




The Origin and Development of Port Said City between Determinism and Possibilism

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ABSTRACT

There is a mutual relationship between the environment and humans; the environment affects humans, humans in turn affect the environment, and there is an overlap between humans' impact on the environment and being affected by it. The study aims to explore the connections between physical and human conditions. Port Said city is chosen as a model for the subject of the struggle between humans and the geographical environment, as the value of the role played and imposed by those physical conditions and the place of the human factor in it becomes clear. The emergence of Port Said city is due to a human factor, which is to serve the navigational purpose of the Suez Canal. Besides, the conditions of the physical environment in which Port Said originated had their great impact on city life. The matter in which human activity was only a response and subject to the command of those purely physical factors from which man tried to find the most appropriate to reach his goal. However, the human factor, which had a clear and tangible impact on changing many topographical features and showing a new image of life in a barren area, contributed to the emergence of the city in its final appearance. Hence, it is correct to point out that the environment does not decide or dictate to humans all aspects of their activity. Human life itself is capable of overcoming the difficulties it faces and benefiting from the capabilities offered to it by the environment.

Keywords: Port Said city, Determinism, Possibilism, environment, the Suez Canal.

Introduction

During the nineteenth century, geographical studies tended to pay attention to the development of geographical thought and various geographical research. Modern geography took on the character of science after it has included, for many centuries, fragments of knowledge and

facts that were predominantly descriptive. Among the most important results of the serious intellectual struggle were those between two groups of geographers.

The first group is represented in the Determinism School, headed by the German geographer Ratzel, Ellen Semple, and Demolins. This group

viewed man by placing his activity, history, and lifestyle within the determinism framework that imposes on him the pattern of interaction with the earth. Besides, they put him into compliance and obedience to the dictates of physical reality.

The second opposing group is represented in the Possibilism School, headed by the French geographer Vidal De La Blache and Taylor. This group rejected the idea of determinism in form and substance and viewed man through the ability to face challenges. In this regard, they were convinced that nature does not whisper a solution in the human ear, but that this solution is reached through continuous effort (Al-Shami, 1976).

Recent geographical studies have indicated that there is undoubtedly a mutual relationship between the environment and man. That is, the environment affects man, and man in turn affects the environment. In addition, there is a subtle overlap between the human impact on the environment and its impact on him in a way that makes it difficult to know when one impact ends and the other begins (Ghallab & Abu Al-Lail, 1987).

The general theory that is to be interpreted is the interaction between two basic dimensions, namely the environment, which is represented in the characteristics of the location and site, and the human being, as well as the mutual relationship between them. With these two elements, the character of the site can be explained.

Port Said city is selected to study the issue of the mutual impact between the environment and man. This is mainly due to the fact that the origin of Port Said is a model for the issue of the struggle between man and the geographical environment as the value of the role played and imposed by those physical conditions, along with the status of the human factor in it, becomes evident. Man could not stand idly by before the conditions of the harsh environment and could overcome the

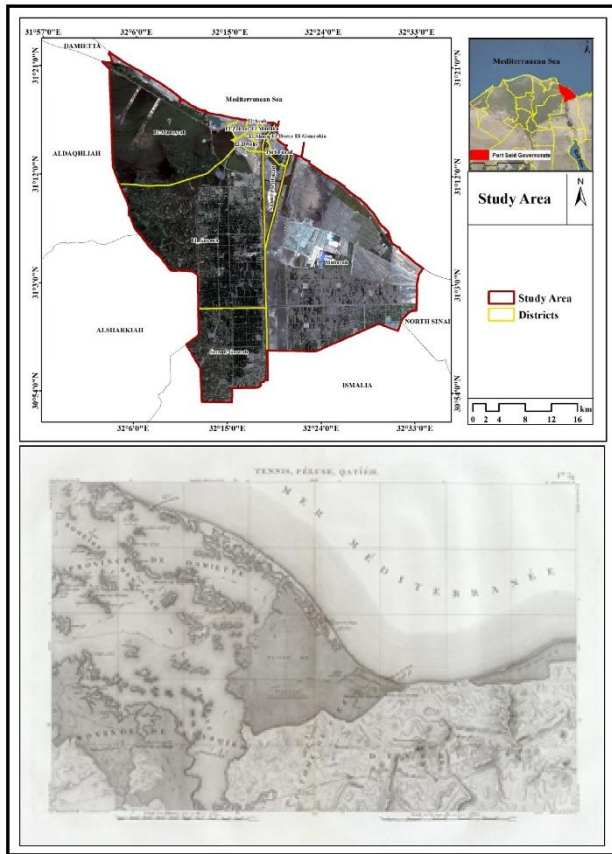
obstacles he encountered and the extent of their impact.

Port Said city is on that narrow coastal strip between the Mediterranean Sea and Lake Manzala. It is located at the intersection of latitude 31° 16' north and longitude 32° 18' east in a privileged location at the northeastern tip of Egypt at the head of the Suez Canal and the coast of the Mediterranean Sea. It is one of the urban governorates of Egypt, which currently has an area of 1351.14 km², with a percentage of 0.14% of the total area of Egypt (Figure 1). In essence, Port Said is a compound name from the word "Port", meaning port; and the word "Said", the name of the ruler of Egypt at the time of its historical origin.

