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GLOBALIZATION IN EGYPT IN HISTORICAL CONTEXT:
THE SUEZ CANAL, HISTORY, AND GLOBALIZATION

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ABSTRACT

The history of globalization is generally depicted as involving increasingly reduced constraints imposed by space and distance and the accelerated flow of people, goods, services, and ideas. This picture can be refined by considering the various movements through the Suez Canal, a global shortcut that is often presented as belonging to a narrative of mid-late 19th-century technological progress. After its opening in 1869, the canal developed into a thoroughfare, carrying records and goods as well as people and their ideas. However, an under-examined role of the Suez Canal is its role in triggering changes in the local flora and fauna, environmental transformations, and the migration of species. This study considers the role of the Suez Canal in the globalization of Egypt with a focus on impacts on the social and natural environments. Following a case study of Port Said and Ismailia as model cities, the paper presents a review of some articles published in *Nature* since the canal's opening. Ultimately, it delineates five historical stages of increasing globalization, which encompass issues concerning the canal's opening and biology as well as debates among scientists and other experts.

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INTRODUCTION

Research into the net effect of globalization on the environment has matured, although there remain many outstanding questions. Moreover, there has been little (to no) effort exerted at linking up the two broad kinds of literature concerning the direct and indirect effects of globalization on our natural environment. Globalization impacts all aspects of life, and no country is excluded from its effects. Driven by technological development, globalization results from the worldwide movement and exchange of goods, services, capital, people, ideas, and cultural practices, among others. Innovations in transport (e.g., steam locomotives, steamships, jet engines, and container ships) and telecommunications technology (e.g., the telegraph, internet, and mobile telephones) have contributed to globalization, fostering increasing economic and cultural interactions and interdependence.

Egypt is particularly affected by innovations in transport because historically, it sits at the crossroads of trade between three continents and relies for sustenance on a single river whose headwaters lie outside its borders. This interconnection and crucial vulnerability have made use of the Nile extremely sensitive to the movements of external powers.

Since its opening in 1869, the Suez Canal has served as a nodal point and lynchpin of various forms of mobility, carrying not only records and goods but also people and their ideas. Developed as a thoroughfare granting ships a direct route between the North Atlantic and northern Indian oceans via the Mediterranean Sea and the Red Sea, the Suez Canal drastically reduced transport distance and time for European and Asian vessels, which had previously been obliged to circumnavigate Africa in order to move goods across regions.

The canal remains critically important in the modern global container shipping network; approximately 1.2 billion tons of cargo pass through it annually (Suez Canal Authority, 2021), amounting to about USD \$9.6 billion of goods per day and 12% of total global trade (Baker et al., 2021; Martin, 2021). As such, it can be stated that the Suez plays a substantial role in facilitating globalization. Indeed, when the ship *Ever Given* was stuck in the Suez in March 2021, financial experts estimated economic losses from the resulting blockade at USD \$400 million per hour, raising widespread fears of catastrophic effects on the global supply chain (Ghosh, 2021).

BACKGROUND AND PRECURSORS

Historical records document several efforts to create artificial east-west waterways between Egypt and Western Asia. In each case, the canal fell into disrepair, only to be extended, abandoned, and rebuilt. The first recorded attempt to create a human-made canal through the Isthmus of Suez dates back to the reign of Pharaoh Senusret III in 1874 BC (Breasted, 1906). Although the project was abandoned, reliefs during the rule of Hatshepsut depict seagoing vessels carrying an expeditionary force returning from Punt, which suggests the presence of a navigable link existed between the Red Sea and the Nile in 1470 BC (Sanford, 1938), and additional evidence supports the existence of a

navigable waterway during the time of Ramesses II in the 13th century BC (Chisholm, 1911). According to Strabo, this waterway began near Arsinoe (modern Suez) “in that recess of the Arabian Gulf which penetrates into Egypt. Here are harbors and dwellings and several canals with lakes adjacent to them.” The canal went north and then followed Wadi Tumilat to join the Pelusian branch of the Nile near the town of Phacusa. From there, ships passed into the Mediterranean following the Nile branch to the port of Pelusium (Bedford Pim, 1859).

