Using Historical Maps for MENA Political Science Research

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Historical maps contain a wealth of information. They enable us to access rare data and reveal information that would have been otherwise lost in the archives. Access to historical maps can equip scholars of the politics of the Middle East with new data sources and a toolkit that allows them to address many unique research questions, ranging from implications of historical conflict to the roots of political and economic determinants of development in the Middle East. Historical maps can also help us understand the infrastructure that historically helped social movements develop and the implications of different repression methods on the fabric of the city. Recovering municipal and national boundaries and changes thereof (see Clark's contribution in this symposium) can prove extremely helpful to understanding movement and migration across time and space and their implications. Historical maps can further be highly beneficial for research in the field of Historical Political Economy when researchers face the issue of missing or incomplete data sources such as censuses.

In this article, I showcase the potential of using historical maps by discussing examples of published and ongoing research projects that underline how we can benefit from historical maps and generate data in a variety of research areas. After that, I highlight ways through which we can get access to historical maps of the Middle East. I also discuss challenges and limitations researchers could face with historical maps.

How does Middle East Research employ Historical Maps?

Historical maps have contributed to recent extensive advances in data collection for social mobilization research. Ketchley,[1] for example, uses historical map sheets dating between 1916 and 1918 to geo-locate telegraphs, telephones, postal, railway, and road networks; the author then uses that data to explain infrastructural drivers of the diffusion of protests in the Egyptian Revolution of 1919. Brooke and Ketchley[2] also use maps of Egypt to geolocate railways in 1936 to show that the expansion of political Islam was more likely in sub-districts with train stations connected to the Egyptian railway. Such studies have made extensive use of historical maps to extract indicators of early forms of state, economic, and communication infrastructure that could have been otherwise lost in archives.

Scholars researching determinants of state formation and political and economic development have also recently highlighted how historical maps help advance data collection in that field. Blaydes and Paik[3] use maps from Kennedy's[4] Historical Atlas of Islam to locate Muslim trade routes. They show that proximity to the Muslim trade routes had a positive impact on urbanization patterns in the year 1200. However, as new trade routes emerge, such as the European discovery of the Cape Route, the authors show a decline in Middle Eastern and Central Asian cities by 1800. Blaydes and Paik[5] use maps of crusader origins from the Euratlas project by Nüssli[6] to "calculate crusaders who mobilized during the First through Fourth Crusades for

[1] Ketchley, Neil, "Telegraphing Revolt: Protest Diffusion in the 1919 Egyptian Revolution," *Draft*, (2021).

[2] Brooke, Steven, and Neil Ketchley, "Social and Institutional Origins of Political Islam," *The American Political Science Review* 112, no. 2 (2018): 376-394.

[3] Blaydes, Lisa, and Christopher Paik, "Muslim Trade and City Growth before the Nineteenth Century: Comparative Urbanization in Europe, the Middle East and Central Asia," *British Journal of Political Science* 51, no. 2 (2019): 845-868.

[4] Kennedy, Hugh, *An Historical Atlas of Islam* (Leiden: Brill, 2002).

[5] Blaydes, Lisa, and Christopher Paik, "The Impact of Holy Land Crusades on State Formation: War Mobilization, Trade Integration, and Political Development in Medieval Europe," *International Organization,* (2016): 551-586.

[6] Nüssli, Christos, "Digital Historical Cartography of Europe," 2011, http://www.euratlas.com/about.html.

each sovereign entity in the map."[7] Using this crusader variable as a proxy for the degree of crusade mobilization in each location, they find that areas with larger numbers of crusaders have increased political stability, institutional development, and urbanization. Grosjean[8] uses maps from the Periodical Historical Atlas of Europe[9] to show that areas governed by the Ottoman Empire experience lower levels of financial development in the present.