This study aims to investigate the correlation between physical conditions and human conditions, the extent of the impact of the physical environment on human activity and the formation of society, and the role that man plays in shaping the face of the earth.

1. The Role of the Geographical Factor in Selecting the Ideal Location for the Estuary of the Suez Canal

When the geographical fact, pinpointed by Linant de Bellefonds in 1853, emerged that there was no difference between the level of the Mediterranean and the Red Sea, studies and designs began to determine the course of the canal in late 1855 (Mansi, 1971). Later on April 21, 1859, Ferdinand de Lesseps arrived in Port Said, and found that it was a barren area with no inhabitants, except for some huts in the village of Al-Jamil, 9 km to the west, which are inhabited by a few dozen fishermen. As for the other neighboring areas, they were the ruins of some ancient cities that flourished in ancient times and then collapsed, such as the city of Pelusium and Tennis (Figure 1).



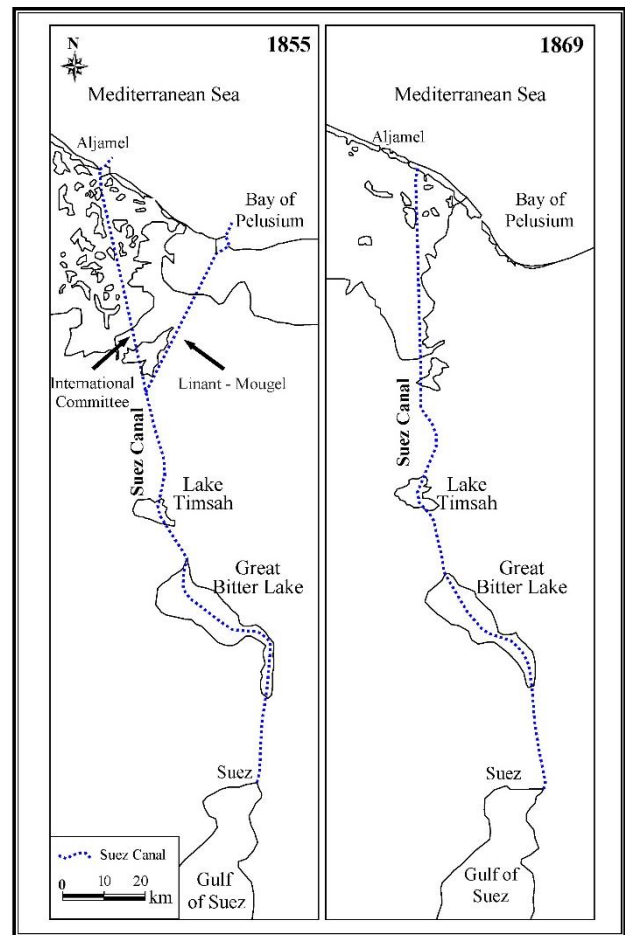
Source: El-Zeiny, et al., 2022, French Campaign Maps, Scale 1: 100000, 1826.

Figure 1. The Geographic Location of Port Said City

After the studies explored the characteristics of the site of the Port Said region, the geographical dimension had the greatest impact in modifying the estuary of the canal on the Mediterranean Sea from El-Tina mouth at Pelusium Bay to the current location 35 km west of the previously proposed one (Figure 2). This is mainly for the following geographical factors:

- The required water depth, which is eight meters at the mouth of El-Tina, is available only at a distance of 7500 meters north of this location within the Mediterranean Sea, while the current geographical location has the required water depth of eight meters at a distance of 2300 meters. The new location saves huge costs when constructing breakwaters, cleansing, and maintaining to ensure the proceeding of navigation.
- This location gives the navigational course straightness without any bends.

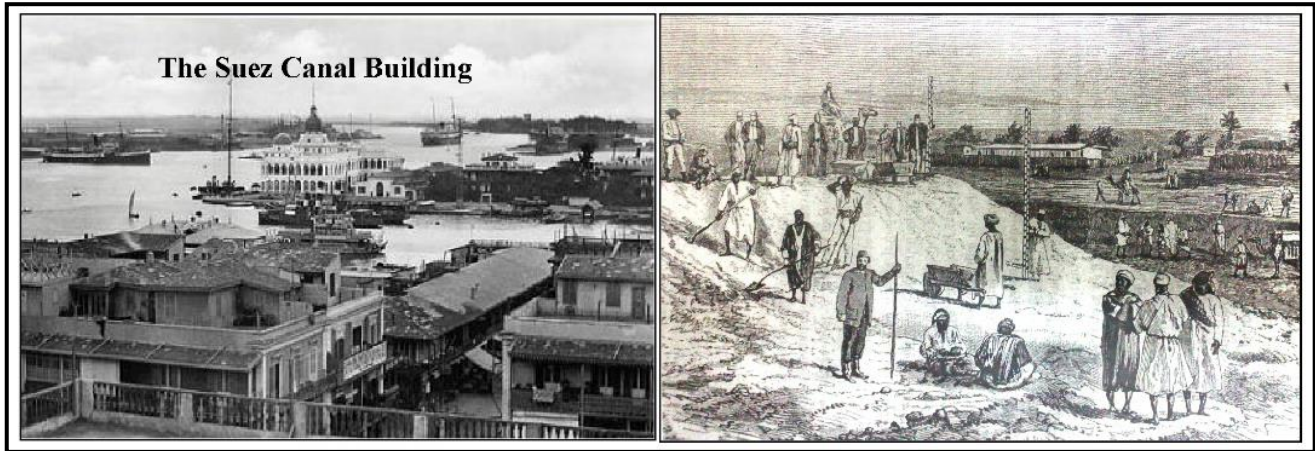
- Directions of winds and sea currents at the new location are more suitable for navigation than at any other location at El-Tina mouth at Pelusium Bay.



