

‘My Life is like the Summer Rose’
Maurizio Tosi e l’Archeologia
come modo di vivere

Papers in honour of Maurizio Tosi for his
70th birthday

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THE LOTHAL REVISITATION PROJECT. A FINE THREAD CONNECTING ANCIENT INDIA TO CONTEMPORARY RAVENNA (VIA OMAN)

Dennys FRENEZ
Università di Bologna, Italy

“India is one of the worst places to live on the entire planet, because of its climate, the environment, the beasts! But Indians... Indians, with their genius, intelligence and incredible dexterity, have turned it into gold and honey. I don't like to stay in India, but I love to stay with Indians”. Maurizio Tosi

The first words I heard from a not yet acquainted Maurizio Tosi, at the inaugural lecture of the 1999-2000 course of Palethnology at the Faculty of Preservation of Cultural Heritage of Ravenna, were: “Many of my colleagues will tell you that, by profession, archaeologists ‘seek’. Rubbish! Real archaeologists ‘find’! And if they don’t find, they had better search for another job. I will not teach you how to search, but how to find”. The example he then gave us was the discovery of the inscribed Harappan potsherd he found at Ra’s al-Jinz, in the Sultanate of Oman, on Christmas Day of 1981. He was not looking for it, but he found it.

The fascinating force of such a clear example was evident even for the rather inexperienced student I was at the time. What I did realize only years later is the critical importance of understanding the actual meaning of a find, the full significance of a discovery. If properly understood in its context, a single find can link places that are distant in space, but also in time. This personal homage of mine to Maurizio¹ is just an attempt to tell the story of how, starting from a single potsherd found in Oman, he was able to connect, with a rigorous scientific method, Bronze Age India to present-day Ravenna, the Indian Ocean to the Adriatic Sea, in a single research project with some intriguing outcomes.

LOTHAL REVISITATION PROJECT. GENESIS OF THE RESEARCH PROPOSAL

Maurizio is an old friend of India, where he lived for four years as Cultural Attaché at the Embassy of Italy in New Delhi, between 1989 and 1993. He was of course very well-known at the Archaeological Survey of India and personal friend of several former Director-Generals like B.B. Lal, B.K. Thapar, J.P. Joshi and M.C. Joshi, and of other very eminent scholars like S.P. Gupta, K.N. Dikshit, and others. But, in spite of his love of the Country and its culture and of his lifelong friends,

¹ I started calling him Maurizio instead of Professor Tosi just after my graduation when, after a funny quarrel started from my ‘unforgivable fault’ of having been born in Northern Italy, he told me: “Hey! Now you’ve called me a jerk, you may as well start calling me by name!”. Actually, for the sake of a correct historical reconstruction, I told him “I don’t think you are a jerk at all! Please, stop talking bul***it!”. If you know him personally, you will not be surprised to know that after that chat we spent a very beautiful afternoon at the bar just outside the Department, talking about so many things, including archaeology!

Maurizio had never applied for a research project in India².

In 1993, just before resigning from his position at the Embassy of Italy in New Delhi, Maurizio started feeling rather concerned about leaving the Country without having carried out even a single project in India. He thought this might have been regarded as an offensive lack of interest in the history and the archaeology of India. Hence, he proposed a project to the Archaeological Survey of India (ASI), even though he thought they would never accept it because proposed by a non-Hindu scholar: archaeological explorations at the sacred site of Jhusi, near the *Triveni Sangam* at Allahabad (Uttar Pradesh). To his great surprise, on January 20th 1993, he

² For the ‘Lothal Revisitation Project’ I wish to thank the many people who have made the start-up of the Project possible through their work, suggestions and support. First of all, numerous members of the Archaeological Survey of India, foremost the current Director-General, Dr. Gautam Sengupta, and the former DGs, Mr. Babu C. Rajeev, Mrs. Anshu Veish and Mr. K.N. Shrivastava; Dr. B.R. Mani, Additional Director-General; Dr. R.S. Fonia, Director National Mission and former Director Exploration & Excavation; Ms. Subhra Pramanik Director Institute of Archaeology and former Director Exploration & Excavation; Mr. S.K. Mitra Director Exploration & Excavation; Mr. K.C. Nauriyal, Superintending Archaeologist at the Vadodara Circle, ASI; Mr. V. Shivananda Rao, former Superintending Archaeologist at the Vadodara Circle, ASI; Dr. Rajeev Pandey and Mr. Bipin Chandra “Negi”, former Assistant Archaeologists at the Lothal Museum during our field-work. Other people I wish to thank very much are Prof. B.B. Lal, former Director General of the Archaeological Survey of India, the late Dr. S.P. Gupta and Dr. K.N. Dikshit of the Indian Archaeological Society; Dr. Yadubirsingh Rawat, Director of the Department of Archaeology, Govt. of Gujarat; Dr. Rakesh Tewari, Director U.P. State Archaeology Department; Dr. Kuldeep Bhan, Dr. P. Ajitprasad and Dr. K.C. Tiwari, the Maharaja Sayajirao University of Baroda; Dr. Vasant Shinde, the Deccan College Post-Graduate and Research Institute in Pune; Prof. Toshiki Osada, Research Institute for Humanity and Nature, Kyoto; Dr. T. Miyauchi, Chiba University; Dr. Jeevan S. Kharakwal and Mr. K.P. Singh, Rajasthan Vidyapeeth University, Udaipur; Aniruddha S. Khadkikar, Agharkar Research Institute, Pune; Prof. Jonathan Mark Kenoyer, Dr. Randall Law and Dr. Gregg Jamison (and all other friends from Wisconsin), University of Wisconsin, Madison. I have to thank The Italian Ministry of Foreign Affairs (MAE), the (late) Istituto Italiano per l’Africa e l’Oriente (IsIAO), the Italian Cultural Institute in New Delhi, the Carisbo Foundation of Bologna and the Flaminia Foundation of Ravenna for their financial and diplomatic support. Special thanks also to Prof. Giovanni Gabbianelli, Dr. Francesco Mancini and Dr. Giuseppina Marcheselli of the Integrated Geoscience Research Group of the University of Bologna. I wish to give very special thanks to Mr. Mukesh Arya and Mr. Ashish Rawat of the Archaeological Survey of India and to my friends Mr. Philip “Dilip” Koch and Ms. Veronica Peverelli for their inestimable help and support during the field seasons at Lothal. Special thanks also to Y.S. Bhagirath Sinh Vaghela of Utelia for his patronage.

received a positive response to his application from the then Director General of the ASI, Shri M.C. Joshi. But the increasing research engagements in the recently disclosed Former Soviet Union Countries and his new position at the University of Bologna obliged him to abstain from starting field-work at Jhusi³.

After an absence of several years, Maurizio visited his friends in India several times between February 2005 and January 2006, mainly in connection with his activities in Oman. On those occasions, he also met with many Indian archaeologists of the 'new generation' who were very curious about the use he always made in his projects of technologies and techniques borrowed from other disciplines like informatics, biology and medicines, geology, engineering, space applications, etc.

This convinced Maurizio that it was finally time to give his personal contribution to the archaeology of India, but he preferred that it would be a "technical" contribution, rather than a "cultural" one. I clearly remember that he called me from New Delhi, saying: "I have nothing to teach my Indian friends as to the cultural understanding of ancient India, but I can say my own opinion about how to do this in terms of methods and techniques. What do you think about a possible project in India? Let me have a draft proposal before I leave Delhi for Oman".

At the time I had just discussed my master's degree dissertation on the clay sealings found at Lothal (Frenez and Tosi 2005; Frenez 2006). I was of course deeply interested in Lothal and when I proposed a small-scale project based on the most advanced techniques of non-invasive archaeology, he immediately agreed. Beside the incomparable importance that Lothal has in the study of the Indus Civilization, it became of special interest to Maurizio following the discoveries he made along with the late Serge Cleuziou at Ra's al-Jinz, in the Sultanate of Oman, in the early '80s (Fig. 1).

