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A TRANSDISCIPLINARY APPROACH TO RECONSTRUCT NILOTIC SOCIO-ECOSYSTEM IN LUXOR WEST BANK DURING THE PTOLEMAIC PERIOD: THE CONTRIBUTION OF THE STUDY OF MODERN CARTOGRAPHY

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During all its periods, Egyptian society maintained a privileged relationship with the Nile: the location of housing, necropolises and temples was dictated by the river's course and agricultural land has benefited from the Nile's floods (Bunbury 2019; Moreno Garcia 2019).

• **Aim:** to reconstruct the Nilotic socio-ecosystem of Memnoneia (Luxor, West Bank) during the Ptolemaic period using a transdisciplinary approach combining:

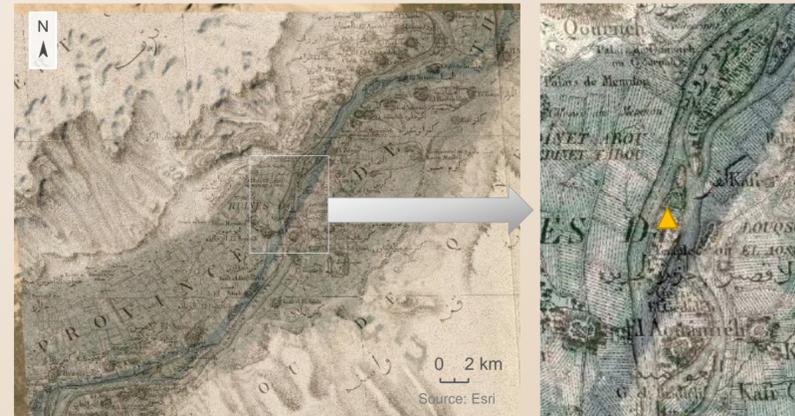
- ◇ cartography,
- ◇ analysis of demotic contracts
- ◇ and geomorphology.

• In this perspective, a selection of sources related to the study area has been identified, in order to better understand the fluvial environment of the Memnoneia and its recent evolutions meanwhile aiming to reconstruct the agricultural and alluvial landscape during the Hellenistic period.

• **Selected data:**

- ◇ 34 Greek and Demotic land sale and lease contracts from 332 B.C. until the end of the first century B.C.;
- ◇ maps of the west bank of Luxor from the *Description de l'Égypte* (Édition royale, 1821-1829) to the most recent satellite and aerial images;
- ◇ a geoarchaeological cartography integrating geomorphological data already acquired by other archaeological missions and a geophysical mapping of the plain that we planned for the near future.

• The analysis of the available cartography of the region proves to be decisive to better understand the anthropic and geomorphological changes that occurred in the alluvial plain and to establish how quickly the landscape has changed and still evolves.



Legend: ▲ Island of Bayrat

Figure 1. P. Jacotin, 1821-1829. Georeferencing a geographical map.

Remarks: Nile movements, presence of 5 islands, flood plain environment.

Figure 2. R. de Régnaud de Lannoy de Bissy, 1890. Georeferencing a military map.

Remarks: Nile movements, similar condition of the flood plain, presence of 5 islands.



Figure 3. G. Schweinfurth, 1914. Georeferencing a topographical map.

Remarks: changements in the number and size of the islands, rationalisation of the flood plain.

Methodology: georeferencing and comparing maps with GIS tool

- ⇒ Comparing the human/environmental changes produced over the course of a century
- ⇒ Understanding the evolution of the Memnoneia sector and how the agrarian reform of Muhammed Ali changed the environment

The analysis of these three georeferenced maps allows us to draw some preliminary conclusions on the evolution of the landscape of this sector.

• **Natural changesets**, we can observe:

- ◇ significant Nile movements at Luxor towards the East in the last 100 years; at the north, at Medamud, opposite movement of the course of the river;
- ◇ a major branch of the river and the resulting two islands at the south of the temple of Luxor in the map of Jacotin and Regnaud have disappeared in the more recent one of Schweinfurth; in some cases, secondary branches of the Nile gradually dried up, causing these "îles nouvelles" (*mzy(t)* in demotic) to become an integral part of the western or eastern riverbank. An example of this phenomenon is the island of Bayrat (the ▲ symbol on the maps), now linked to the west bank. The rate at which the islands appear and disappear is noteworthy, as we can see comparing the three images.

• **Anthropic changesets**, the rationalization of the west bank (Jacotin, Schweinfurth) :

- ◇ creation of the railway and Fadiliyeh canal → division of the alluvial plain in two plots of rectangular form (project carried out during the government of Muhammad Ali to implant new cultures, in particular cotton, in an effort to make the country more competitive);
- ◇ presence of canals of anthropic origin can be found in the collected demotic corpus, where the canals dug by the state to irrigate even the areas furthest from the river are called "King's Canal" (*mw Pr ʿ3*);
- ◇ the spread of built surface area, which in the last 50/60 years have "devoured" part of what were previously agricultural parcels.

In order to determine the rate of sediment deposition, we have planned to make geoarchaeological analyses for the near future.