According to Herodotus, the pharaoh Necho attempted to reconstruct the canal in the 7th century BC; however, he was afraid of the supposed sea-level differences between the two seas and the possibility of the Red Sea flooding Egypt. However, the Persian ruler Darius was more successful, and he celebrated his reconstruction of the canal in the text of a stele on the western shore overlooking Bitter Lake. According to Strabo, the voyage through the Isthmus took four days, and the canal was broad enough to admit two triremes abreast, i.e., approximately 30–40 m broad (according to the dimensions of a Greek trireme given by Casson [1959]). However, the triremes had only about 1.5–2 m drafts, and thus the canal could have been very shallow.

Approximately three centuries later, Ptolemy 11 Philadelphus rebuilt the canal and added a more direct, northern branch—similar to the modern Suez Canal—which led from Lake Timsah due north through Lake Ballah; however, like previous versions, this canal had fallen into disuse by 24 BC.

Sneh et al. (1975) discovered an ancient canal, unmentioned in any historical text, which ran from Qantara to the town of Pelusium on the Mediterranean shore. These authors consider that the 2–3-m deep and 20-m broad canal pre-existed the Pelusiac Delta branch, which became active only in the 5th century BC. This canal might have been part of a trans-isthmian waterway, although Sneh et al. (1975) consider it more as a sort of strategical water barrier mentioned in the Bible as “Pi-Hirot” or “Shur.”

Caliph Amro Ibn Ellass of Egypt rebuilt the canal after the Islamic takeover of Egypt, linking the Nile to the Red Sea and creating a new supply line from Cairo, which was used for shipping grain to Arabia and to transport pilgrims to the Holy Land. The canal was blocked up in 767 AD by the Abbasid caliph El-Mansur to cut off supplies to insurgents located in the delta and to starve out rebels in Medina. The last known written record of navigation through the old canal comes from the Irish Abbott Fidelis (7th century), who reports: “in naves in Nilo flumine, usque and introitum maris Rubri navigaverunt” (Letronne, 1841).

Scientists exploring Egypt in the early 19th century published detailed maps depicting their discovery of an ancient canal extending westward toward the Nile and northward from the Red Sea (Panckoucke, 1822) (*Description de l'Égypte ou, Recueil des observations et des recherches qui ont été faites en Égypte pendant l'expédition de l'armée française · Volume 11*. Oxford University Press). Preparations for the current canal began in 1854 when the French diplomat and engineer Vicomte Ferdinand Marie de Lesseps succeeded in

attracting the Egyptian viceroy Said Pasha's interest in the project, and in 1858, La Compagnie Universelle du Canal Maritime de Suez (Universal Company of the Maritime Suez Canal) was formed with the authority to cut a canal and operate it for 99 years, following which ownership would return to the Egyptian government. The company was originally a private Egyptian concern, with its stock chiefly owned by French and Egyptian interests. Digging began in 1859, and the canal opened ten years later. In 1875, the British government purchased Egypt's shares. (<https://www.sis.gov.eg/section/4683/2872?lang=en-us>).

Cosmopolitanism of Suez Canal Cities around 1900, Port Said as a Case Study

During its construction, the Suez Canal became a powerful symbol of the “shrinking of the globe.” (<https://globalurbanhistory.com/2017/06/20/cosmopolitanism-on-the-move-port-said-around-1900/>). In the decades after 1869, the Suez Canal and the Red Sea emerged as a lifeline for Europe, and the harbor towns of the Suez Canal became critically important. Among several towns built as part of the Suez Canal project, Port Said stood on a bed of earth excavated from the Isthmus of Suez. Its location at the Mediterranean entrance of the canal made it a quasi-obligatory stopover during the journey between the African and Asian colonies and Europe. Initially, it consisted only of wooden barracks for workers, but gradually, these barracks were replaced by more permanent structures. With its regular pattern and straight streets, the city stood in explicit contrast to the “oriental city,” which European town planners associated with winding streets and maze-like bazaar quarters. Unfortunately, despite expectations to the contrary, Port Said never developed into a flourishing city comparable to its rival Alexandria, and it remained a rather small town; by 1882, the number of inhabitants had stagnated at around 15,000.