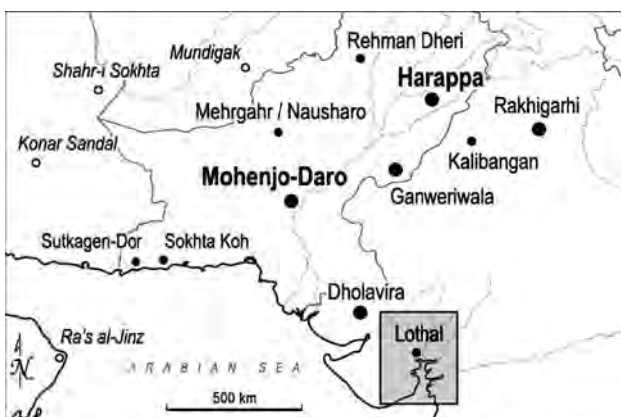


Fig. 1. Map with indication of the major sites of the Indus Civilization (black dots) and other important contemporary sites in Iran, Central Asia and the Arabian Peninsula (white dots).

³ Maurizio has never forgotten his original idea and in 2009, after the field-season at Lothal, he sent one of our master's degree students, Ms. Samanta Signor, to Allahabad and Jhusi in order to verify the possibility of resuming his original proposal.

In Eastern Arabia archaeological research began in the late '50s, at the same time as Rao's excavations at Lothal. In the next decades, excavations in Bahrain, the Emirates and the Sultanate of Oman demonstrated the pervasive influence of Harappan merchants and craftsmen from the Indus centres of Gujarat and Makran on different technical developments of the local cultures. In particular, the research carried out from 1985 to 1999 (and recently resumed) at Ra's al-Jinz, in the central coastal region of the Sultanate of Oman, by the French-Italian 'Joint Hadd Project' directed by Maurizio and the late Serge Cleuziou, demonstrated the presence of possible direct connections between the site of RJ-2 and Lothal itself, as proven by the presence of pottery, ornaments and seals of Harappan origin and inspiration (Mery 2000; Cleuziou and Tosi 2000; 2007). At RJ-2 they also found the remains of the so-called black boats of Magan that probably first connected Mesopotamia to India through the coastal centers of Eastern Arabia during Bronze Age (Cleuziou and Tosi 1995).

For all these reasons, Maurizio has always considered a priority on his agenda to design a research project centered on Lothal and the role it played in the trade networks that joined the opposite shores of the Arabian Sea during the Bronze Age. However, he was also well aware of the impact that large-scale excavations, necessary to clarify the possible use of the dockyard as a harbor, might have had on the site. But considering the great importance of Lothal for the cultural heritage of India and in consideration of the very detailed and convincing data published by S.R. Rao, he never applied for such a project. The research we called 'Lothal Revisitation Project' would have finally made it possible to collect new archaeological and palaeo-environmental data on different scales without any major disturbance of the site and its exposed structures.

In our opinion, this target could not be reached without a detailed reconstruction of the paleogeography of the area around Lothal during the Late Mid-Holocene, ca. 3000-1000 BC (Belcher and Belcher 2000: 687), and without the structural and technical understanding of the hydraulic engineering developed by the Harappans to manage the water flow within and around the site (Figs. 2 and 3).

I would also like to spend a few words to clarify the aims of our Project, in relation to the previous research carried out at Lothal by S.R. Rao. Our 'revisitation' of Lothal does not have to be considered an attempt to criticize Rao's accomplishments at any level, or to exceed them just by applying a few new methods and technologies on what he already discovered and published in detail. On the contrary, we decided to center this project on Lothal also because we consider the research carried out by S.R. Rao in the '60s, one of the best archaeological experiences ever gained for the understanding of a Harappan site. Rao's accuracy in excavating and publishing Lothal is still an example 50 years later and it allows us to attempt a renovation of the work for a better understanding of the site just by adding a few more



Fig. 2. Artistic view of Lothal according to S.R. Rao's reconstruction (Lothal Archaeological Museum, ASI).



Fig. 3. Lothal (Gujarat, India). View of the baked-brick dock from South (photo by Dennys Frenéz 2005).

pieces to the puzzle. On such bases, we designed the Project around very specific targets, in order to expand the results obtained by S.R. Rao by setting the site into its environmental and palaeo-geographical framework.

LOTHAL REVISITATION PROJECT. ARCHAEOLOGICAL BACKGROUND

The archaeological site of Lothal (22°31'22.97" N / 72°14'56.10" E) covers about eight hectares and was discovered in 1954, as the result of a systematic village-to-village archaeological survey of the Saurashtra-Kathiawar Peninsula in the State of Gujarat, India (Rao 1979: 1-12). The site is located on a natural elevation within the small *doab* created by the confluence of the Bhogavo River from north-west and the Sabarmati River from the north, about 25 to 40 km (depending on the tide) before their present debouching into the Gulf of Khambhat (Fig. 4).

About one third of the site mound has been excavated and documented in detail by S.R. Rao from the Archaeological Survey of India between 1955 and 1962. An enormous corpus of data about the structural setting of the site and its material culture has been published

over almost thirty years by Rao in different books and papers (Rao 1957; 1961a; 1961b; 1961c; 1962; 1963; 1965; 1968; 1970; 1973), but mostly in the official report of the excavations, published by the Archaeological Survey of India in two separate volumes: volume 1, about the environmental context and the structural features of the site (Rao 1979) and volume 2, which illustrates in detail the material culture found at Lothal (Rao 1985).

The excavations carried out by Rao disclosed an urban settlement clearly ascribable to the Indus Civilization, which flourished on a local pre-Harappan Chalcolithic site (Rao 1979: 24-25). The site occupation was divided into two main periods separated by a short break. Period A is dated from about 2450 to 1900 BC, perfectly matching to Phases 3B and 3C of Harappa (Rao 1979: 28-33; Meadow and Kenoyer 2005), while Period B was related to a Late Harappan occupation dated from about 1800 to 1600 BC (Rao 1979: 33-36).

At Lothal, archaeologists found an 'acropolis' raised upon a system of artificial box-like platforms that supported the public and the ritual buildings and a 'lower town' with the residential and craft areas. However, the most impressive structure is undoubtedly the huge baked-brick-lined water basin excavated by Rao immediately east of the site (Fig. 3). According to the excavator (Rao 1979: 63-64, 123-134 and fig. 19), it was roughly trapezoidal, measuring 212.40 m on the western embankment, 209.30 m on the eastern one, 34.70 m on the southern one and 36.70 m on the northern one. The walls are about 1.80 m at foundation level and about 1.00 m at ground level, with the inner faces of the walls strictly vertical. According to Rao, a 12.20 m wide inlet was originally present in the northern embankment, while in a later stage it was closed and replaced by a 7.00 m wide one opened at the southern end of the eastern embankment.

The debate about the function of this unique structure is still open and the different possible interpretations highly influenced several other central archaeological questions about the site. The basin was originally interpreted by Rao as a dock for small boats that reached Lothal from the Gulf of Khambhat through the Sabarmati-Bhogavo river system (Rao 1979: 125-134). This hypothesis was supported by several scholars (Chakrabarti 1979; 1995; 1999; Lal 1997; Nigam 1988; 2005; 2006; Nigam *et al.* 1990; Nigam and Hashimi 2002; Wheeler 1973). Later, other scholars considered it just a big reservoir for irrigation and/or drinking water (Deloche 1983; Fairservis 1971; Leshnik 1968; Shah 1960), while others just rejected both theories without proposing any solid alternatives (Dhavalikar 1995; Gaur 2000; Pandya 1977; Possehl 1976; 1980). In a recent paper, Rear Admiral Retd. S.C. Bindra (2003) evaluated all possible interpretations proposed of the Lothal basin in great detail. Considering the technical features of the structure and the rough environmental data available at the moment (Gaur 2000; Hariharan 1964; Chandra 1997; Nigam 1988; Panikkar and Srivastavan 1972; Rao 1973; 1979; Sahay 1996), he rejected the possible use of the



Fig. 4. Satellite images of the archaeological site of Lothal, the Saurashtra Peninsula and the Gulf of Khambhat (Gujarat, India) (modified after US Dept. of State Geographer 2012).

basin for storing fresh water, in favor of its interpretation as an inland tidal dock (Bindra 2003: 16-18).