Source: Montell (2005) and Al-Baghdadi (1985), as cited in Reymond (1950).

Figure 2. Modification of the Estuary of the Suez Canal

April 25, 1859 is the date of the birth and origin of Port Said city, which historians have identified as being located in front of the Suez Canal building (Figure 3). The choice of this date was successful in terms of the weather condition, due to the absence of rain, which was mostly little in the rainy season. However, the drought was an important factor in the beginning because it helped a lot in drying the sediments extracted from the drilling process. Accordingly, the city did not exist before the construction of the Suez Canal, but rather it is considered one of the fruits of the canal, and therefore it can be said that the Port Said city is a gift from the Suez Canal (Hanafi, 2005).



Source: Al-Qadi (2010).

Figure 3. The Point Where the Excavation Began and the City of Port Said Later Appeared on, and the Building of the International Suez Canal Marine Company, Which Was Established in 1893

2. The Selection of the Location of Port Said City between Determinism and Possibilism

The origin of Port Said city is due to a human factor, which is to serve the navigational purpose of the Suez Canal. However, the physical conditions played a role in selecting the location of the main port at the head of the canal from the side of the Mediterranean. At the same time, the conditions of the physical environment, in which Port Said emerged, had profound effects on the life of the city. Geographical conditions affected the selection of the appropriate area on which the city was built, a matter in which human activity was not but responsive and subject to the order of those physical factors.

The physical conditions of that area on which the city emerged required it to be in the west of the canal, which is the source of fresh water resources and agricultural products that have an impact on selecting the location of the city in the west of the canal and not in the east.

Accordingly, the value of the geographical factor and its wide impact on determining the location of both the port and the city is evident, which is in line with the opinion of those who believe in the doctrine of geographical determinism. This matter is evident in the control of that environment in selecting the appropriate location for the city and the port. Nevertheless, the human factor, which had a clear and tangible impact on

changing many topographic features, contributed to the establishment of the city in its final appearance. If the location of Port Said city was the response to the purely physical conditions of which man tried to find the most appropriate in order to reach his purpose, the human factor appeared later. It appeared since the establishment of the city began to show a new picture of life in a barren region. In this regard, it is right to point out that the environment does not decide or dictate all aspects of human activity. This is mainly due to the fact that human life itself is able to overcome the difficulties it faces and benefit from the possibilities offered by the environment (Al-Gamal, 1952).

3. The Geological Characteristics and the Origin of the Port and City of Port Said

On the order of de Lesseps, an international committee was formed on April 30, 1855, so as to study the geological formations of the coastal region. The committee found that it consists of a coastal strip of fine sand, followed by a sandy area that extends into the Mediterranean Sea for a distance until the water depth becomes ten meters, and then there is a muddy area of Nile silt that extends into the Mediterranean Sea itself. Moreover, the committee concluded that the depth of the bottom from the surface of the water of eight meters, which is the depth required for navigation of large ships from the shore, is available in the western region of the Pelusium

Bay, at a distance of 2300 meters from the shore.

Accordingly, it became clear to the committee that there is no danger in the Pelusium Bay to the northern outlet of the canal from the Nile sediments or sand dunes. It was also clear that all that must be taken into account is to extend the channel outlet on the Mediterranean Sea so that it protrudes into the Pelusium Bay until it reaches a sufficient depth that allows ships to enter and exit (Negm, 1987).

The Port Said region belongs to the most recent geological eras (the Pleistocene and the Modern), whose formation is due to the dominance of the water of the Mediterranean Sea. Moreover, the rush of sea currents towards the east helped direct a large amount of sediment carried by the Nile water to the Mediterranean towards the east. Hence, the Port Said region is distinguished by its loose sand and the absence of the rocky element.

The absence of rocks and the predominance of sediments led to the absence of natural harbors, and thus the first environmental problem was related to the difficulty of anchoring ships close to the site. A rock was discovered a few hundred meters from the beach, almost protruding from the surface of the water, so the rock was provided with a wooden dock that helps the boats anchor. This small rock can be considered as the vibrant heart of the city (Crosnier-Leconte et al., 2006).