However, the term “cosmopolitanism,” which was used by passing travelers to denote Port Said's “non-oriental” appearance, can provide us with a clear lens for understanding the city in the late 19th and early 20th centuries. The city's artificial nature did not fit the expectations of many travelers, and their descriptions illustrate the city's character as a global meeting place with a particularly fleeting and mobile population. Street scenes featuring people from different areas of the world became commonly associated with Port Said. In 1886, the town contained around 2,000 Habsburg subjects, 2,000 French, 2,500–3,000 Italians, 1,800–2,000 British subjects, and about 3,000 Greeks. Much of the population was directly connected to occupations involving mobility, including suppliers, service personnel, seamen, consuls, and merchants. Finally, the town was considered a temporary international dwelling place where seasonal coal heavers and others spent a night or only a few hours in Port Said, such as troops on their way to their colonial stations or other overseas operations, shipping crews, colonial officers, and tourists disembarking for shopping and entertainment. Around 1900, Port Said particularly catered to steamers on their way between Europe and Asia, Australia, or East Africa (Lotfy, M. M, <https://fount.aucegypt.edu/etds>)). Port Said's streets were named after a global array of characters and events, including eminent Europeans such as Empress Eugénie, Thomas Waghorn, and

Francois Joseph, and Ottoman and Egyptian rulers such as Sultan Murad, Sultan Othman, Said Pasha, Ibrahim Pasha, and Khedive Tewfik.

Cosmopolitanism of Suez Canal Cities around 1900, Ismailia as a Case Study

Historically, the city of Ismailia dates back to the pre-dynastic era, as the eighth district was in the lower Egyptian provinces. It was one of the largest provinces in this era, and its capital was called "Baratum" in the area of Tal Al-Maskutah (the city of Abu Sawyer now).

Recently, the new city of Ismailia is considered one of the most recent Egyptian cities, as it originated with the construction of the Suez Canal. Ismailia dates back to April 27, 1862, during the reign of Khedive Ismail, 3 years after the beginning of the digging of the Suez Canal in 1859, and after the French engineer, Jumard - responsible for planning the city of Ismailia - completed the planning work for the city, whose residents were mostly foreigners. Some of its neighborhoods and streets are still on the French pattern, especially in terms of urban planning.

The International Company for the Suez Canal divided the city of Ismailia into two parts, the El Franj district, which is dedicated to the residence of foreigners and is located on the Suez Canal, and the Arab neighborhood, which is dedicated to Arabs and Egyptians and is far from the canal. The El Franj area is distinguished by French architecture that still exists. In addition, Ismailia witnessed the establishment of the first church, the French Church, called "San Francisco de Sala". The first mass was held in 1862.

The head office of the Suez Canal Authority (established on July 26th, 1956) is located in Ismailia on the shore of Lake Timsah. It has a large number of buildings dating from British and French involvement with the Canal. Most of these buildings are currently used by Canal employees and officials.

The Suez Canal and unifying the world

Twelve years after the establishment of the canal, in 1881, a ballet was presented by the Italian designer and artist Luigi Manzotti in Milan under the name "Excelsior" to introduce theater-goers in Western Europe to the Suez Canal. The aim was to illustrate through ballet all the great discoveries and achievements of the late 19th century. The result was 'a choreographic, historic, allegoric, fantastic plot in two parts and eleven scenes', i.e., this was not a ballet in the classical sense. The steam engine, the Brooklyn Bridge, electricity, telegraph, the Suez Canal, and the tunnel between Italy and France were all shown on stage. The ballet tells the story of civilization's success through a duel between the demon of darkness and the genius of light. It was a huge success when first performed, enjoying a run of 103 performances during that year alone and then moving to other European cities, such as London in 1885 and Frankfurt in 1891 to celebrate the International Exhibition of Electricity and Technology. In the seventh scene, onlookers suddenly find themselves transported into the desert, which Satan praises as, the "frontier of culture", and thus as his last stronghold: this is the area where civilization will not make any progress. No