LOTHAL REVISITATION PROJECT. PRELIMINARY RESEARCH

The Bhogavo-Sabarmati tidal plain north of the Gulf of Khambhat, where Lothal is located, is a very dynamic geographical compound affected by heavy siltation, fluvial erosion and deposition. Consequently, the modifications undergone during the past five millennia may have considerably modified the coastal configuration and the main hydrological drainage system of the region (Khadkikar 2006; Khadkikar *et al.* 2004a; 2004b; Nigam 1988; 2005; 2006; Nigam *et al.* 1990; Nigam and Hashimi 2002). Moreover, a comprehensive detailed palaeo-environmental reconstruction has to consider also the particular features of the sea level fluctuations in the area. The Gulf of Khambhat is, in fact, a macrotidal monsoonal system affected by a high tidal range that reaches up to twelve meters (Deo *et al.* 2011: 138; Nayak and Shetye 2003) (Fig. 5).

The geomorphological framework is therefore of fundamental importance to validate Rao's interpretation. The geographical and ecological evolution of the area was closely affected by the Holocene climate cycles that

alternated periods of marine transgression and ingression, which determined a continuous shifting of the shorelines along the Bhogavo-Sabarmati tidal plain (Mancini *et al.* 2010). According to several scholars (Hashimi *et al.* 1995; Rao *et al.* 2003; Mathur *et al.* 2004), the sea level in the eastern Arabian Sea was ca. 70 m lower in 10000 BC, while in 7000 BC the level was comparable to the present stationing; from 7000 BC to 4000 BC, it maintained a constant relative rising trend with a climatic optimum around ca. 6000 BC, when the climate was characterized by high degrees of temperature and humidity (Nigam *et al.* 1990).

During the second half of the 3rd millennium BC, the level of the Eastern Arabian Sea was ca. +2 m above the present mean sea level (Hashimi *et al.* 1995). Moreover, according to the study of paleochannels and paleodeltas identified from satellite images processing, the coastline seems to have run across the modern towns of Vataman, Moti Boru and Bholar, less than 10 km far from Lothal (Khadkikar 2006; Khadkikar *et al.* 2004a; 2004b). Other scholars, instead, stated that the maximum marine ingression occurred between ca. 4500 and 4000 BC (corresponding to the period of urban occupation at Lothal), with a sea level of ca. +6 m above the present mean sea level (Mathur *et al.* 2004; Gaur and Vora 2006; Gaur *et al.* 2007; Rao *et al.* 1996). However, such models might also be affected by recent tectonic movements in

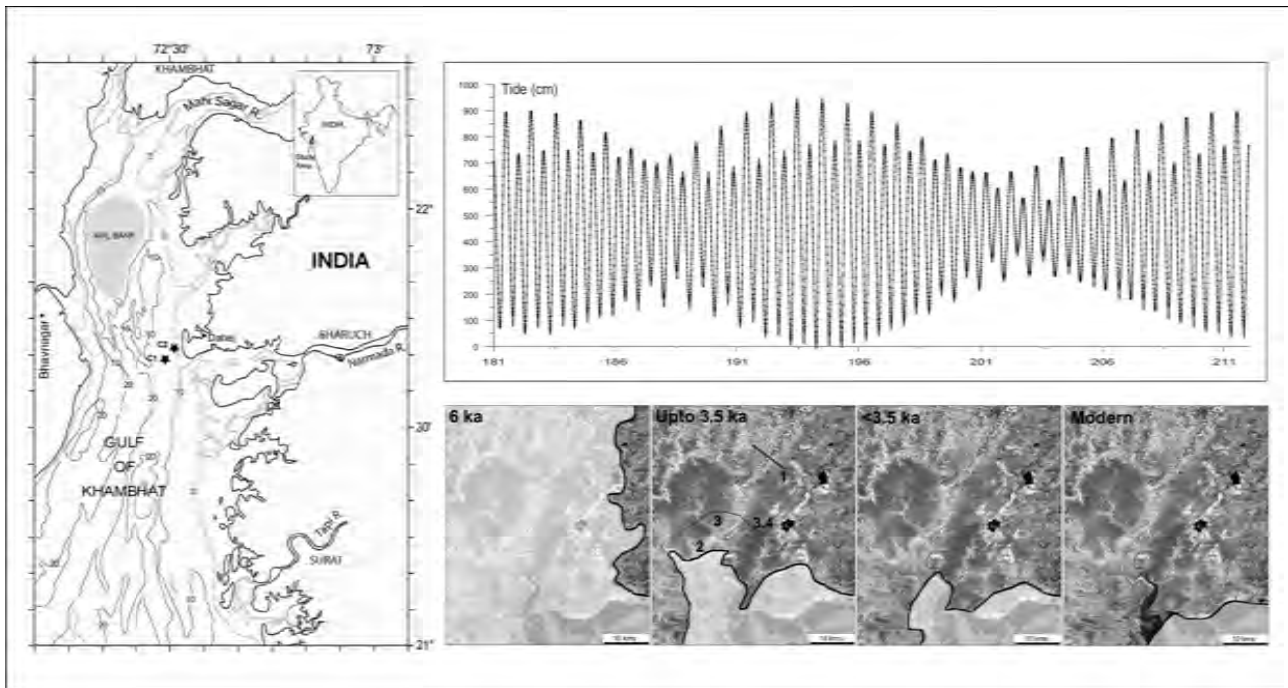


Fig. 5. Gulf of Khambhat (Gujarat, India). Geographical configuration and bathymetry (left), tide in July 2003 based on the measured data (upper right) and hypothesis for sea level changes in the past 6000 years (lower right) (modified after Khadkikar 2006).

the region that suggest a possible uplift of the area from 2000 BC (Chamyal *et al.* 2003; Kusumgar *et al.* 1998; Mancini *et al.* 2010).

On these bases, the 'Lothal Revisitation Project' was proposed to be carried out in direct partnership between the Department of History, Cultures, Civilizations of the University of Bologna and the Archaeological Survey of India, Ministry of Culture, Government of India, with the technical collaboration of the Department of Earth Sciences and Environment of the University of Bologna (now Department of Biological, Geological and Environmental Sciences), then headed by Prof. Giovanni Gabbianelli.

The Project was mainly designed as a geo-archaeological project, combining remote sensing and field activities. In particular, non-invasive geophysical prospections have been proposed to detect different natural and artificial subsoil features, complemented by series of core-drillings to determine the shifting of palaeo-channels and shorelines (for the theoretical background of the proposed geophysical methods and examples of case-studies, see Campana and Forte 2006; Campana and Piro 2009; Khadkikar 2006; Khadkikar *et al.* 2004a; 2004b).

The research program was designed to investigate in detail the comprehensive archaeological compound, including the urban settlement configuration and the surrounding environment, through a close and continuous interaction between archaeologists and teams of geologists, geo-morphologists, geophysicists and other specialists of environmental sciences, in order to reconstruct the paleogeography around Lothal during the

Late Mid-Holocene (ca. 3000-1000 BC) and the hydraulic structures that interfaced the site with the surrounding environment.

The 'Lothal Revisitation Project' was also planned as a comprehensive program of mutual exchange with an intensive program of training, in order to activate the transfer of the most advanced and innovative methods and techniques for the application of remote sensing, digital documentation and geophysical prospections in archaeology through field activities, lectures and conferences. Moreover, special advisers with recognized experience in museum sciences, archaeological site conservation and design of open-air archaeological parks are continuously assisting the Indo-Italian team for specific actions.