Besides, the absence of rocks in the Port Said region had a negative impact at the beginning of its emergence. An instance of this impact is dealing with the exorbitant cost of bringing stones from the El-Max area in Alexandria for establishing the port's dock and barriers at the beginning, and constructing bridges that would protect the city, whether from the north when the Mediterranean Sea dominates or from the south when the water of Lake Manzala dominates, to which the eastern branches of the Nile end in the Delta of Egypt (Al-Sayed, 2010).

Later, the company tended to rely on local environmental resources by making "blocks"

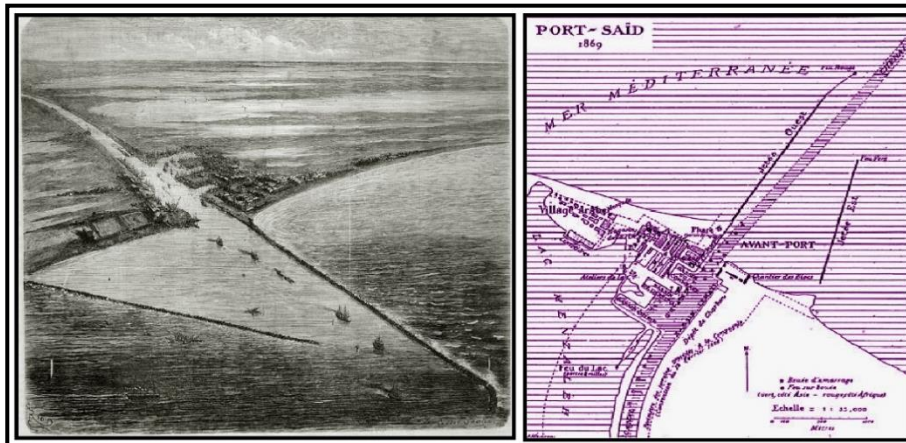
made of local materials within the city itself, and thus dispensed El-Max rocks. In this respect, the impact of man effort appeared in overcoming physical conditions and reaching his purpose through his own capabilities (Al-Gamal, 1952). Therefore, it was decided to manufacture these blocks locally, by extracting sand from the bottom of Lake Manzala and mixing it with hydrated lime, to form a mortar of lime and sand in a ratio of 1: 3. Their strength was greater than natural stones, and the weight of one block reached twenty tons (<http://www.pscopts.org>). In addition, Dassaud was assigned to work on manufacturing two hundred and fifty thousand cubic meters of industrial rocks to prevent water leakage and to reduce the continuous cleansing process of the port (Figure 4).



Source: <http://www.portsaid-online.com>

Figure 4. The Artificial Rocks, Used to Erect Two Breakwaters, Was Made in the Form of Blocks

Two breakwaters have been erected, one in the west and the other in the east (Figure 5). Concerning the western breakwater, it was known as the Ferdinand de Lesseps dock in which water whose depth is ten meters ends. It was 2,500 meters long and two meters high above the water surface, and it was completed in early 1869. As for the eastern breakwater, its end reaches a point where the water is eight and a half meters deep, and the ends of these two breakwaters meet with each other at the port entrance (Figure 5). The eastern breakwater is 1900 meters long and one meter high above the water surface, and it was completed in January 1868 (Negm, 1987).



Source: <http://www.diabcenter.com> - www.egyptionoasis.net

Figure 5. The Two Barriers at the Port Entrance at the Beginning of the Establishment of Port Said City in 1869

It is also worth mentioning that the geological formations of Lake Manzala are a rich resource for the extraction of gypsum, which was used after processing in the construction and coating of the old buildings in Port Said city, those that were built with reeds and gypsum. Their presence in the vicinity of the city saved the residents the hardship of transporting them from the neighboring governorates, and thus saved time and a lot of construction process (Al-Sayed, 2010).

Hence, the role of man interaction with the environment to reach his purpose emerged. There were physical obstacles that stood in front of the establishment of this port and accordingly the city of Port Said, such as the straightness of the coast and its sedimentary composition, and therefore the area was not suitable for docking ships from a physical perspective. As a result, the human factor had to be active and do its part to compensate for that deficiency imposed by physical conditions in front of the human need to find a suitable port.

4. Topographical Characteristics and the Origin of Port Said City

The site in which Port Said was established and developed was nothing but a coastal strip ranging in width between forty and fifty meters between Lake Manzala and the Mediterranean Sea. Water sometimes flooded it, as it was characterized by its flatness and the absence of heights, for it was rarely more than a meter, but the low levels of this

coast reach 0.8 meters, and that is in the part overlooking the Mediterranean coast directly northeast of the city in the vicinity of the western dock. To the west of this low level, we find levels of 0.92 meters, and the maximum height of that coast in front of the city is 1.5 meters. Then, after this relatively high area, the coast returns to decline, and we find that the coast level to the west of kilometer 3 reaches 0.78, 0.52, and then 0.40 meters, respectively, from west to east. It is clear from this that the level of the coast is not very high above sea level, and here appears the influence of geographical factors and their coprocess in giving a special picture of the Port Said, where we find that the low land surfaces are prone to submersion under the surface of the water if the winds blow in the winter season (Al-Gamal, 1954).

