



Geoarchaeology of Beirut's ancient harbour, Phoenicia

Nick Marriner^{a,*}, Christophe Morhange^a, Muntaha Saghih-Beydoun^b

^a CNRS CEREGE UMR 6635, Université Aix-Marseille, Europôle de l'Arbois, BP 80, 13545 Aix-en-Provence, Cedex 04, France

^b Université Libanaise, Rectorat BP: 14-6573, Place du Musée Beyrouth, Lebanon

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ABSTRACT

This paper presents geoarchaeological results from the ancient harbour of Beirut (Lebanon). As at Sidon, knowledge of Beirut's ancient tell has advanced significantly over the past decade, thanks namely to redevelopment of the city centre and excavations centred on the modern port. In spite of this research, understanding of the city's coastal palaeoenvironments during antiquity is poor. Buried Iron Age harbourworks presently 300 m from the sea attest to pronounced coastal changes during the past 3000 years. These processes have been significantly accentuated during the last two centuries by redevelopment of the port, which remains in use some 5000 years after its foundation. Here we elucidate the coastal stratigraphy east and west of the Bronze Age tell to yield new insights into the evolution of the Beirut seaboard, in addition to the complex history of human–environment interactions. These chronostratigraphic data are subsequently used to (1) precisely locate the main anchorage haven during antiquity; and (2) propose a chronology for its evolution.

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1. Introduction

Whilst archaeological discovery in Lebanon has a long and productive history, research in the nation's capital has been hampered by enduring demographic, geographic and geopolitical factors (Renan, 1864; Chéhab, 1939; Mouterde, 1942–1943; Lauffray, 1944–1945, 1946–1948; Elayi and Sayegh, 2000; Curvers and Stuart, 2004; Doumet-Serhal, 2004). Although it is known from written accounts that Beirut played an important role in world affairs, especially during the Roman and Byzantine periods (Mouterde and Lauffray, 1952; Hall, 2004), precise archaeological and topographical data regarding the city have long been missing. Despite the fact that the identification of ancient Bêruta/Berytos/Berytus with modern Beirut had never been called into question, the exact location of the ancient city and tell within the modern agglomeration was open to fervent debate (de Vaumas, 1946; Davie, 1987). Sporadic surveys by 20th century scholars tended to suggest the ancient city lay in an area between the present port, delimited by rue Foch to the east, rue Allenby to the west, and the place de l'Etoile to the south (Fig. 1). Beirut has, however, been built up progressively on ancient habitation layers rendering extensive archaeological excavations in such a dense urban fabric politically and logistically difficult (Forest and Forest, 1977).

Against this backdrop of data paucity, plans to reconstruct and modernise Beirut's city centre during the early 1990s offered exciting opportunities to explore the evolution of this important site on an unprecedented scale (Lauffray, 1995; Lefèvre, 1995a,b). The area surrounding the present seaport is rich in buried archaeological monuments and relics, bearing witness to a complex history of human occupation spanning some 5000 years (Gavin and Maluf, 1996; Elayi and Sayegh, 2000; Curvers and Stuart, 2004; Doumet-Serhal, 2004). Since 1993, national and international institutions have supported a project involving hundreds of archaeologists covering the quasi-totality of ancient Beirut, and notably the ancient centre demarcated by the medieval walls.

For *Solidere*, the reconstruction agency, one of the early concerns was to marry urban development with archaeology so that the rich heritage of the city centre could be integrated into the rebuilding process. Unfortunately, as wealthy developers and politicians vied with archaeologists, the project received criticism from some quarters for falling short of many of these initial goals, this in spite of rigid government legislation designed to avoid bygone errors (e.g. the Lebanese Antiquity Law; Lauffray, 1995; Karam, 1996; Naccache, 1996, 1998; Seeden, 1999; Raschka, 2006). Nonetheless, the unique urban excavation has produced a great mass of data since its inception in 1993 (Perring et al., 1996; Saghih, 1996; Butcher and Thorpe, 1997; Cumberpatch, 1997; Curvers and Stuart, 1997, in press; Finkbeiner and Sader, 1997; Heinze and Bartl, 1997; Thorpe, 1998–1999; Thorpe et al., 1998–1999; Elayi and Sayegh, 2000; Faraldo Victorica and Curvers, 2002; Doumet-Serhal, 2004).

*Corresponding author. Tel.: +33 4 4297 1584; fax: +33 44297 1549.

E-mail addresses: marriner@cerge.fr (N. Marriner), morhange@cerge.fr (C. Morhange), mbeydoun@terra.net.lb (M. Saghih-Beydoun).