LOTHAL REVISITATION PROJECT. FIELD ACTIVITIES 2008 AND 2009

The base for planning any other field activity has been given by the study of different multispectral satellite images of the area from the Gulf of Khambhat, about 30 km south of Lothal, to the Nalsarovar Lake, about 30 km north-west of the site. Multispectral satellite imagery might be used in archaeology to identify palaeo-channels and other geomorphological patterns indicating sea level stationing. Relict morphological structures gave anomalous spectral response in comparison with the surrounding areas due to the localized presence of different types of sediment and/or changes in their conditions of humidity or vegetation covering. The main palaeo-channels around Lothal were already detected by

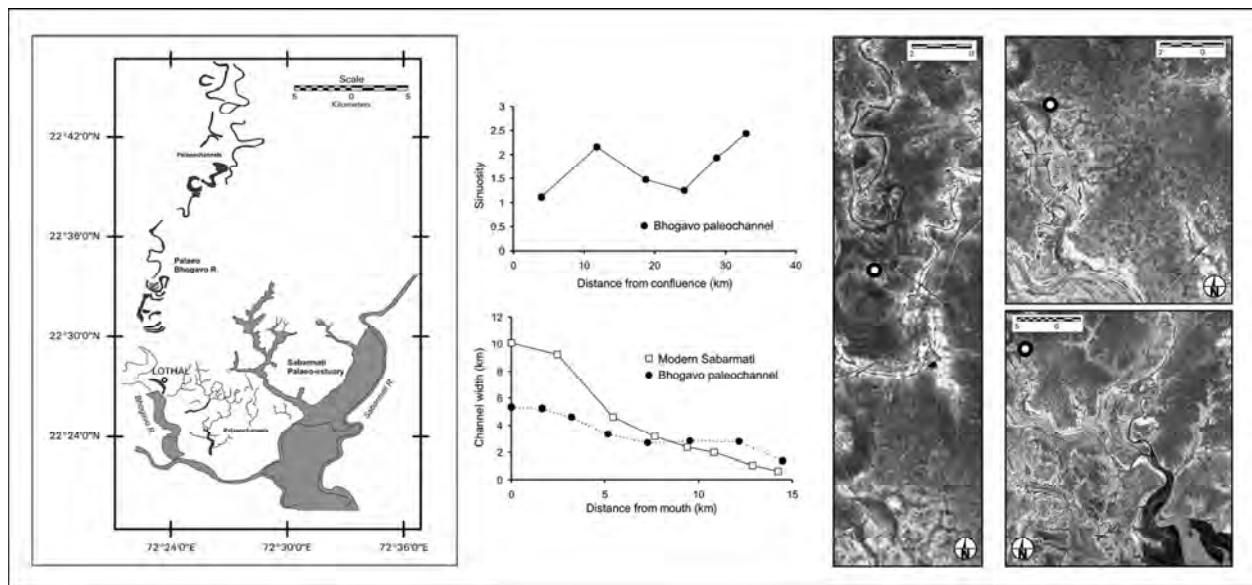


Fig. 6. Gulf of Khambhat (Gujarat, India). Palaeo-channels and palaeo-estuarine funnel during the Late Mid-Holocene based on multispectral satellite imagery analyses (left): Bhogavo palaeo-channel sinuosity and width increase upstream (central plots); the presence of scroll-bars complexes just north of Lothal and a wide channel south of the site indicate that tidal water ingressed (???) till north of Lothal (right) (modified after Khadkikar 2006).

A.S. Khadkikar through the analysis of data collected by the sensor LISS IRS 1D-3 (Khadkikar 2006; Khadkikar *et al.* 2004a; 2004b) (Fig. 6).

In the case of Lothal, elevation represents in fact a critical factor because the local gradient is included in a range of ten meters only. The geomorphological remote-sensing analysis of the area around Lothal, carried out by Dr. Giuseppina Marcheselli⁴, is based on six multi-temporal TERRA-ASTER images acquired in April-May. In that period the vegetation is in fact not covering the terrain, since the harvest is completed, and the monsoon has not flooded the area yet. In multispectral ASTER data, the presence of palaeo-channels has been emphasized through the principal component technique (PC), which resulted in a new RGB image generated from the three images that presented a more clear visibility of the relict structures. Following these very preliminary analysis, the assumptions about the sea level stationing in the Gulf of Khambhat during the second half of the 3rd millennium BC can only be speculative. More accurate measurements should be carried out in order to quantify the difference between the past and the present mean sea levels and to trace the related palaeo-coastline. On the base of SRTM elevation data and assuming +4.0 m in the sea level stationing and +2.0 m of tectonic uplift during the past 4000 years (ca. 0.5 mm/yr), Mancini *et al.* (2010) positioned the Late Mid-Holocene shoreline at less than 10 km from Lothal. This scenario presents a substantial correspondence with the discovery of marine micro-organisms in sediments extracted in the area by A.S. Khadkikar (Khadkikar 2006; Khadkikar *et al.* 2004a, 2004b).

⁴ Dr. Giuseppina Marcheselli, Centro di ricerca interdipartimentale per le scienze ambientali, Università degli Studi di Bologna (g.marcheselli@unibo.it).

Following these observations and thanks to specific permits granted seasonally by the Archaeological Survey of India, several preliminary field activities have been carried out in 2008 and in 2009, in order to collect the data required to eventually design a new three-year research project:

1. The 3D Digital Elevation Model (DEM) of the site and the immediately surrounding area using a relative kinetic GPS, in order to understand the preferential natural and artificial ways of water flowing within and around the site. The measurements and the data post-processing have been carried out by Dr. Francesco Mancini and Dr. Francesco Stecchi⁵ in eight working days, using three receivers Topcon GB500 L1/L2 (one as reference station and two rovers for the kinematic relief), set on data acquisition every five seconds for a precision of ca. 1,0-1,5 cm.
2. The complete magnetic survey of the non-excavated archaeological area by Dr. H. Becker using a cesium magnetometer (Fig. 7)⁶. In the northern area of the site, just north of the surrounding wall, the magnetograms outlined a possible baked-brick embanked canal perfectly running east-west, perpendicularly to the dockyard (Mag. Anomaly A, in Fig. 7). It was probably used to connect the palaeo-river streaming west of the site with the dockyard to the east. Several

⁵ Dr. Francesco Mancini, Università Tecnica di Bari (f.mancini@poliba.it); Dr. Francesco Stecchi, Centro di ricerca interdipartimentale per le scienze ambientali, Università degli Studi di Bologna (francesco.stecchi2@unibo.it).

⁶ Helmut Becker, Ehemaliger Direktor der Abteilung für Archäologische Prospektion und Luftbildarchäologie an der Bayerischen Landesamt für Denkmalschutz in München, Germany; since 2007 Becker Archaeological Prospection in Beuerberg, Germany (becker.mag@gmail.com).

