fishing Nowruz is the birthday of fish and the fertility of the sea, so no lunches or boats go to the sea, and if it does, it is not for hunting. They go to the sea without nets and hooks (Field Observation, Salimi, 2015) (Fig. 11).

Figure 11. Nowruz fishing ceremony, Qeshm 2018 (Photo by Jila Moshiri).

X. Zar therapy (Exorcism)

In African and Middle Eastern cultures, the term Zar represents demons and evil spirits who possess a person from time to time. These wandering demons enter the bodies of people, especially women, and cause various diseases and ailments. Zar ceremonies come to Iran from Africa and are held with special music in which the effects of African music can be seen. However, the form of performing this ceremony in Iran has found many differences compared to the methods of exorcism ceremonies in North Africa (Field Observation, Salimi, 2015) (Fig. 12).

Figure 12. Zar therapy (exorcism), Qeshm (Internet source).

XI. Tourism and Music

Music-based tourism is a combination of two fascinating hobbies that have many fans around the world. Today, most developed countries have made a deep connection between tourism and music. Iran's ethnic diversity has the potential to develop local music festivals, including Qeshm music, along with the music of Bushehr and Khuzestan, which can play an effective role in attracting tourists to the Persian Gulf region. Since Iran has a rich culture and civilization of several thousand years with different ethnicities, each of which has unique characteristics, all these cases pave the way for the development of cultural tourism. Folk music is one of the pillars of Iranian culture with many fans in different parts of Iran and can act as a motivating factor for a specific tourist destination (Tajzadeh Namin and Hashemzadeh, 2014: 28).

Qeshm folk and ritual music as a symbol and representative of Persian Gulf culture can play an effective role in attracting tourism to Qeshm in the south of the country.

XII. Conclusion

One of the most important and necessary issues of any country is to pay attention to the ethnic and geographical cultural heritage of its land, without which the preservation and cultural development of a nation is impossible. Therefore, studying these cultural issues is very important and valuable in preserving the life of any nation. On the other hand, it strengthens the spirit of the people of that nation, and for Iran, the Persian Gulf is no exception to this rule. The southern regions of Iran, due to their climatic situation, their special communication potential, and the impact of these factors on the art of these regions, experienced different types of art with various artistic features compared to other regions of the country, which have conveyed significant cultural progress and prosperity. The music of southern Iran, especially Qeshm Island, is one of the richest and, at the same time, the most complex local music compared to other regions of Iran. Its rhythmic variety has contributed to its attractiveness. It has made music an integral and necessary part of the culture of the people of the Persian Gulf and Qeshm Island, which is necessary to know and to keep alive to save the name and culture of the people of Qeshm.

Our research outcomes show that folk music is one of the pillars of Iranian culture that has many fans in different parts of Iran and can act as a motivational principle for a specific destination.

The cultural characteristics of each region are also effective in the preservation or disappearance of musical elements in a region. Therefore, music is one of the effective signs of recognizing ethnic culture and tracing the social and cultural changes of each region.

On the other hand, the study of the cultural atmosphere of neighboring nations shows that music is a means of retrieving the common roots of demographic movements and economic and cultural exchanges.

Explaining the reasons for these disremembered changes and studying cultural and geographical factors in the emergence of music, its persistence, and expansion in a cultural and geographical area are important issues in understanding the people of a region. Today, a large part of the Iranian musical system is unknown and beautiful in the heart of this type of folk music, including the corners and the melody of many songs found in this place. Moreover, with a glance, one can understand the breadth and beauty of local music. Most cultures have indigenous music, music that relates to, reflects all the needs of the people, and belongs to all individuals, representing social aspects of their lives. One of the characteristics of folk music is its simplicity and unpretentiousness. In Iranian folk music, the role of early arts, beliefs, feelings, and, in general, the life of the past can be recovered. Since Qeshm music displays a special ritual culture, it can play a decisive role in increasing the tourist attraction for the Persian Gulf region.

References

Ahmadi Rishhari, A. H. (2003). *Sangestan*. Shiraz: Navid Shiraz (In Persian).

Afshar Sistani, I. (1999). *Khuzestan and its ancient civilization*. Tehran: Printing and Publishing Organization of the Ministry of Culture and Islamic Guidance (In Persian).

Amid, H. (1984). *Farhang Farsi Amid*. Tehran: Amirkabir (In Persian).

Creswell, J. (2015). *Qualitative Inquiry Research Design*. Sage Publication.

Darvish, M. R. (2001). *Encyclopedia of Iranian Instruments*. Tehran: Publishing (In Persian).

Durant, W. (1964). *History of Civilization: The Orient the Cradle of Civilization*. Translated by Ahmad Aram. Tehran: Iqbal (In Persian).

Eftekhari, M. and Darvish, M. R. (2004). *Epic music*. Tehran: Surah Mehr (In Persian).

Falsafi Mayab, A. (2000). *Ethnography of Qeshm city*. Tehran: Archive and Documentation Center of the Anthropology Research Institute of the Cultural Heritage Research Institute (In Persian).

Hajjarian, M. (2008). *An Introduction to Ethnic Musicology*. Tehran: Jeyhun (In Persian).

Hassani, H. R. (2003). *Ethnography of Bandar Lengeh and Bastak*. Tehran: Archives and Documentation Center of the Anthropology Research Institute of Cultural Heritage and Tourism (In Persian).

Ibn Bazzaz, T. I. I. (1997). *Safwa Al-Safa*. Tabatabai, Gh. (Ed.). Tehran: Zaryab (In Persian).

Masoudieh, M. T. (1977). *Bushehr Music*. Tehran: Soroush Publications (In Persian).

Masoudieh, M. T. (2010). *Sazhenasi*. Tehran: Soroush Publications (In Persian).

Masoudieh, M. T. (2012). *Fundamentals of Ethnomusicology*. Tehran: Soroush Publications (In Persian).

Moin, M. (1992). *Moin Persian Culture*. Tehran: Amirkabir (In Persian).

Mansourizadeh, M. (2001). *Ethnography of Bushehr*. Tehran: Archives and Documentation Center of the Anthropology (In Persian).

Murchison, J. M. (2010). *Ethnography*. Jossey-Bass published.

Salimi, M. (2015). *Field Observation. Qeshm Island* (In Persian).

Sharifi, V. and Hashemi, Z. H. (2015). Reflections on the Art of Music and Architecture of the Southern Regions of Iran in the Safavid Period. *Proceedings of the Eleventh National Scientific-Cultural Conference of the Persian Gulf* (In Persian).

Shams al-Dini, M. (1991). *Ethnography of Genaveh*. Tehran: Archives and Documentation Center of the Anthropology Research Institute of Cultural Heritage and Tourism (In Persian).

Saremi, K. and Emami, F. (1994). Instrument and music in Shahnameh, Tehran: Pishro.

Tajzadeh Namin, A. and Hashemzadeh J. (2014). The role of local music festivals in tourism development from the perspective of potential tourism. *Tourism Management Quarterly* 8 (26): 52—25 (In Persian).

Uwe, F. (2018). *An Introduction to Qualitative Research Methods*. Sage Publication (In English).

Research Institute of the Cultural Heritage and Tourism Research Institute (In Persian).