Introduction to the Multidisciplinary International Archaeological Project at Shahr-i Sokhta of the University of Salento

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The International Multidisciplinary Archaeological Project at Shahr-i Sokhta, which began in 2017, and the Shahr-i Sokhta and Dahan-ye Qolaman Archaeological Project (launched in 1997) have worked together on four successive research and excavation campaigns. Their endeavours, aimed at improving our historical understanding of the settlement of Shahr-i Sokhta, have now produced the first significant results. The establishment of a topographical grid, the reconstruction of the settlement's sequences of occupation, the formulation of a new chronological proposal based on isotopic analyses, the determination of a vascular sequence associated with other classes of materials and an assessment of the relationship between the old interpretations and the new stratigraphic sequences are only some of the aims we set ourselves at the beginning of the research. Much of this information is presented in this volume, and other works are being printed.

Within a broader framework, various publications have sought to understand the historical framework in which Shahr-i Sokhta developed began, as part of research activities aimed at:

1. Chronological determination of cultural developments in the Hyrmand valley between the fourth and second millennia BC.

2. Identification and study of proto-urban and urban socio-economic patterns in eastern Iran between the end of the fourth and the beginning of the second millennia BC.

3. Identification of the models of storage, processing and production of the artefacts found in the craft areas of Shahr-i Sokhta.

4. Identification of cultural and commercial interactions between Shahr-i Sokhta and the Jiroft valley, the Takab plain, the Fars highlands, the Makran coast, the Oxus oases, the Mesopotamian alluvium and the Indus Valley.

5. Synchronisation of local sequences with other areas (Baluchistan, Turkmenistan, Indus, Jiroft and Mesopotamia).

6. Understanding daily life in the settlement, as well as its urban development and topography.

To achieve these macro-objectives, a multidisciplinary approach to the excavation activities and the archaeological material was adopted, specifically involving:

1. *The study of materials*. Typological, functional, comparative, distributive and quantitative analysis of the individual classes of materials collected (ceramics, seals, stone and clay objects, metals, etc.), classified by phase and periods. Functional study to establish a relative chronology and a synoptic framework encompassing the main settlements of eastern and south-eastern Iran;

2. *Surface analysis*. Collection and study of surface finds, assisted by remote sensing and geo-magnetic methods, with particular attention to specific concentrations, emerging structures and the relationship between topographical and chronological clues;

3. *Petrographic analyses*. Petrographic analyses of alabaster and calcite samples in order to determine their chemical composition, reconstruct individual

production processes and distinguish between imported and exported materials. From these preliminary analyses, it was possible to identify distinct, homogeneous, regional and cultural contexts, the relationships between them and the contacts between eastern Iran and its neighbouring regions;

4. *Isotopic analyses*. Isotopic analyses with C14 calibration of 44 charcoal samples collected during the 2017-2019 campaigns, with a view to determining an absolute chronology. The results, as mentioned above, have enabled the construction of a new archaeological grid and chronological sequence.

5. *Archaeological excavations*. Excavations aimed at the reconstruction of the settlement's stratigraphic and cultural sequences. The field research includes the registration and digitalisation of data collected in the form of Stratigraphic Unit records, stratigraphic cross sections, detailed and schematic plans, architectural elevations and cross sections, photographic documentation, etc. Every single piece of data was processed with a view to the creation of a digitalised platform.

6. *Bioarchaeological analyses*. Collection and analysis of animal and plant remains for the reconstruction of the bio-botanical and bio-zoological environments.

Specifically, the archaeozoological work is mainly based on:

- Osteological and taxonomic analyses for species identification.
- Quantitative analyses for the determination of domesticated species.
- Statistical biometric analyses for the determination of differences between the various groups analysed.
- Mortality and sex analysis.
- Study of animal breeding practices.
- Study of pathological, morphological and genetic factors.
- Biometric analysis.
- Study of possible secondary deposits arising from uses unrelated to feeding practices (e.g. sacrifices and other cultic and/or funeral activities).
- Study of the approaches to breeding and domestication.

Each type of analysis will be conducted diachronically, in order to give historical depth to the results.

Similarly, the palaeobotanical studies entail:

- Analysis of anthracological remains in order to determine the area's environmental history, dynamics and transformations.

- Carpological analyses to identify individual crop types and their transformations.

- Isotopic analyses aimed at gathering further information on environmental conditions and the technologies used for food production and consumption. Plant δ13C and δ15N values allow the identification of specific agricultural practices, the origins of food products and any climatic variations.