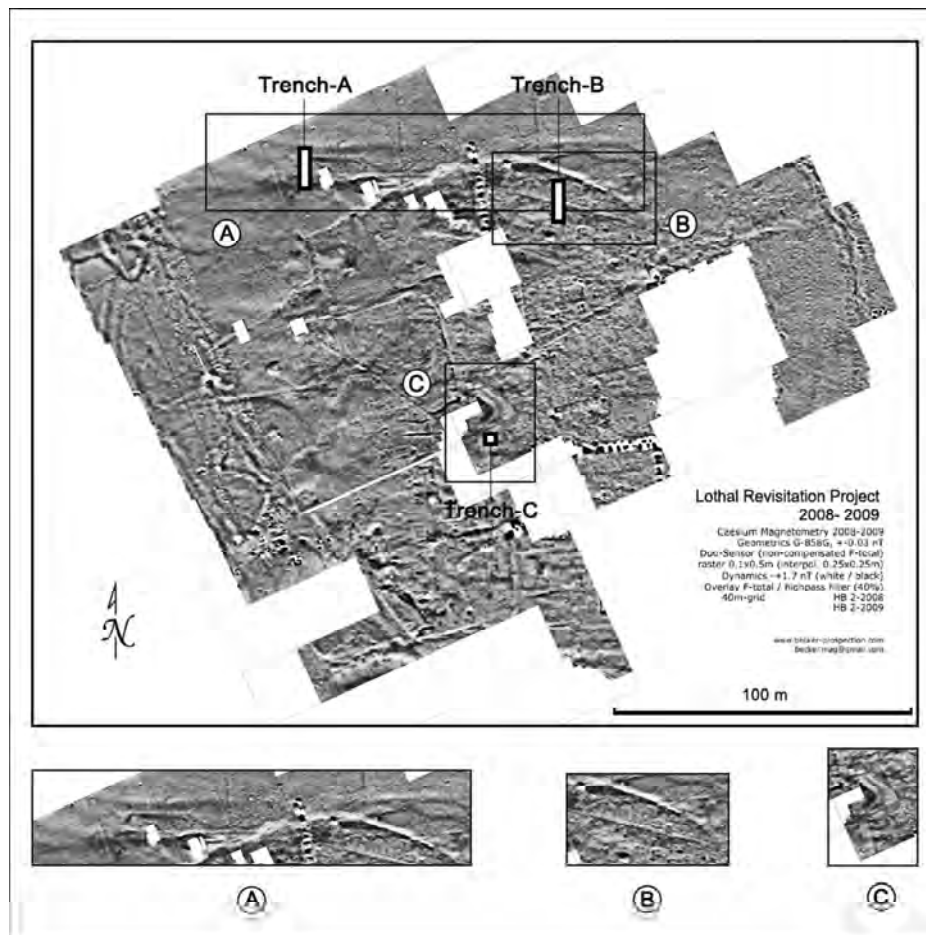


Fig. 7. Photomosaic of the magnetograms obtained by Dr. Helmut Becker during seasons 2008 and 2009 (courtesy of Dr. Helmut Becker 2009), with indication of the major anomalies and the three test trenches excavated in 2009 to verify the matching between the digital signal and the buried structures.

other interesting features have been detected in the north-eastern area of the archaeological compound, possibly including an architectural complex consisting of rooms facing a narrow street and separated by lanes (Mag. Anomaly B, in Fig. 7). Moreover, a vast magnetic anomaly at the south-western corner of the acropolis shows huge curvilinear walls that might configure an articulated rampart system with a possible monumental gateway, or a large drainage outlet for the waste water that was flowing down off the acropolis (Mag. Anomaly C, in Fig. 7).

- Following the results of the magnetic survey, three stratigraphic test trenches have been excavated to verify the matching between the digital signal and the buried structures. Trench-A (10 x 5 m) has been excavated in correspondence with the western end of the possible artificial baked-brick embanked canal, but the presence in the upper layers (from 1.0 to 1.5 m deep) of an interesting kiln, that at first seemed to have been used to bake the precious stoneware bangles (Halim and Vidale 1984), prevented us from reaching the structure during the season. Trench-A should be deepened and extended to the east in the future. Trench-B (10 x 5 m) exposed mud-brick walls just below the surface, configuring several rooms as

indicated by the magnetograms. The pottery, including an inscribed potsherd, and other finds like steatite beads, bangles, chert blades and a bronze knife date these layers to the Late Harappan occupation of Lothal during Period B (ca. 1800-1600 BC). Trench-C (5 x 5 m) has been excavated in the north-western corner of the acropolis to a depth of 3.50 m. The remains of a huge wall of mud bricks with basement of baked-bricks started at a depth of about 2.50 m, in association with materials dated to the mature Harappan phase (Lothal Period A, ca. 2450-1900 BC).

PROPOSAL FOR FURTHER RESEARCH AND FIELD ACTIVITIES

The new data obtained combining these different methods suggested the need for further studies to better clarify the complex and dynamic sedimentary layout of the archaeological compound at Lothal, with special reference to the interfaces between the natural and the artificial structures used to redirect the water flowing within and around the site. Several other non-invasive techniques of preventive archaeology might be applied, in order to collect new data on both the palaeo-environment and the innovative hydraulic engineering developed by

the Harappans to set and maintain an artificial harbor within the macrotidal monsoonal environment of the Bhogavo-Sabarmati tidal plain.

The usual complement and specification of magnetic survey is the ground-penetrating radar (GPR). We planned to combine ground-penetrating radar with set of high-resolution shallow seismic profiles, in order to outline the structural features of the possible baked-brick embanked canal detected through the magnetic survey. As the magnetic measurements produce a horizontal image of the buried structures overlapping the different phases, ground-penetrating radar and seismic tests provide the necessary information to understand their vertical stratigraphic configuration. Ground-penetrating radar uses electromagnetic radiation in the microwave band (UHF/VHF frequencies) to delineate the buried features by detecting the signal reflected by subsoil interfaces at different depths. The principle involved is similar to seismic reflection, but GPR uses electromagnetic energy instead of the acoustic energy generated for seismic measurements. Seismic techniques are based on the return rhythm measurement of artificially generated seismic waves, which are reflected and refracted at each subsurface density contrast. At a depth greater than ca. 20 m or for very small targets (e.g., man-made archaeological features), and in water-saturated environments, seismic reflection may be preferred to seismic refraction.

In selected situations, positive results might also be obtained combining seismic profiles with electric tomography. At Lothal, geo-electric tomography would aim to obtain sections and profiles of the palaeo-channels originally detected by the satellite imagery analyses, which revealed several cases of overlapping and intersections among different hydrological networks in the area surrounding the site.

The new data produced by means of ground-penetrating radar, seismic reflection profiles and geo-electric tomography have to be framed within a tridimensional sedimentary grid obtained through series of machine-operated core drillings bored exclusively out of the protected site area. While geophysical measurements provide mainly a geometrical quantitative description of the features detected, core drillings also give samples for qualitative analyses. Sedimentary and biological analyses of the samples collected from the palaeo-channels actually allow to reconstruct in detail the environment surrounding Lothal and the palaeo-drainage network active in the area during the Late Mid-Holocene (ca. 3000-1000 BC), including their dating.

As of test excavations, while Trench-B confirms that cesium magnetometer gives positive results in detecting shallow structures made of mud-bricks, with a low contrast with the surrounding archaeological deposit, the discovery of a massive baked-brick wall in Trench-C demonstrates that it also works to detect high-contrast features at least up to three meters below the surface. This evidence promotes the necessity of further deep

excavations in the area of Trench-A, in order to reach the subsoil below the bangle kiln. Remains of the possible baked-brick connective canal may be found in Trench-A below the layers reached at 1.5 m. Moreover, laboratory activities are required to further document and study in detail the archaeological materials from the archaeological test trenches excavated in 2009.

OUTCOMES AND OCCASIONS

In 2004, when I first visited Lothal for my master's degree thesis on the clay sealings, I was hosted by Bhagirathsinhji Vaghela of Utelia (Fig. 10), the former *Yuvraj* (Eng. "Crown Prince") of the Dholkataluka district that includes Lothal and about 60 other villages and small towns adding up to about one million and a half people. Bhagirathsinhji is a fine gentleman (and a cunning businessman), well-known in both intellectual and economic realities of modern Gujarat. He has turned the family Palace into a beautiful, charming heritage hotel and he has patronized the 'Lothal Revisitation Project' since its very beginning. Moreover, Bhagirathsinhji played an active role in the few parallel operations, all inspired by Maurizio, that we organized with his assistance and participation⁷.

