A Database of Ancient Greek Harbours

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Abstract: The "Limenoscope" database was organized and is being updated in the framework of the Project "Harbours of Ancient Greece" undertaken by the Laboratory of Harbour Works, School of Civil Engineering, NTUA. The whole effort represents an example of the NTUA contribution to the promotion of the country's cultural heritage and the dissemination of the relevant information with a view to helping research on that particular cognitive field. The financial support received from private maritime engineering firms attests to the credit given to this contribution. The aim of the Project has been the realisation of a database, where one can search for concise information relevant to the historical role, the topography, the morphology, the harbour works and installations of ancient harbours in the Mediterranean and the Black Sea. The Database started off with the registration of examples of harbours located in the Aegean Sea and Cyprus, dating from Archaic to Byzantine times. Special emphasis is laid on the bibliographical update of the data forms of the harbour sites, as well as the related references in ancient literature. The Database enables the locating of these sites on a general map whereas photographs, plans etc. are also cited. In this contribution the principles of the database structure are briefly presented as well as an example among the harbours registered therein.

Keywords Ancient harbours; Greek harbours; harbour technologies; sea trade.

Introduction

The database "Limenoscope" was developed and is being updated within the Research Project "Harbours of Ancient Greece" undertaken by the School of Civil Engineering of the National Technical University of Athens (NTUA). The inspiration of the project belongs to two professors of the NTUA Dr Th. Tassios and Dr C. Memos. In due course the project was also supported by a variety of institutions including the Ephorate of Underwater Antiquities and the Institute for the Study of Ancient Technology.

This article, in continuation of previous similar articles presented in the 3rd National Conference of Harbour Works (Tassios, 2003; Ziros *et al.*, 2003), outlines the aims of the project and the structure of the database, giving a brief summary of the harbours that have already been incorporated, along with a brief description of the indexing process. Finally an example drawn from the base is presented with a tour of the Phalasarna inner harbour in western Crete. The database is available on the web at: www.limenoscope.ntua.gr and its homepage can be seen in Figure 1.

needs of the area but burden, also, both the environment and the economy through excessive costs.

For the above reasons the discussed database can serve both as a catalogue of ancient harbours and as a reference point for those interested in the relevant inception and technical aspects or for those who today design similar installations. The research project "Ancient Greek Harbours" was designed to cover this need by providing an internet accessible database whereby the historic, technical, and operational data of ancient Greek harbours would be available.

The geographical coverage is originally the Aegean Sea with a view that it will be extended in the near future to cover harbours in the entire Mediterranean basin and the Black Sea. It is hoped that ancient harbours in those areas will be included whether or not there have been archaeological studies for these. Indeed, efforts are being undertaken so that the first harbours to be introduced in the database encompass those that have undergone full archaeological investigation (i.e., Amathus in Cyprus), those undergone certain stage of survey and investigation (Pireaus harbours), and finally those that have simply been recorded (Salamis).

The Database

For the implementation of the harbour database, material concerning ancient sites was collected from ancient texts, modern research reports, photographs, maps, etc. It must be noted at this point that research concerning the harbour sites of antiquity in Greece, and the rest of the Mediterranean basin, has not been as enthusiastic as would had been expected, especially when the number of sites studied is compared to the number of ancient harbours. As for marine archaeology, harbour installations have been largely ignored in favour of shipwrecks which offer a variety of artefacts undisturbed by time or man, in addition to being easier for a variety of technical reasons as compared to ancient harbours. Thankfully, this trend seems to have changed over the last few years with the influx of new archaeologists, whose interest in harbour sites reflects the importance of this area of research.

Following the initial compilation of material for the database, and after many discussions concerning the scope of the new web-site, the cataloguing process was formulated. The basic principle adopted was to follow a concise and standardised method describing each entry, placing emphasis on compiling extended bibliography so that, along with the general information to be given for each harbour, the user have a comprehensive reading list at his/her disposal. Subsequently, the technical aspects of the web-site were streamlined, along with the development of software "Diavlos" which feeds the site with new data. The database allows the user to search and select any number of harbour sites that have been registered from a general map, and to view photographs and location maps. With the information written in both Greek and English, and through internet, the database aims at being accessible to the widest possible range of public. Translation of the material from Greek to English is already under way.