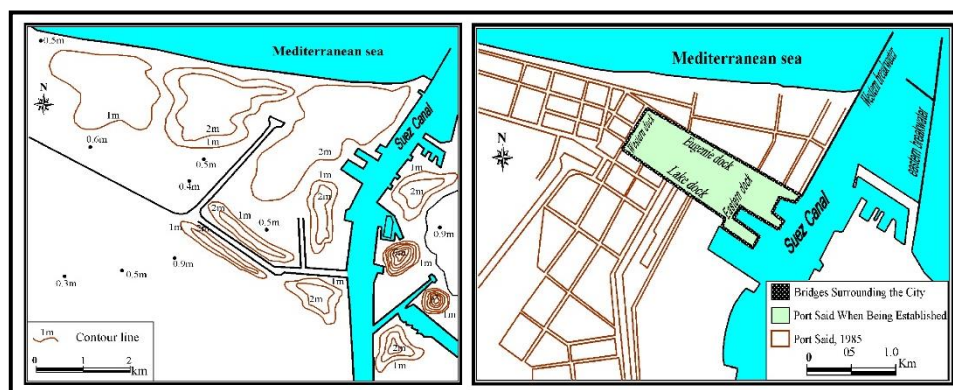
It is worth noting that on the 5th to the 6th of October of the year 1859, the sea flooded the camp and took the direction of the lake, which in turn advanced about 50 meters from the shore. In addition, part of the roof of large wooden buildings was destroyed by the wind. The manufacture of bricks stopped, as a result of the lake water intrusion into the camp, as well as waiting for the lake water to withdraw back and the moisture to leave the soil.

In addition, work in Port Said stopped for a long time in 1860, due to the high water level of the lake and the intrusion of the camp by a flood. Although the residents tried to protect the land from the water by means of some dams, the water

reached these lands to the extent that it was sometimes difficult to reach the windows of the houses, so it was necessary to wait until the waters of the lake receded (Salama, 2005).

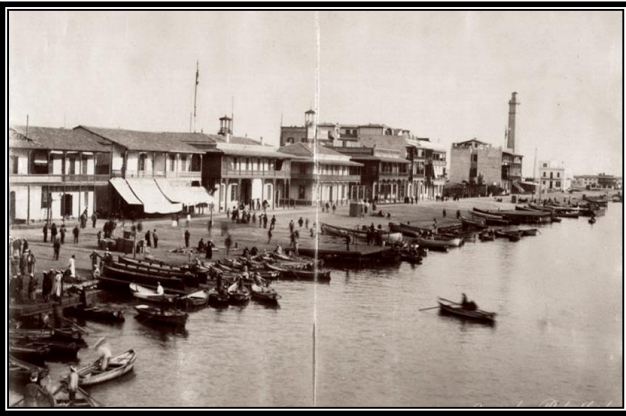
Hence, the main goal for man was to protect the city from this water, whether by building bridges or raising their level. Indeed, the bridges surrounding the city were raised, as they were built at a height of 2 to 2.5 meters above sea level (Figure 6/A). For this purpose, the northern dock, which is the Eugenie dock, was established (Figure 7). The retreat of the sea due to the sediment that accumulated west of the western breakwater led to the presence of several streets to the north of this dock. Concerning the eastern dock, it is the street that runs parallel to the Suez Canal and overlooks the port of Port Said. At this time, it was called the dock of Francois Joseph. As for the southern dock, it is the lake dock, and this dock is no longer the southern border of the city, as the streets parallel to it extended to the south with the growth and expansion of the city at the expense of Lake Manzala. Finally, the western dock extended from the west of Eugenie dock in the north to the west of the lake dock in the south. This dock was known at this time as Al-Tarsana Street (Al-Baghdadi, 1985). The area on which the city would be built was also backfilled in 1867, and the total volume of backfill amounts reached 628.3 thousand cubic meters at the end of April 1868. In other words, the excavation process helped to acquire new lands for the city (Ragab, 1984).

The role of man interaction with the environment to reach his purpose appears here, as he could not stand idly by in front of the harsh conditions of the environment. The human factor had a clear and tangible impact on changing many topographic features to become suitable for the establishment of Port Said city. It is evident from the study of the contour map of the Port Said area after the completion of the backfilling processes (Figure 6/b) that a two-meter contour line passes in the area located directly to the west of Port Said port, which is the residential block for the East, Arab and Al-Manakh sections. This line also passes through the eastern region of the Suez Canal, which is represented by the residential block of the Port Fouad section. The height of this region dates back to the early periods of the establishment of Port Said city and the digging of the Suez Canal, as these areas rose above sea level by this previous amount as a result of the accumulation of sand resulting from the digging of the Suez Canal and the backfilling of swamps on the northern and eastern banks of Lake Manzala. At the southwestern end of the city, we find a 2-meter contour line passing north and south of the communication channel, which connects the Suez Canal with the Lake Manzala Canal. At the southwestern end of the city, we find a two-meter contour line passing north and south of the connection channel, which connects the Suez Canal with the Lake Manzala Canal. These areas represent the bridges that were built south of Port Said to protect it from the advance of the waters of Lake Manzala over it (Al-Baghdadi, 1985).