In October 2008, Maurizio and I organized a series of meetings in Ravenna and Bologna under the aegis of the Prorettorato per le Relazioni Internazionali dell'Università degli Studi di Bologna, titled "Towards Growing India: Prospects for Economic & Research Partnerships between Emilia-Romagna and the State of Gujarat"⁸. We invited directors of all Departments of the

⁷ All privileges and special status of Indian rulers have been abolished by Indira Gandhi in 1971 through the twenty-sixth amendment to the Constitution of the Republic of India, Act, 1971: "The concept of rulership, with privy purses and special privileges unrelated to any current functions and social purposes, is incompatible with an egalitarian social order. Government has, therefore, decided to terminate the privy purses and privileges of the Rulers of former Indian States. It is necessary for this purpose, apart from amending the relevant provisions of the Constitution, to insert a new article therein so as to terminate expressly the recognition already granted to such Rulers and to abolish privy purses and extinguish all rights, liabilities and obligations in respect of privy purses". Indira Gandhi, Prime Minister of India (New Delhi, The 31st July, 1971).

⁸ Over the past ten years, the State of Gujarat has achieved an impressive economic growth, with an average annual growth rate of 10.4% that is even higher than that of China. Against 5% of the population and the territory of India, Gujarat contributes to 16% of the industrial production of the Country and to almost 25% of its exports. Moreover, Gujarat mobilized the highest share of foreign investments (12.7%). Gujarat's main contribution to the industrial production of India is in sectors of soda ash production (98% of the entire production in India), salt processing (85%), diamond processing (80%), plastic industry (65%), petrochemicals (65%), chemicals (60%), pharmaceuticals (35%) and textiles (80%). Moreover, 65% of Gujarat's territory is cropped for a total of about 13 million ha. In 2009-2010 Gujarat produced 218 million tons of food grains including wheat, rice, maize, groundnut, mustard, sesame, pigeon pea, green gram and black gram. Gujarat has also the highest productivity of custard, castor, guava, potato, onion, cumin, fennel and cotton in the whole country. Gujarat Cooperative Milk Marketing Federation Ltd., jointly owned by 3 million milk producers for about 10 million liters of milk per day, is the largest milk producer and dairy industry in Asia (all data and information from 'Vibrant Gujarat 2013', website: www.vibrantgujarat.com). Considering also the increasingly rapid

University of Bologna, as well as representatives of Confindustria Emilia-Romagna, the main organization representing the Italian manufacturing and service industry. Bhagirathsinhji was also invited as a representative of the Chamber of Commerce and Industry of Gujarat to illustrate the many possibilities for economic investments in Gujarat. Dr. Maurizio Miranda, Director of the Indo-Italian Institute for Trade and Technology (IIIT), and Dr. Sauro Mezzetti, of the Indo-Italian Chamber of Commerce and Industry (IICCI), completed the vibrant picture. Moreover, Maurizio has presented a wide range of possible research and partnerships in various sectors by the University of Bologna in Gujarat, from cultural heritage to tourism economy, from chemical and pharmaceutical research to infrastructural engineering (Guerrini 2008a).

Two main projects of particular interest were brought forward during these meetings. Even if for several reasons both projects have not been exploited in all their potential, they still set the stage for possible future developments.

CREATED FROM THE GROUND. A RAVENNA-GUJARAT STRATEGIC PARTNERSHIP ON INDUSTRIAL PORTS⁹

As soon as the hydraulic engineering developed at Lothal by the Harappans emerged in all its possible complexity, Maurizio immediately suggested me to contact the Port Authority of Ravenna¹⁰. Even if on a very different scale,

infrastructural and urban development, parallels with Emilia-Romagna and its economic system are evident and convincing.

⁹ For the 'Ravenna-Gujarat Strategic Partnership', I wish to thank Mr. Giannantonio Mingozzi, Vice-Mayor of Ravenna; Eng. Leonello Sciacca, General Manager Sapir Engineering S.r.l.; Eng. Stefano Puzzarini, Sapir Engineering S.r.l.; Dr. Nicolò Tassoni Estense, former Economic & Commercial Counselor for the Embassy of Italy in New Delhi; Dr. Maurizio Miranda, Director of the Indo-Italian Institute for Trade & Technology (IIIT); Honbl. Mr. Atanu Chakraborty, IAS, former Vice Chairman & Chief Executive Officer, Gujarat Maritime Board, Govt. of Gujarat; Capt. Y.P. Deulkar, General Manager Business Development & Planning Marketing & Corporate Communication, Gujarat Maritime Board, Govt. of Gujarat. Again, I wish to thank Mr. Philip Koch, who knew all there was to know (and probably even more) about the ports of Ravenna.

¹⁰ The port of Ravenna (Ferilli 1999; Mauro 2002) has a millenary history dating back at least to Emperor Augustus, who founded the military harbor of Classe in 31 BC (named after *classis*, Latin for "fleet"). Due to its strategic geographical position, the Port of Ravenna remained active even after the decline of the Western Roman Empire at the end of the 5th century AD. It entered a further golden age during the Byzantine dominion, as witnessed by the splendid mosaics of Sant'Apollinare Nuovo. It underwent decline after being flooded with the mud of the rivers and conquered by Venice in the 15th century. In 1738, after a major operation to drain the marshes around Ravenna, the new Corsini Port Canal, currently called 'Candiano' as the old one, started connecting Ravenna to the Adriatic Sea (Fig. 8). Nowadays, the port of Ravenna is the only major canal port in Italy. Designed in the '50s as an industrial port related to a huge petrochemical plant established at Ravenna just after World War II, the 'Candiano' evolved quickly enhancing its multipurpose trade facilities. The present port canal is about 12 km long and connects the seafront with the historical centre of the city (Fig. 9). The port of Ravenna is leader in Italy for direct trade with the Near East, the Southern Mediterranean and the Far East. Moreover, thanks to excellent roads and rail connections, it serves all the regions of Italy and Central Europe. In addition to petroleum-

both ports, in a broader sense, are in fact artificial waterways built in a sandy mud soil and we desperately needed expertise in this type of construction techniques and the many problems involved (Figs. 9 and 10). The occasion arrived soon during the visit of Bhagirathsinh Vaghela in Ravenna in October 2008. On our request the Vice-Mayor of Ravenna, Mr. Giannantonio Mingozzi, kindly organized a visit to the industrial port and a series of meetings with the management of the Port Authority of Ravenna. In such meetings, the Port Authority of Ravenna showed apparent interest in exploring possibilities for business in Gujarat, mainly related to the planned construction of a new port at Dholera, on the western shore of the Gulf of Khambhat (Guerrini 2008b; 2008c). Of course, this would have also been a great occasion for us to work alongside geologists, hydrologists and experts in port building and development.



Fig. 8. The old 'Candiano' port canal of Ravenna in 1920 (from "Il Porto di Ravenna" 2011). The resemblance with the Lothal dock and the attached warehouse as proposed by S.R. Rao is striking (even if probably fortuitous).

Hence, my tasks for the 2008-2009 seasons of the 'Lothal Revisitation Project' also included the preparation of a negotiating table between the Gujarat Maritime Board and the Port Authority of Ravenna, in view of the visit of a delegation from Ravenna in December 2008¹¹.

related and chemical products, the port of Ravenna handles raw materials and finished products related to ceramics, steel, timber and agricultural food production for a total average of about 25 MMT (million tons) per year. The canal has a depth of up to 11.50 m and a total of about 16 km of operational quays (8 km might be further equipped). The whole intermodal operational area of the Ravenna port canal extends for about 2.000 ha, including 280 ha of warehouses, 140 ha of storing yards and about 1 million cubic meters of tanks and silos (all data and information from 'Assoport' website, <http://www.port.ravenna.it>).