Scholars researching philanthropy and service delivery in the Middle East have expended remarkable efforts to obtain and employ historical maps in their research. For example, Cansunar[10] underlines inequalities in access to charitable infrastructure, like public water fountains, across different ethnic and social groups in Ottoman Istanbul. She uses historical maps to support her empirical analysis by geocoding geographic covariates of Istanbul's neighborhoods, such as location of mosques, elevation and distance from the coast, distance to the Imperial Palace, and walking paths from a neighborhood with no fountains to one with fountains. The author shows that elites endowed the majority of the water fountains in Ottoman Istanbul to neighborhoods of other Muslims and elite groups and finds that the physical cost of obtaining water is lower in elite neighborhoods.
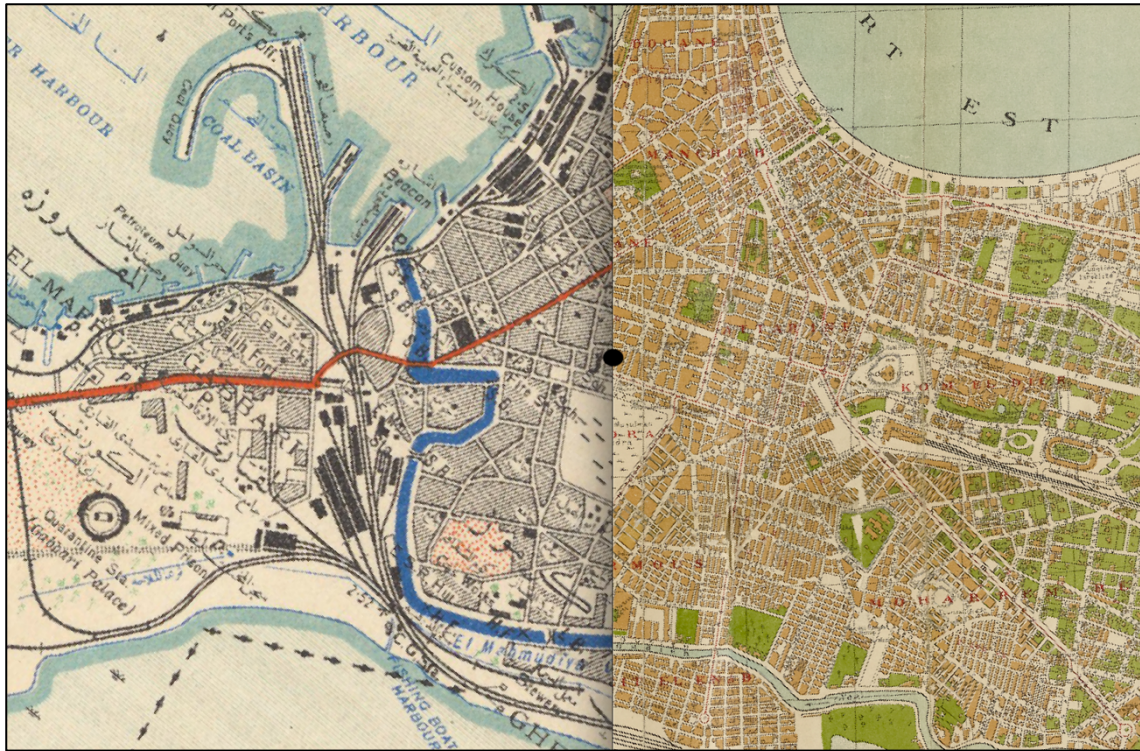
Figure 1: Georeferenced maps of Alexandria 1915 - 1930

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[7] Blaydes and Paik, "The impact of Holy Land Crusades", 566.

[8] Grosjean, Pauline, "The Institutional Legacy of the Ottoman Empire: Islamic Rule and Financial Development in South Eastern Europe," *Journal of Comparative Economics* 39, no. 1 (2011): 1-16.

[9] Euratlas, "Periodical Historical Atlas of Europe," Version 1.2 of 2008.

[10] Cansunar, Asli, "Distributional Consequences of Philanthropic Contributions to Public Goods: Self-Serving Elite in Ottoman Istanbul," *Journal of Politics,* (Forthcoming).

Maps sources: On the left, the map is obtained from David Rumsey Map Collection, 1915 Alexandria map by Ministry of Finance Egypt [11]. On the right, the map of 1930 is from New York Public Library by Pincus and Princess Firyal Map Division[12].

My dissertation research focuses on understanding mechanisms of responsiveness of local elites to public service needs in their cities, highlighting highly important patterns and developments of internal self-governance in colonial cities and how they can relate to local economic development. Alexandria provides a good example of how historical maps can help us gain access to important and rare information about the development of a city (Figure 1). In the 19th and early 20th century, Alexandria was well documented by cartographers because of its highly

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[11] Ministry of Finance Egypt, Maslahet el Misahah, Wizarat al-Maliyah, "Sheet 21 Alexandria Map," Dated 1915 in David Rumsey Map Collection, accessed January 2021 https://www.davidrumsey.com/.

[12] Pincus, Lionel, and The New York Public Library Princess Firyal Map Division,"Plan général d'Alexandrie avec ses embellissements récents, 1930; Plan général de Ramleh," Dated 1930 in The New York Public Library Digital Collections, accessed January 2021, https://digitalcollections.nypl.org/.

cosmopolitan nature and centrality for trade. Thus, I have been able to collect a series of maps that provide me with neighborhood-level data to investigate under which circumstances local elites of different backgrounds are responsive to some service-related needs but not others, and how those decisions impact economic and social inequalities that persist over time and space.