explorer may travel across these lands, no ship may disturb its peace, and railways may never be transported to this "dark continent ."However, at that moment, the genius of light intervenes and declares Satan wrong; the transportation revolution will not stop at the edge of the desert but will conquer the "dark continent" as well. At this moment, the clouds appear and the Suez Canal is filled with ships of all nations. Slaves are released, and civilization is pampered as a young woman of Egypt, England, China, Turkey, and Spain, as she does not want to belong to one nation. This is followed by a great celebration of the goal of uniting all peoples through the communication provided by transportation, which was embodied in the Suez Canal. This scene reflects the vision of the canal as a great unifier promoted by the official discourse of the canal builders with this interpretation.

The Suez Canal in Nature

The Suez Canal started as an international enterprise, a center of preoccupation for the most enlightened minds of the mid-19th century. The same was true for the nascent study of marine biology. During the century which has since passed, however, the international commonwealth of scientific research has fallen apart, and the Suez Canal has become an increasingly coveted object in the international power struggle. In the years immediately after its founding in 1869, *Nature* often focused on science in Great Britain as well as what was occurring in its colonies. Dozens of articles were written about Egypt, especially on the Suez Canal.

Opening of the Suez Canal, 1869

Four articles in volume 1 of *Nature* (1869) documented the opening of the Suez Canal. T. Login, late chief engineer (C.E.) of the Ganges Canal, wrote that the "All-engrossing topic of the day is the Suez Canal, about which some diversities of opinion still exist. Again, He wrote, Suez Canal—is to be opened in presence of emperors, kings, princes, and potentates; of eminent engineers, famous warriors, and distinguished savants invited from the East and from the West; and while the ceremonial lasts the very dreariest of the dreary wastes that here and there border the blue waters of the Mediterranean will be animated by a brilliant throng and the sound of music, and speeches will be made and health will be drunk, and all present will join in wishing success to the memorable enterprise, which, for a time, is to furnish to Arab storytellers and Frankish newsmongers a topic to talk about. "The flotilla, with its noble, royal, imperial, and scientific freight, has progressed along the new-made way from sea to sea. From Port Saïd, that new town between the sea and the wilderness, with its ten thousand inhabitants, and acres of workshops and building-yards, and busy steam-engines, the naval train floated through sandy wastes, across lakes of sludge and lakes of water filled from the Salt Sea; past levels where a few palm-trees adorn the scorched landscape; past hill-slopes on which the tamarisk waves its thready arms; past swamps where flocks of flamingoes, pelicans, and spoonbills, disturbed by the unwonted spectacle, sent up discordant cries; through deep excavations of hard sand or rock; across the low flat of the Suez lagoons and so to the 'red' waters of the great Gulf of Arabia. The flotilla has done its work: the Canal has been opened; and the distance by water to India is

now 8,000 miles, instead of the 15,000 miles by the old route around the Cape of Good Hope”.

Interchange of the Marine Fauna and Constant Currents 1870

Under the title “Legislation and Nature,” Goadby (*Nature*, volume 1, pages 648-649, 1870) argued that the Suez Canal had not existed long enough to have had any appreciable effect either in modifying the coastlines of the Mediterranean or in creating any interchange of marine species; however, Suez Canal had not existed long enough to have had any appreciable effect, either in modifying the coast-lines of the Mediterranean, or in creating any interchange of marine species; and we cannot predict what may be their effects. Jeffreys (*Nature*, volume 2, page 83, 1870) shed light on the interchange of the marine fauna of the Mediterranean and the Red Sea that would probably result from this artificial mode of communication. In another issue, Galton (*Nature*, volume 2, page 189, 1870) wrote about the anomalous phenomenon of the constant current that runs through the central portion of the Suez Canal from the side of the Mediterranean to that of the Red Sea.