The database contains, up to now, information concerning sites from Greece and Cyprus, covering a time span from the Prehistoric to the Byzantine period. The following harbours are included: Kantharos, Zea, and Mounichia of Piraeus, the naval base of Sounion, the harbour of Ambelaki on Salamis island, the naval and commercial harbours of Thassos, the harbour of Anthedon on the Euboean Gulf, the harbours of Aigeira and Lechaeon on the Corinthian Gulf, the harbour of Kenchreai on the Saronic Gulf, the harbour of Phalasarna in western Crete, and the harbour of Amathous in Cyprus (Fig. 2).

General features

Historical and archaeological evidence pertaining to the surrounding area of the harbour. The ancient city of Phalasarna is located in the middle of the west coast of Crete, by the tip of the Gramvousa cape. Pottery from the surrounding area proves that the city was already inhabited in the Middle Minoan period, while its development is depicted by the Archaic and Classical tombs discovered in the nearby area. The city was at its peak between the middle of the 4th century B.C. and the middle of the 1st century B.C. During this period a "limen kleistos" (walled harbour) was constructed, coins were issued and naval trade and warfare was developed, exploiting the city's strategic position in-between the Aegean-Egypt and Western-Eastern Mediterranean sea crossroads. The Romans destroyed the city in 67 B.C., most probably because of its turning to piracy. Relics of houses, temples and quarries have been located around the harbour area. Today the port is found inland due to tectonic action in the Crete region. Excavation is taking place by the Ephorate of Underwater Antiquities.

Main features

(a) Region: Selection from a table: Aegean Sea, Ionian Sea, Saronic Gulf, Euboean Gulf, Pagasetic Gulf, Corinthian Gulf, Ambracian Gulf, Peloponese, Crete, Cyprus: Crete.
(b) Use: Selection from a table: Commercial, Military, Commercial-Military, Anchorage, Loading Pier, Naval Base, Not Defined: Commercial-Military.
(c) Prosperity period (centuries): Mention of the relevant centuries: 4th - 1st c. B.C.
(d) Existence of contemporary port: Yes/No question. In case of "Yes" synoptically mention the relation with the ancient harbour: No. The harbour is inland today.
(e) Surviving structures: Yes/No question. In case of "Yes" synoptically mention the surviving features of the harbour: Yes, two basins, remains of defending walls and towers, a quay with mooring stones and two channels.

General description

Description of the harbour installations and the relevant structures such as ship-sheds, stoae, stores, defense structures, sanctuaries-temples, lighthouses, etc. The harbour of Phalasarna was established in an existing basin, which was dredged and reshaped. Access to the open sea was achieved by building a channel from the port to the sea that was also functioning as a drainage work. This channel was most probably walled and sealed by a chain, in order to create the "limen kleistos", as mentioned in Skylax (47). A second channel, which intersected the first one, discharged further north and was built probably for preventing siltation in the port. The main basin, 75x100m wide, was enclosed by walls and protected with at least four fortification towers. In the inner side of the walls quays equipped with mooring stones were built. A stone stepladder was also discovered. In the middle of 2nd century B.C. a second port basin was created northern than the first one. Its entrance was built from the remainders of a fortification tower. A small canal (50x50cm.) allowed water circulation. The existing walls-quays were used for mooring.

Technical features

(a) Construction period (centuries): Chronology in centuries and mention any other dating feature: 4th c. B.C. The harbour was constructed around 335 B.C. By the middle of 2nd ca. B.C. the second basin was formed.

Pictures and plans

A page of relevant pictures and plans given in bibliography with a reference to every certain source. There is also the possibility of showing the location of the harbour on a map of Mediterranean. Due to space limitation only two sample pictures are given (Figs. 3 and 4).

Acknowledgments

Figure 4 Part of quay with binding holes and mooring stones (Hadjidaki and Stefanakis, 2004: 115).

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