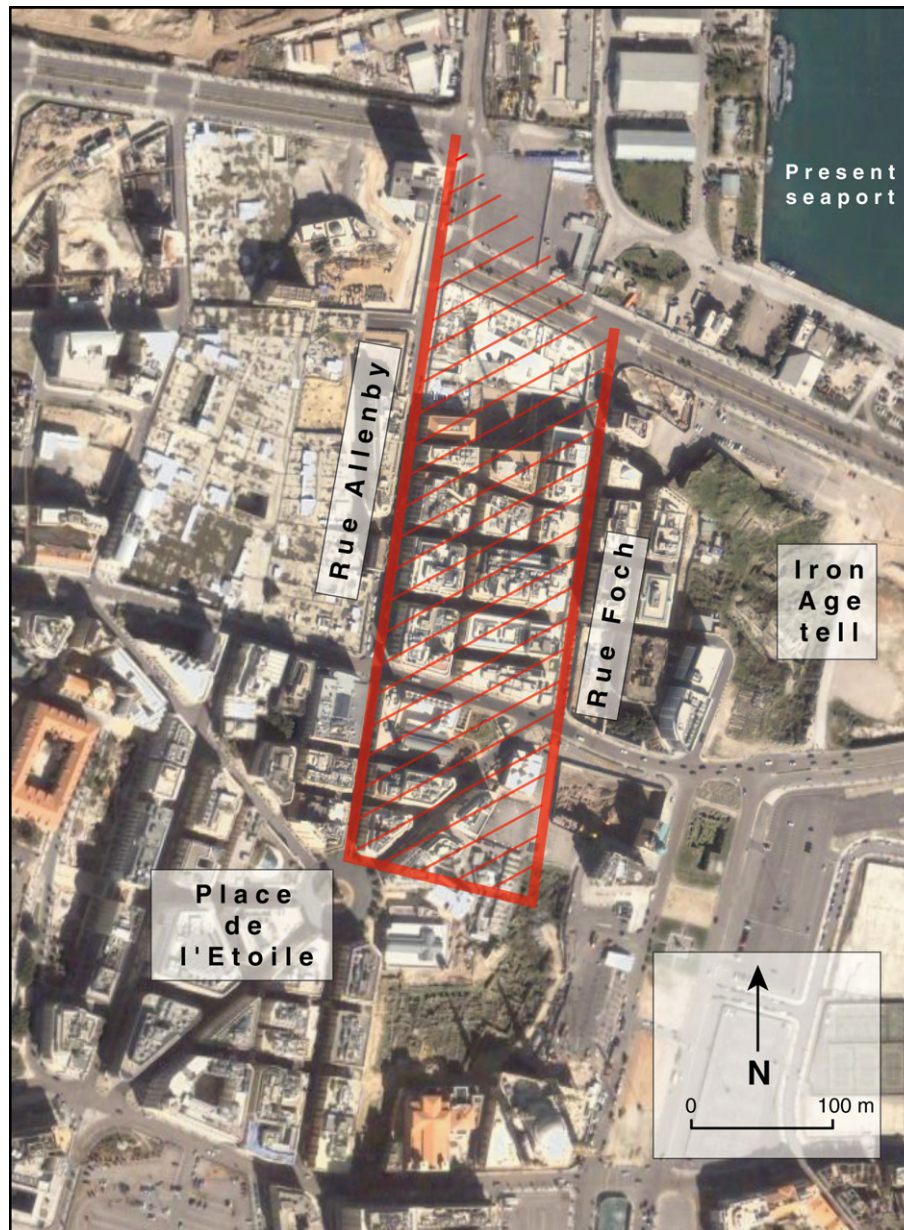


Fig. 1. Early archaeological surveys tended to suggest that the ancient city lay in an area between the present port seaboard, delimited by rue Foch to the east, rue Allenby to the west and the place de l'Etoile to the south (Renan, 1864; Chéhab, 1939; Mouterde, 1942–1943; Lauffray, 1944–1945, 1946–48; de Vaumas, 1946; Mouterde and Lauffray, 1952; Davie, 1987).

Without doubt, the main positive outcome of the project has been the spatial coverage of archaeological and topographical data obtained for both the ancient and historical periods (Elayi and Sayegh, 2000; Curvers and Stuart, 2004). From a geoarchaeologist's standpoint, therefore, coupling this data with a study of the coastal stratigraphy offered unprecedented opportunities to (1) accurately relocate the city's ancient harbour(s); (2) precisely reconstruct 5000 years of coastal deformation; and (3) better comprehend human–environment interactions at both the local and regional scales, through a comparison with Sidon and Tyre (Marriner et al., 2005; Marriner and Morhange, 2006a,b).

2. Archaeological and geomorphological contexts

Beirut's rocky promontory, 6 km long by 2 km wide, is one of the most defining geomorphological traits of the otherwise rectilinear Lebanese coast (Dubertret, 1940). Wedged between the Mount

Lebanon range to the east and the Mediterranean to the west, the promontory is surrounded by the sea on two of its three sides; it is intersected by a network of transverse faults which cut across the Lebanon chain (Figs. 2 and 3; Dubertret, 1955).

The peninsula attests to a long history of human occupation beginning in the middle Palaeolithic (Fleisch, 1946; Copeland and Wescombe, 1965, 1966). Twenty sites are known from the Neolithic, the oldest of which was discovered in 1930 at Tell Arslan, 8.5 km south of Beirut, underneath a Roman habitation layer (Bergy, 1932). For later periods, Beirut's tell and city centre bear out 5000 years of continuous human occupation spanning the Bronze Age and Iron Age, in addition to the traces left by the Persian, Seleucid, Roman and Byzantine empires (Mouterde, 1966; Hall, 2004). At its greatest extent, archaeological evidence suggests that ancient Beirut covered an area of at least 1.2 km by 0.8 km (Mikati and Perring, 2006).

The ancient city was founded on the northern part of the peninsula, in a depression between two hills, Ashrafieh to the east

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