Source: Al-Baghdadi, 1985.

Figure 6. The Contour Map and the Bridges That Surrounded Port Said City



Source: <http://www.as7apcool.com>

Figure 7. The Port Dock (Eugenie Dock) in 1870, When the Port Was Without Walls

New sandy lands, called Tarh Al-Bahr also appeared with the sea receding to the north. This helped in the emergence of a street in front of the pavement, which was called Eugenie Street. In 1862, a nucleus of a population cluster began to appear west of the wooden huts of the engineers and drilling workers on the shore of the canal being dug. The eastern cluster was separated from the nucleus of the western cluster by a sandy separator of about 500 meters wide that was flooded with water during the flood. The connection between them was by means of small boats. This separator is what is now known as Muhammad Ali Street (Hanafi, 2005).

The few depths of water caused the southern coastal part of the city, which overlooks Lake Manzala. This, in turn, resulted in the water there becoming almost stagnant, which does not help the existence of a good healthy atmosphere. That is, these areas represent a favorable environment for mosquitoes and their reproduction, in addition to the bad effect arising from the proximity of the ground surface level to the water level. As a result, most buildings and facilities suffer from high humidity as well as their decline over time, and this had its impact on the request of some residents in Port Said to move to other places (Negm, 1987).

Moreover, the shallow depths of the water in the northern coastal part of the city also made it difficult to use the port of Port Said as a berth for large ships, despite the fact that the depth of the

water reached about eight meters in front of the area chosen for the construction of the port. Hence, the ships were standing near the coast and transporting their cargo in small boats to the shore (Al-Gamal, 1952). Therefore, it was necessary for the company to find a solution to this natural environmental problem to make Port Said a suitable place for berthing large ships for the continuation of the canal project. In this regard, it built a bridge that extends in the Mediterranean Sea until it reaches sufficient depths at which ships stand to unload their cargo. In this way, the company faced this problem until it finally succeeded in entering large ships into the port (Al-Shennawy, 1958).

5. The Effect of the Location and Site on the Fresh Water Resources in Port Said

The nature of the geographical conditions of the region in which Port Said originated made it difficult for construction works, and one of the most important problems is the problem of fresh water. This problem cannot be solved by any means within the same place because of the impossibility of extracting fresh water from wells. This is mainly due to the nature of the formations in this coastal part in that they are sedimentary formations which at the same time are not high above sea level, as the salty water seeps to the bottom of that layer to mix with the groundwater. It is also not possible for the rains, as they are little, and their annual total does not exceed 70 mm.

Thus, we find that physical factors have come together to not supply Port Said with fresh water. Therefore, that was one of the most important problems that faced the city, which represented an important role in the roles of human struggle in overcoming these physical conditions (Al-Gamal, 1954).

Accordingly, it was necessary for Port Said to derive its need for fresh water from other sources. At the beginning, the company brought water for workers to drink from Damietta in boats across Lake Manzala and on the backs of camels and donkeys, and from Alexandria in boats equipped

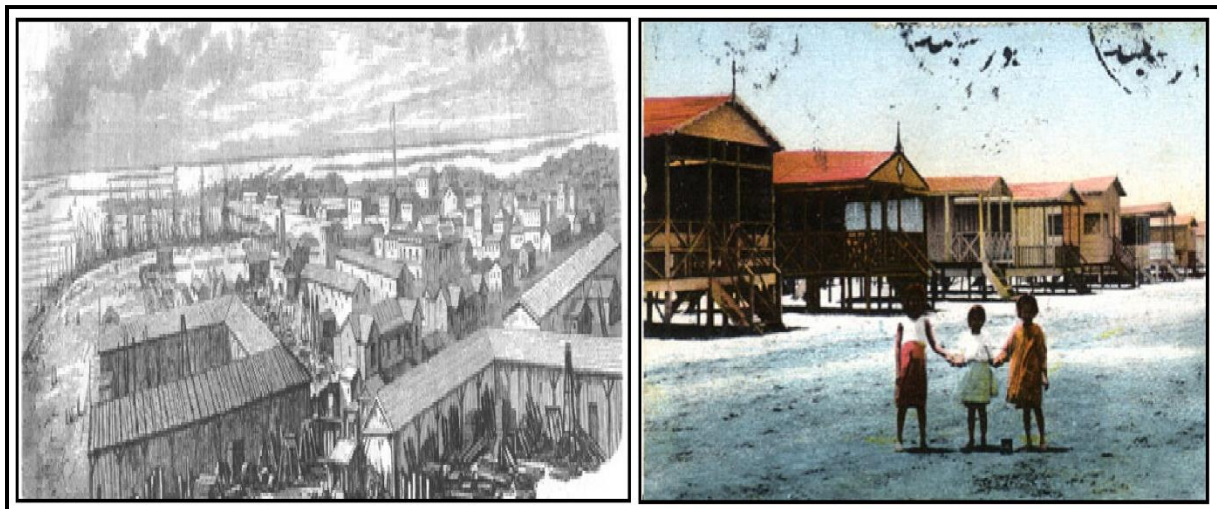
for this purpose. However, the boats were sometimes exposed to storms, which prevented their arrival on time, and this matter had serious consequences in terms of exposing the lives of workers to the danger of dying of thirst and disrupting the workflow (Al-Baghdadi, 1985). Moreover, de Lesseps used to resort to the wells located in the village of Katia, several kilometers east of the excavation site (Al-Qadi, 1997). It was also relied on a well located at El-Tina mouth, but the water of those wells was unpalatable as a result of its mixing with sea water. The company was not satisfied with that, rather it used water distillation devices and set up two condensers in 1859. Nevertheless, the lack of water was a reason for quarrels among the people, particularly in the village of Arabs, and this caused severe anxiety and permanent disturbance to the company (Negm, 1987). This situation continued until the company finished laying a pipeline to transport water from Ismailia to Port Said (Al-Shennawy, 1958).