- *Anthropological analyses*. There have also been anthropological studies of the vast necropolis of Shahr-i Sokhta based on:

- Palaeo-demographic analyses to establish the occupants' sex and age, partly by means of radiological analyses of the dental crown in order to determine the exact tooth/pulp ratio.

- Palaeo-anthropological analyses involving the division of the human remains, burial type, grave goods and orientation of the deceased.

- DNA analysis to identify, from a historical perspective, the possible presence in each of bio-anthropologically distinct human groups and to correlate them with the different funerary, and more generally cultural, traditions of the site.

- Morphological analyses that can be correlated with socio-political developments via the study of linear enamel hypoplasias, dental wear and periostitis. When associated with the individual contexts of provenance, such analyses can make very significant contributions to the study of ancient settlements such as Shahr-i Sokhta.

The results of all these analyses have been the subject of scientific publications (9 books and 162 articles), congresses (55) and doctoral theses (2), including recent updates enabled by the organisation of congresses in Munich (2017) and Lecce (2021). Obviously, there is still a great deal of work to be done, and the next step will be a new volume presenting the excavation and research campaigns of 2020 and 2021, followed by a new series of monographs on the archaeological material from Shahr-i Sokhta.

In conclusion, the International Multidisciplinary Archaeological Project in Shahr-i Sokhta has continued its research activities over the last few years, both in the field and in its own laboratories at the Department of Cultural Heritage of the University of the Salento, to whose staff I extend my warmest thanks for their fruitful cooperation and support for our activities.

The difficulties encountered, which have been compounded in this by the pandemic, have been overcome mostly thanks to the contribution of human resources, which have made this research group a solid base on which to set up and implement new projects (Fig. 1). The list of people to whom I am indebted is even longer than it was for the first preliminary excavation, whose results were published in 2019. On one hand, I would like to express once more my gratitude to those with whom I started this project; on the other, I must take this opportunity to thank all those who, in various ways, have enriched our research by contributing significantly to the achievement of the results presented in this volume.

First of all, I would like to thank the Rector of the University of the Salento, Prof. Fabio Pollice, who made it possible to overcome every obstacle by supporting our activities in Iran. In the same way, I would like to thank the Director of the University of the Salento's Department of Cultural Heritage, Prof. Raffaele Casciaro, who enthusiastically followed our research, allowing us to fulfil the initial proposal for a multidisciplinary project with a strong international dimension, which four years later we can claim to have achieved: an international project that saw the contribution of the Seminar für Ur- und Frühgeschichte of the University of Göttingen, the Ludwig Maximilian University of Munich and the Universitat Pompeu Fabra of Barcelona in a range of scientific endeavours.

In this international context, the present author has initiated numerous forms of cooperation in search of a broader contribution to this research, not only focused on the historical reconstruction of the regional dynamics of Sistan, but also oriented towards the historical understanding of the Bronze Age relationships between eastern and south-eastern Iran, Greater Indus and Central Asia. In this regard I would like to thank the Archaeological Survey of India in New Delhi (and its branches in Purana Qila, Jodhpur and Baroda), the National

Archaeological Museum of India, the Maharaja Sayajirao University of Baroda, the Deccan College of Pune (Vadodara) and the Louvre Museum in Paris for the establishment of agreements that have already enabled broader forms of scientific cooperation and will continue to enable them in the future.

We would also like to thank the Iranian Research Institute for Cultural Heritage and Tourism (= RICHT) for always enthusiastically accepting our research proposals, his staff and Dr. M. Kholghi, who has always provided us with extraordinary support for the implementation of our project. Thanks are also due to the Iranian Centre for Archaeological Research (= ICAR) without which any work in Sistan would have been impossible, and Dott. G. Mancuso without whom this project would have been difficult to develop. With the same gratitude, I would like to mention His Excellency G. Perrone, the Italian Ambassador to Tehran, and the Italian Cultural Attaché, Dr. Y. Romanova, for assisting us, supporting our research and helping to disseminate our results in both Iran and Italy.

In conclusion, I (E. Ascalone) express my special gratitude to our Iranian colleagues and their director, S.M.S. Sajjadi, for sharing their research with us and supporting ours, for hosting us and for always making us feel at home (Fig. 2).

Fig. 1: some members of Iranian-Italian joint mission at Shahr-i Sokhta.

Fig. 2: archaeological mission at Shahr-i Sokhta in 2019.