In summary, the work highlighted in this section stresses how geography can be important to understand determinants of political and economic development, provision of charitable endowments and public goods, and also political behavior. Historical maps allow us to test for theories of a spatial nature. They also let us measure proximity directly and show changes over time. Finally, historical maps can be central for researchers to develop measures of segregation[13] and to understand under which circumstances segregation becomes embedded in the city's fabric. For example, Lévêque and Saleh[14] use historical maps of Cairo to geocode firms in Cairo between 1848 and 1868 to show how industrialization affects religious segregation in the city.

Accessing Historical Maps and the Associated Limitations

These types of valuable historical maps can be obtained from a variety of sources. In this section, I discuss some of these map sources and associated limitations; Table 1 summarizes different public and university libraries, projects, and atlases where historical maps are located. The list is certainly not exhaustive. To use these maps, many will have to be located, checked physically, and scanned, preferably by high-resolution scanners. If those are not available, researchers can also use their phones to take pictures and stitch them together. Unfortunately, because of the COVID-19 pandemic, physical access to libraries, archives, and universities might be restricted or limited at the moment. However, some digital collections can be easily accessed

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[13] Cho, Wendy K. Tam, and James G. Gimpel, "Geographic Information Systems and the Spatial Dimensions of American Politics," *Annual Review of Political Science* 15, (2012): 443-460.

[14] Lévêque, Christophe, and Mohamed Saleh, "Does Industrialization affect Segregation? Evidence from Nineteenth-century Cairo," *Explorations in Economic History* 67, (2018): 40-61.

and maps can be downloaded directly. GIS[15] software such as QGIS and ArcGIS can then be used to georeference these maps. Georeferencing is the process of matching map sheets' locations to the coordinate system of, for example, a current map. We can then extract positions of entities of interest, boundaries, and textual information.

The British Library in London is a great source for finding historical maps – its map collection is one of the largest in the world. Of course, some maps require access to the library's reading rooms; however, there are also scanned maps that can be downloaded online. Also, the National Library of Scotland includes maps of North Africa and some parts of the Levant. The Library of Congress also hosts an extensive collection of maps, partly physical and partly online. The New York Public Library has a digital collection interface that provides access to some Middle East historical maps. Another great source is the Bibliothèque nationale de France (BNF), which includes a large online map collection that permits high-resolution downloads. In Egypt, Bibliotheca Alexandrina has a map collection and atlases with a special focus on Alexandria, Egypt, the Arab world, and the Mediterranean region. The library has a search tool for its map collection that provides information, for example, about which maps have been digitized; that tool can be fully accessed through the library's computers in Alexandria.

In addition, university libraries around the world host collections of Middle East historical maps. The University of Oxford has a great collection of maps. Most of the maps are stored offsite and require ordering to the map room. Ketchley[16] and Brooke and Ketchley[17] have used Egyptian historical maps from Princeton and Harvard universities for their recent research. Harvard has a geospatial library[18] that is a great source for getting raster layers and shapefiles for Middle Eastern cities

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[15] Geographical Information System.

[16] Ketchley, "Telegraphing Revolt".

[17] Brooke and Ketchley, "Social and Institutional Origins".

[18] This library includes maps from sources outside of Harvard as well.

that demarcate their contemporary and historical administrative divisions. These can also be viewed as layers on interactive maps. The Perry-Castañeda Library Map Collection at the University of Texas at Austin also gives researchers access to a great map collection. Although some institutions offer public online access to at least parts of their collections, there are, of course, institutional licensing restrictions and associated costs that can come with accessing needed maps.

National archives of countries hold many important maps; however, limitations in some countries can include, for example, long wait times for access to these archives. Also, in many countries, national archives and public libraries do not have fully cataloged archives, and this makes it challenging to know in advance what may or may not be available. Another general issue is having map sheets of the same city or country scattered around different institutions across the world. For example, recently, I could find only one sheet for a historical map that I needed for Alexandria, and it was not known in the library where the other parts may be.

It is worth highlighting that scholars from different academic institutions have been making remarkable efforts to set up projects to collect and digitize maps, in some cases also to crowd-source georeferencing efforts of these maps. For example, David Rumsey's map collection is an excellent online resource for locating Middle East maps. Google Earth also has a collaboration with Rumsey: a collection of maps from 1680-1930 are georeferenced online and can be easily viewed by swiping around a world map. Al-Turayyā project was developed by a team from the Universities of Vienna and Leipzig to assist researchers interested in geographical routes. They map the pre-modern Islamic world that consists of 2000 geographical routes and localities ranging "from Andalusia and the Maghreb in the West, to Samarkand and

Sind in the East;"[19] the researchers georeference these routes and localities relying on Cornu.[20]

Last but not least, researchers requiring access to older historical maps of the Middle East, for example, for pre-Islamic, early Islamic, or from Crusaders periods, can find atlases helpful for this task[21] (The Appendix includes further details for those interested in exploring these resources).