¹¹ Thanks to its geographic location and to its 1600 km of coast, Gujarat is still the real gateway to India. Gujarat's maritime sector is considered among the most proactive and well developed sectors of India. The 45 interlinked ports handled 205 MMT (million tons) of cargo traffic in 2009-2010, which will increase to over 500 MMT within 2015. With the doubling of cargo handling capacity, Gujarat will handle more than 40% of India's cargo traffic. Gujarat Maritime Board (GMB) was created by the Government of Gujarat in 1982 to manage, control and administer all maritime sectors in Gujarat, including ports, captive



Fig. 9. Aerial view of the modern 'Candiano' port canal of Ravenna (photo by Giorgio Biserni 2007).

Following the first meetings I had in Gujarat, it was rather clear that more than the building of a new port at Dholera, the Gujarat Maritime Board needed a technical partner for the development and the modernization of the still existing ports. I started working consequently along with my friend and colleague Philip Koch and, with the diplomatic support of Dr. Nicolò Tassoni Estense, with the then Economic and Commercial Counselor for the Embassy of Italy in New Delhi. Thanks to the technical assistance of Dr. Maurizio Miranda, we prepared the draft for a Memorandum of Understanding between the Gujarat Maritime Board (GMB) and the Industrial Extension Bureau (iNDEXTb) for the Government of Gujarat, the Port of Ravenna Authority / Sapir Engineering S.r.l. and the Department of Archaeology (now Department of History, Cultures, Civilizations) of University of Bologna, for the Italian side.

Following our presentation held in Gandhinagar on December 24th, 2008, with the participation of Eng. Stefano Puzzarini as a representative of the Port Authority of Ravenna / Sapir Engineering S.r.l., the Gujarat Maritime Board agreed in principle to sign the MoU by inviting an official delegation of the Port of Ravenna Authority to the Vibrant Gujarat Global Investors' Summit 2009 (11th - 13th January, 2009). Between December 25th and 29th, Eng. Puzzarini visited five major ports in Gujarat, in order to start a first evaluation of the possible technical operation to be proposed by the Port Authority of Ravenna / Sapir Engineering S.r.l. in the next steps of the agreement.

In order to summarize the contents and philosophy of the proposed enterprise, I here report the core passages of the MoU presented to Mr. Atanu Chakraborty, Vice Chairman and Chief Executive Officer of the Gujarat Maritime Board, Government of Gujarat, on December 24th, 2008, and previously approved in all its points by Dr. Leonello Sciacca, General Manager of Sapir Engineering

jetties, shipbuilding and fishery. Over the next three decades, GMB planned the integrated development of new ports, along with the required road and rail links (all data and information from "Gujarat Maritime Board", website: www.gmbports.org).

S.r.l., and by Mr. Giannantonio Mingozzi, Vice-Mayor of Ravenna.

Following 1) evaluation by Eng. Stefano Puzzarini, technical representative of the Port of Ravenna Authority / Sapir Engineering S.r.l., of the environmental features of the most important locations for future ports development in Gujarat and 2) collection of technical data about the Gujarat port system; the aforementioned Parties state the intention to evaluate possibilities for the establishment of a technical strategic partnership between the Port Authority of Ravenna / Sapir Engineering S.r.l. and the Gujarat Maritime Board, Government of Gujarat, for the development and the management of internodal port systems in Gujarat, on the basis of the following preliminary stages:

1. Organization by the Port of Ravenna Authority / Sapir Engineering S.r.l. of a training stage in Ravenna for two Indian technicians selected by the Gujarat Maritime Board, Government of Gujarat, among their 1) technical and environmental staff, and 2) administrative and legislative staff, in order to operatively start mutual know-how exchanges and expertise sharing to set up the executive framework for the possible future technical strategic partnership between the Port Authority of Ravenna / Sapir Engineering S.r.l. and the Gujarat Maritime Board, Government of Gujarat. The proper duration and the exact period of the training stage in Ravenna will be decided by the Port Authority of Ravenna / Sapir Engineering S.r.l. in agreement with Gujarat Maritime Board, Government of Gujarat; ideally, the basic expenses in Italy should be charged to the Port Authority of Ravenna / Sapir Engineering S.r.l., in collaboration with the Municipality of Ravenna, while the international travels might be covered by the Gujarat Maritime Board, Government of Gujarat;
2. Organization of an International Conference titled "Created from the Ground. A Ravenna-Gujarat Strategic Partnership to understand the Past planning the Future" to be held in Gandhinagar in April or May 2009, with the presence of official representatives for the Municipality of Ravenna, the Port Authority of Ravenna / Sapir Engineering S.r.l., Confindustria Ravenna and the University of Bologna from Italian side; ideally, hospitality and conference expenses should be charged to the Gujarat Maritime Board, Government of Gujarat, while Italian parties might cover their travel expenses in full.

Unfortunately, the first signals of the economic crisis, that is still crippling the world, have possibly suggested to the Port Authority of Ravenna to not risk such an enterprise. Eventually, they even decided to turn down the invitation from the Gujarat Maritime Board to attend the Vibrant Gujarat 2009 free of charge, including a stand with an exhibition about Ravenna and its industrial and touristic ports. Nevertheless, I think that the entire operation deserves consideration as a concrete example of how archaeology (and archaeologists) might also contribute to the actual development of its socio-economic environment.

MINIMUM MAHARAJA. A RAJPUT FAMILY BETWEEN TRADITION AND MODERNITY¹²

The second Project, more related to pure academic research, was inspired by a chat I had with Maurizio on the way back to Ahmedabad from Bhuj to meet Bhagirathsinh (trying to resume the ports affair), late in January 2010. We were talking to Andrew Lawler¹³ about the intangible cultural heritage and Maurizio came up with very detailed and circumstanced arguments to support a possible nomination of the cultural and socio-economic heritage left in India by the Maharajas (Dwivedi 2008; Jackson and Jaffer 2009).

Later that season we stopped the field-work at Lothal as early as around mid-March, since an anomalous heat wave (min. 35° C, max. 50° C) prevented us from working on the field. Most of all, the very high temperature made the ground too dry, cracked and compact for all types of geophysical measurements we had planned and also for the core-drillings. Our archaeological and geological teams soon left Lothal for various destinations, while I still had several meetings planned and scattered throughout the next month. Hence, I suggested to Maurizio to propose his friend and colleague at the Faculty for Preservation of Cultural Heritage, Prof. Gustavo Gozzi¹⁴, to develop with our support a preliminary research based on the sociopolitical and anthropological study of the Vaghela Rajput family of Utelia, in order to understand the legacy of Maharajas and how traditions and modernity coexist in present-day India (Mathur 1979; Pellicani 1994; Tod 1832; Wood 1984). The major long-term outcome of this research should have been the demonstration that small former royal families still play an active and dynamic role, improving the social cohesion and maintaining the cultural identity of rural India. This might have allowed the competent Indian institution to propose the nomination of Maharajas' cultural and social legacies as candidates for the UNESCO Intangible Cultural Heritage List¹⁵.

¹² For 'Minimum Maharaja', I wish to thank Prof. Gustavo Gozzi and Dr. Annalisa Furia, Faculty for the Preservation of Cultural Heritage, University of Bologna; Dr. Franco La Cecla, Istituto di Studi Superiori, University of Bologna; Ms. Giulia Bendandi, Ms. Elisa Valandro and Ms. Vanessa Merlin. Of course, special thanks to the Yuvraj Bhagirathsinhji Vaghela of Utelia, his father Takhtsinhji 'Bapu' Vaghela, his mother Kumaridevi 'Mata' Vaghela, his wife Vidhatridevi and their son Neerbhai. Personal thanks to my friends Bahadur and Giriraj.

¹³ During that return drive to Ahmedabad after a conference in Bhuj, Andrew Lawler also collected all of Maurizio's anecdotes and information at the base of his profile "The 'Cobra' Uncovers Ancient Civilizations and Cold War Political Secrets", published as a box within an article about present archaeological research linking Oman and Gujarat (Lawler 2010).

¹⁴ Professor of "International cooperation, human rights and ethno-cultural heritage in the Mediterranean and Eurasia" at the Faculty for Preservation of Cultural Heritage, University of Bologna - Ravenna Campus.