Biological Notes and Zoological Results of the Visit of Prof. K. Moebius to Mauritius 1880–1887

Moseley (*Nature*, volume 23, pages 514-515, 1881) presented the results of investigations on the Suez Canal and a voyage through the Red Sea, where *Trichodesmium*, the yellowish-red floating algae that are supposed to have given the name to the sea, was found in abundance. Additionally, Clarke (*Nature*, volume 25, page 9, 1881) noted that the changes to rainfall patterns in the Suez and Cairo district were attributed to the Suez Canal. In “Biological Notes: Fauna of the Suez Canal,” Keller (*Nature*, volume 26, pages 42-44, 1882) claimed that “the exchange between species was proceeding slowly owing to the presence of the “Bitter Lakes” through which the canal was traced.” Lecturing on “The International Hygienic Congress at Vienna,” Pettenkofer (*Nature*, volume 36, pages 524-527, 1887) dwelt on the necessity of spreading hygienic principles among all classes of society and denied that the English were responsible for cholera coming to Europe through the Suez Canal because the disease had frequently occurred before the canal was opened.

Success of Anti-Malarial Measures and the Migration of a Red Sea Crab 1903–1929

Ross (*Nature*, volume 75, pages 204-205, 1906) published a translation of a report received from the General Secretary of the Suez Canal Company regarding the effects of the anti-malaria campaign at Ismailia following his visit to the area with Sir William MacGregor the previous September. Fox (*Nature*, volume 113, pages 714-715, 1924) lamented that since the opening of the Suez Canal, “it has been invaded from both ends by plants and animals. Some members of the Red Sea fauna have passed right through the Canal to spread into the Mediterranean, and some Mediterranean species have reached the Red Sea.” In 1925, Fox (*Nature*, volume 115, pages 262-263, 1925) discussed the Cambridge Expedition financed by the Royal Society, which had left England

the previous September to study the migrations of marine organisms through the Suez Canal. Among the conclusions from the expedition, he noted that the marine faunas of the Mediterranean and Red Seas differed so widely from one another before the opening of the Suez Canal that in many groups, if a species was found in one sea, it was almost certain that it did not occur in the other. Since then, there have been a few Red Sea crustaceans found all over the Mediterranean, and a swimming crab is being commercially fished along the North Egyptian coast, where also the Red Sea pearl oyster is common.

Migration of Species 1932–1953

Writing about “*Parexocætus*, a Red Sea Flying Fish in the Mediterranean,” Bruun (*Nature*, volume 136, page 553, 1935) proposed that “it seems very possible that *P. menta*, one of the neritic flying fish, has passed through the Suez Canal and found a new breeding place in the innermost, warmest part of the Mediterranean.” In “Erythrean Fishes on the Mediterranean Coast of Palestine,” Haas and Steinitz (*Nature*, volume 160, page 28, 1947) stated that the presence of fishes of Erythrean origin in the Levant has been observed by several authors and that these fishes must have traversed the Suez Canal to settle in the Mediterranean.

Bishop (*Nature*, volume 165, pages 409-410, 1950) wrote about the “Distribution of *Balanus amphitrite* Darwin var. *denticulata* Broch” that “during the faunistic survey of the Suez Canal carried out by the Cambridge Expedition in 1924, Broch found a new variety of barnacle, commonly distributed throughout the entire canal, which he described under the name of *Balanus amphitrite* var. *denticulata*. Since Broch’s original description, there have been no further published records of this cirripede; but recent unpublished work on ship fouling shows that this barnacle, far from being a restricted local variety, is one of the commonest and most persistent of fouling organisms, tolerant of a wide range of temperature and salinity, and is probably the most widely distributed of all barnacles.”