The water in Port Said improved to some extent in July 1866, when another pipeline was extended from Ismailia to Port Said. Despite this, the residents of Port Said continued to complain

about the lack of fresh water coming from Ismailia. Hence, Port Said suffered at the beginning of its establishment and development in the early stages from the determinism of the nature of the geographical conditions of the region, which led to its complete poverty of fresh water resources.

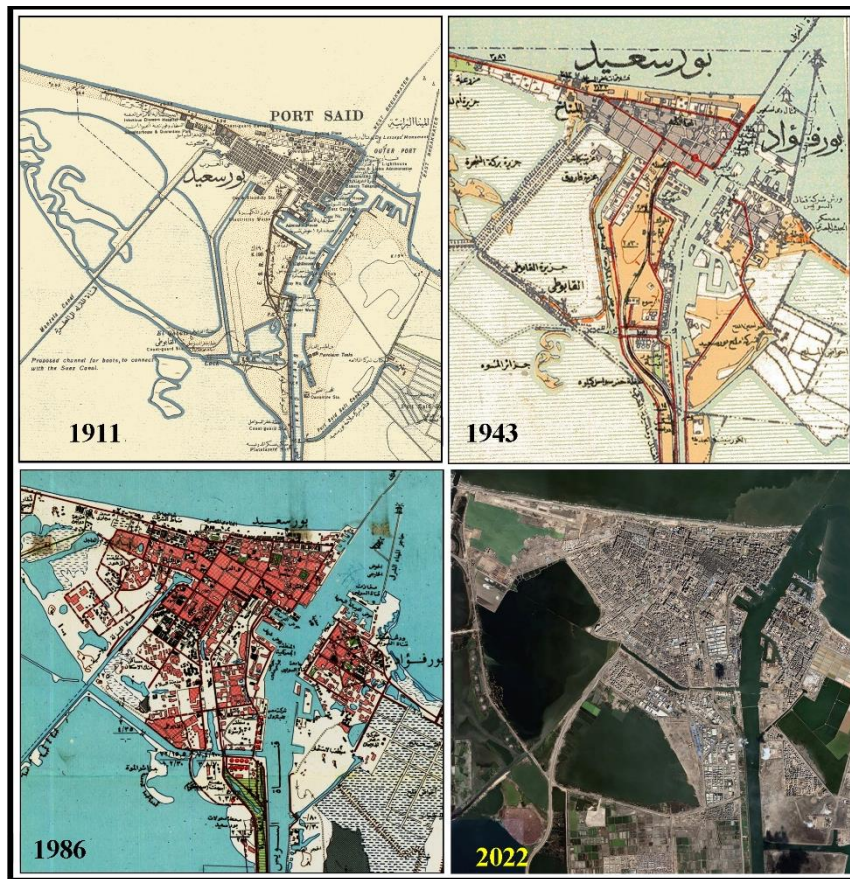
6. Urban Development and Housing Morphology between Determinism and Possibilism

Port Said city witnessed the stages of its urban growth, which began with primitiveness and scattered nuclei that were reduced to a basic nucleus, taking advantage of the geographical elements of the location and site. Port Said city grew from a small nucleus consisting of several wooden houses above the sandy spit confined between the Mediterranean Sea and Lake Manzala (Figure 8). Despite the small area of the site on which the city was established, it succeeded in creating additional spaces at the expense of the Mediterranean Sea at times and at the expense of Lake Manzala at other times (Figure 9).



Source: www.PortSaid-OnLine.com

Figure 8. Wooden Buildings in the Early Stages of the Establishment of Port Said City



Source: Topographic Maps, Scale 1: 50000, 1911, 1986, Scale 1: 100000, 1943, Google Earth, 2022 and Saber, 2022.