¹⁵ According to the *UNESCO Convention for the Safeguarding of Intangible Cultural Heritage* (2003), the 'Intangible Cultural Heritage' includes practices, representations, expressions, knowledge, skills - as well as the instruments, objects, artifacts and cultural spaces associated therewith - that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural

Prof. Gustavo Gozzi and his assistant, Dr. Annalisa Furia, immediately agreed to our proposal with unexpected enthusiasm and one week later two of their more experienced students, Ms. Giulia Bendandi and Ms. Elisa Valandro, landed at Ahmedabad. Another student of Prof. Gozzi, Ms. Vanessa Merlin, started a historical research to reconstruct the socio-economic and legislative relations between the local princely states and the central power in the transition from British Raj to the Republic of India. Moreover Dr. Franco La Cecla¹⁶, a cultural anthropologist with a lifelong friendship with Maurizio, joined our small team aimed to make a documentary film on the Vaghela family (La Cecla 2010).

We spent a beautiful, interesting month interviewing the Vaghela family members following an outline of fifty questions, selected to focus on contrasts and continuity between the old generation of Bhagirathsinhji's parents, his father Takhtsinhji Vaghela and his mother Kumaridevi, and the current one, including Bhagirathsinhji (of course), his wife, Vidhatridevi, and their 12-year old son Neerbhai (Fig. 10). Another shorter interview was also prepared for the Palace staff and the most eminent people in the village of Utelia, such as the old Palace 'manager' and his son, the village doctor, the school-teacher, the priest of the Shiva temple and the fakir of the mosque near the village¹⁷.

Unfortunately, since we fell into a traditionally ill-omened period for traveling, we could not meet at Utelia

heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity. For the purposes of this Convention, consideration will be given solely to such intangible cultural heritage as is compatible with existing international human rights instruments, as well as with the requirements of mutual respect among communities, groups and individuals, and of sustainable development.

¹⁶ Istituto di Studi Superiori, University of Bologna. Franco has recently founded Architecture Social Impact Assessment (ASIA) and is adviser for the Renzo Piano's Building Workshop (RPBW).

¹⁷ The village of Utelia has become rather famous in Gujarat after the communal riots between Hindus and Muslims occurred in 2002, following the sadly famous train burning at Godhra. On January 22nd, 2005, Harit Mehta published a beautiful article titled "Utopia called Utelia celebrates Eid" on the *Times of India*, reporting that "the small village of Utelia (near Ahmedabad), inhabited by Hindus, celebrates *Bakr-Eid* in style on Friday, like it has been doing for centuries, untouched by the communal divide all pervasive in many other parts of Gujarat. For ages now, Utelia, a village founded in 1646 by Bhavsinhji, a member of the Vaghela Rajput clan, has been witnessing an elaborate procession led by the princely family to mark *Bakri-Id* celebrations. And Friday [...] Yuvraj Bhagirathsinhji led a procession of over 500 villagers from the Palace to the village mosque, about half a kilometer away. Here, he offered to the mosque a *nishaan*, a green coloured flag with a moon and star, and 25 kg of *malida*, a local variety of sweet. Legend has it that soon after Bhagirathsinhji's great grandfather was crowned at a tender age of six years, the *Nawab* of Cambay had attacked Utelia. Realizing that the State's small army was no match to the might of the *Nawab*, the then Prince's mother urged Magdum Pir, a *sufi* saint who used to stay at the village mosque, to help out in the hour of crisis. With his 'supernatural powers' (probably religious influence), Pir managed to ensure that the *Nawab's* army beat a retreat. The royal family believes that though the tradition is age old, its significance in contemporary times has only increased. "At a time when the entire State is being blamed for the misdeeds of a few, these kind of instances will only help people from different communities come closer, Bhagirathsinhji said" (Mehta 2005).

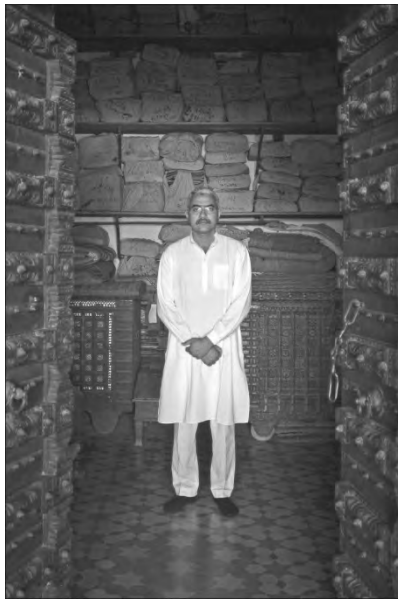


Fig. 10. The Yuvraj Bhagirathsinh Vaghela inside the archives of the Utelia Palace (photo by Philip Koch 2007).



Fig. 11. Members of the Vaghela Rajput clan during the ceremony at the Utelia Palace (photo by Giorgio Gori 2010).

with a representative of the traditional Bārots sub-caste of genealogists (Gujarati, *Vahīvanchās*) and mythographers that has been recording the history of the different Rajput clans for centuries (Shah and Shroff 1958). This would have been an unique opportunity to see the original 200 kg master-book, where they report all facts and legends related to the Rajput clans and start preparing a project to prevent them from cultural extinction. In fact, activities and skills of Bārots sub-caste perfectly fall into the purposes of UNESCO Intangible Cultural Heritage and I still do hope we can find an institution that might take care of our idea and develop a serious project on the topic. Such a project might be also connected with another possible research, related to the Vaghela family of Utelia, for the conservation and the palaeo-economic study of the account archives of Utelia Palace. The archives cover a rather long period including the British rule over Gujarat, providing an exceptional opportunity to understand from a primary source how the Raj influenced the economic organization of a small princely state in India. We are now trying to sound a few partners out in order to resume it at the best possible level worldwide.

The research period at Utelia ended in the best way possible, with Bhagirathsinh and the entire Vaghela clan celebrating the traditional opium tea ceremony in honor of their guests (Fig. 11). Bhagirathsinhji invited (and Franco handsomely paid) bards to tell the feats of the Vaghela Clan and almost one hundred Rajput males of different generations participated in their traditional attires with colorful turbans, singing and dancing under a continuous rain of rose petals (Guerrini 2010; Thompson 1991)¹⁸.

¹⁸ Beautiful pictures of the ceremony at Utelia have been taken by photographer G. Gori, <http://www.kaplanphoto.it/reportages/rajput.html>.

Dr. La Cecla has produced a short film, titled “Minimum Maharaja”¹⁹, which has been presented in preview at Ravenna at the *Notte d’Oro* (October 6, 2010), and then replicated to the *River to River* Florence Indian Film Festival. This is the short description of the documentary I have written with Franco for the leaflet and the website that presented the Ravenna screening:

‘Minimum Maharaja’ tells about the role and the projects of a small Rajput maharaja, who lives in the countryside of Gujarat. Baghiratsinh, this being the name of the maharaja, is an example of how power, even though in a marginal and decadent situation, is enveloped in a breeze that itself produces. Today, Indian maharajas do not own lands and subjects, but they still cast a shadow of what remains of their past on the nearby villages, settling legal disputes, advising on investments, organizing nostalgic ceremonies when local storytellers tale the feats of the Rajput warriors of old. ‘Minimum Maharaja’ is a window on such a “modernized epic”, which is Indian, but that might be the one of our *gattopardi* or of any other dynasty that has lost luster, but not the desire to rise above the many.

My last, most intimate thought goes to the memory of late Professor Serge Cleuziou and late Professor Gregory L. Possehl. Their fate (or chance) has prevented Serge and Greg from contributing to this volume, but their work and their friendship for Maurizio permeate each page.

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¹⁹ “Minimum Maharaja”. Production by Franco La Cecla, Editing by Fabio Bianchini Pepegna (Cineteca of Bologna).

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