Taylor (*Nature*, volume 171, page 756, 1953) recounted that in 1951, Sir John Graham Kerr collected some three hundred *Murex tribulus* shells on the western shore of the Great Bitter Lake south of the village of Fayid. It will be remembered that the entire animal population has been introduced subsequent to the cutting of the Suez Canal in 1869, which opened the way for immigrant organisms from the Red Sea. Now, granted the inherent tendency of living creatures to vary when relieved of the shackles of environment, Sir John argued that, in their new environment of the Bitter Lakes, these *Murex* specimens had had an opportunity of responding to this tendency, and hence the remarkable variety of sculpture in the random collection. Moreover, this variation exhibited in spines and tubercles is not a matter of mere superficial markings, but rather of deep-seated causes such as the localized growth of the mantle edge or the depth in the mud occupied by the individual animal.

Effect of the Aswan High Dam on the Suez Canal 1967–1976

Describing the effect of the Aswan High Dam on the Suez Canal, Morcos (*Nature*, volume 214, pages 901-902, 1967) wrote that “during the course of a recent investigation of the current regime in the Suez Canal, an unusual distribution of salinity was observed along the canal in September 1966. Comparison with older data from the canal for the same month in years 1924, 1933, 1954, and 1964 showed that a complete reversal of the current regime at that time of the year had taken place.” El-Sabh (*Nature*, volume 218, pages 758-760, 1968) noted that “the Suez Canal, being an artificially created body of water, is not in stable equilibrium with the surrounding seas. A continuous effort has to be made to keep the canal in working order, and hence the hydrography undergoes continuous changes that have to be periodically recorded and analyzed. These analyses show that the currents and distribution of salt in the canal vary seasonally.” In 1973, Morcos and Messieh (*Nature*, volume 242, pages 38-39, 1973) illustrated that:

the exchange of water between the Red Sea and the Mediterranean through the Suez Canal takes place in a seasonal pattern. A northward current dominates the Canal from November to June with maximum velocities during winter. This current is reversed in summer to set in a southward direction with maximum velocities in August-September. But the southward current is generally weaker (in velocity and duration) than the winter northward current. This pattern of circulation was established by comparative study of all available monthly observations of salinity from previous years.

Meshal (*Nature*, volume 256, pages 297-298, 1975) wrote that the brine at the bottom of the Great Bitter Lake was a result of closing the Suez Canal:

During the process of clearing the Suez Canal and the Bitter Lakes from bombs and mines resulting from the 1967 and 1973 wars, an abnormal phenomenon was observed. Divers reported that diving was rather difficult through a layer extending about two meters above the bottom in the eastern part of the Great Bitter Lake (GBL). When this layer was reached through diving, any diver was forced to turn upwards. Moreover, sounding of depths by the use of sonic waves gave values which were less by about 2 m than when measured by weight and line.

Recent Subsidence of the Northern Suez Canal 1997–2015

In 1997, Stanley and Good friend (*Nature*, volume 388, pages 335-336, 1997) urged that:

In contrast to a recent interpretation of delta coast stability, we now show that the north-eastern Nile delta in Egypt has been actively sinking relative to the sea during the recent Holocene epoch. The northern Nile delta is only about 1 m above sea level, making the northern Suez Canal and coastal cities of Port Said and Port Fouad (combined population nearly 500,000) highly vulnerable. Subsidence and world sea-level rises contribute to coastal erosion, incursion of salt in the groundwater underlying the delta plain, and silting problems in the canal entrances. These processes must be considered when implementing protection measures for this area.

CONCLUSION

The history of globalization is often referred to as a history of shortening distances, accelerating the flow of people, goods, and ideas. This picture is supported by observing the various mobile people passing through the Suez Canal area in 1869. During this period between 1869-up till now, the Suez Canal was regarded as a global navigation and trade route connecting the two continents of Asia and Europe.

This article reveals the extent to which the Suez Canal has become a factor of globalization since the early days and has made an important contribution to the global history of the region.

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