Conclusion

In recent years, scholars of the politics of the Middle East have made notable efforts to obtain historical maps and use them to generate new data that can speak to a variety of research questions. However, there is still space in the field to make use of underutilized historical maps and unlock their full potential in research. In order to truly advance this work, it is essential that GIS skills be integrated into students' curricula. Geographical attributes extracted from historical maps can permit measurements of new variables. Historical maps can also help scholars interested in geospatial implications of temporal events find data sources to test their theories and can help us take advantage of natural experiments based on geography and geographic discontinuities.[22] Historical maps represent an important source for novel data collection. These maps can help scholars of the politics of the Middle East

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[19] al-Turayyā, Project. "A gazetteer (al-Turayyā Gazetteer, or al-Turayyā Gazetteer) and a geospatial model of the early Islamic world," accessed February 2021, https://althurayya.github.io/.

[20] Cornu, George, *Atlas du Monde Arabo-Oslamique à l'époque Classique: IXe-Xe Siècles* (Leiden Brill, 1983).

[21] Al-bab includes a list of good resources: https://al-bab.com/reference-section/historical-maps-arab-world.

[22] Keele, Luke, and Rocío Titiunik, "Natural Experiments based on Geography," *Political Science Research and Methods* 4, (2016): 65.

evade issues tied with contemporary data collection in countries where research data are scarce and allow us to answer research questions in unique new ways.[23]

Appendix:

Table 1: Public Libraries, University Libraries, Research Projects, and Historical Atlases for locating Historical Maps

Public Libraries	
British Library	Physical and online access
National Library of Scotland	Physical and online access
Library of Congress	Physical access, some maps online
Bibliothèque Nationale de France	Significant digital collection, other cartographic documents require physical access
Bibliotheca Alexandrina, Egypt	Requires physical access, full information about the map collection can be identified from the library's computers
New York Public Library	Online collection includes some Middle East maps
University Libraries	
University of Oxford, Bodleian Libraries	The majority of the Middle East-related maps require access to Weston library
University of Texas at Austin Perry-Castañeda Library Map Collection	250000 maps available, 20% of them are online

[23] Cammett, Melani, and Isabel Kendall, "Political Science Scholarship on the Middle East: A View from the Journals," *PS: Political Science & Politics,* (2021): 1-8; Brooke and Ketchley, "Social and Institutional Origins".

Harvard University	[Geospatial library](), a physical collection, and [scanned maps]()
Princeton University	Large map collection, including the Digital Maps and Geospatial Data [Portal]()
University of Chicago	Middle East and North-Africa [Map Collection]()
Projects	
David Rumsey's Map Collection	Probably one of the best collections [online]() for Middle East historical maps
Google Earth	[Georeferenced historical maps]() 1680-1930 based on Rumsey's collection
Old Maps Online	[Using a searchable portal]() you can locate which external sources hold historical maps you need
EURATLAS by Nüssli[24]	[Collection]() of Maps for Europe and the Middle East ranging over several centuries
Geacron	[Geo-temporal]() database since 3000 BC
al-Turayyā[25] Project	[Project]() developing a geospatial model of the early Islamic world
Atlases	
Classical Atlas of Ancient Geography by Findlay[26]	Ancient Geography in the pre-Islamic period

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[24] Nüssli, "Digital Historical Cartography of Europe".

[25] al-Turayyā, "A gazetteer".

[26] Findlay, Alexander G., *A Classical Atlas, to Illustrate Ancient Geography: Comprised in Twenty-five Maps, Showing Divisions of the World as Known to the Ancients with an Index of the Ancient and Modern Names* (William Tegg, 1849).

Historical Atlas of the Muslim Peoples by R. Roolvink[27]	Expansion of Islam
An Historical Atlas of Islam by W.C. Brice edited by Kennedy[28]	Focus on the early Islamic period, includes boundaries and trade routes
Atlas of Islam 1800-2000 by Birken[29]	Muslim world - some maps focus on ethnic and religious presence

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[27] Roolvink, Roelof, *Historical Atlas of the Muslim Peoples* (Routledge, 1957).

[28] Kennedy, *An Historical Atlas of Islam*.

[29] Birken, Andreas, *Atlas of Islam 1800-2000* (Brill, 2010).