Figure 9. The Urban Growth of Port Said City

Due to the fact that Port Said city was built on the narrow coastal strip, the direction of its growth was always towards the west, as the sand resulting from the process of digging the Suez Canal was thrown in this direction. This eventually led to the formation of an area of land suitable for building on, and hence the first nucleus of the city was adjacent to the entrance of the Suez Canal on the western side of the canal. This nucleus was divided into two parts: a section located in the east, which was for the residence of foreigners; and a section located in the west, and it was called the Arab Quarter and was for the residence of Arabs (Al-Baghdadi, 1985).

The first residents of Port Said since 1859, who are foreign and Egyptian workers, have set up tents and nests on the seashore above the line of small sand dunes at an altitude of 2.5 meters above sea level. While the Europeans were

happier in their residence and living, some fires broke out in the Arab village causing the removal of a large number of these nests, and then they were replaced after that by houses made of building materials and wood. However, the residents of Port Said faced the problem of environmental determinism, which is the lack of availability of building materials in Port Said, since its lands are sandy and there are no bricks or stones available for building materials. As for the northern part of Muhammad Ali Street, which is centered between Eugenie Street and the coast of the sea, it was called Al-Mahrousa Street. It is worth mentioning that urbanization did not begin in this part until after the water of the Mediterranean receded to the north (Al-Sayed, 2010).

Port Said appeared in the form of a triangle whose base is the Suez Canal and its head is towards the

west; that is, the city narrows as we head towards the west with the narrowing of the coastal strip itself. This was imposed by the topographical conditions in the spot on which the city was built. These conditions enabled the expansion of the city at the expense of the lake after draining the swamps and shallow waters in the areas south and west of the city. Thus, we find that the impact of the positional geographical factor is evident in determining the shape of the city and hence in determining its area.

In general, the first nucleus of Port Said city had several directions of growth and expansion represented in the expansion towards the west and southwest by draining parts of Lake Manzala, and also the expansion towards the north (the lands of Tarh Al-Bahr). Studies indicated that the sea coast was advancing towards Port Said since its establishment in 1859 until 1875. However, after the completion of the elevated part of the western rocky barrier of the canal in 1869, the sea gradually receded, leaving behind the sediments that this rocky barrier impounded. The area raised by the sea continued to increase until the High Dam was built, as the Nile silt no longer reached the Mediterranean Sea, and this silt was carried by sea currents until it was deposited in front of this barrier. With the accumulation of these sediments over the years, these lands were formed, which represent the northern region of the ancient nucleus (Al-Baghdadi, 1985). This continuous extension led to the fact that the street that was directly overlooking the sea, which is Eugenie Street, has now become inside the city. Besides, several other streets have been established in its north, subjecting its existence to the extent of what is being held behind the western barrier of Nile silt from the determined retreat of the sea.

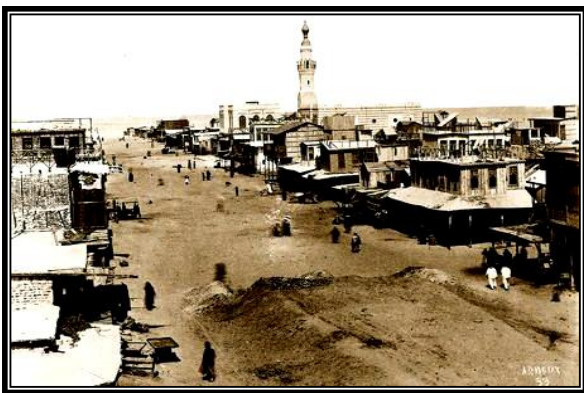
It is evident from the study of urban growth that the geographical obstacles constituted a prominent influence on the city's growth behavior to follow only certain direction. In addition, there were many types of geographical constraints imposed on the city of Port Said, which can be classified as follows (Ibrahim,

2010):

- **Crucial constraints:** These are represented in the Mediterranean Sea and the impossibility of urban growth towards the north at the expense of the sea, particularly after the cessation of sediment accumulation as a result of the construction of the High Dam and the repeated sea sculpture processes in some areas of the coast north of Port Said city.
- **Serious constraints:** These are represented by the Suez Canal, which was in the past the most important obstacle facing horizontal growth in the east, until urbanization was able to consolidate east of the canal, and its effectiveness and area increased when the canal authority provided means of transportation between the two banks.
- **Flexible constraints:** These constraints could be adapted in most cases to keep pace with the growth processes, represented in Lake Manzala. Through backfilling the shallow lands and large parts of its swampy edges, lands that urbanization could creep over were generated.

As for the planning of the streets in Port Said, it was observed that the streets of Port Said exit from the Eugenie dock, which borders Port Said city from the north. These streets are parallel to the axis of the canal, heading from north to south, and they are very healthy because they are always exposed to the wind and the sun. Furthermore, there were no streets in Port Said in the direction from east to west until 1875, except for one street only thirty meters wide, which is the western extension of Ferdinand de Lesseps Street, extending from the port to the Arab Village. It is known as the Al-Thalatin Street (Figure 10) (Negm, 1978).

As for the sidewalks of the streets, they were created from raising the rubble of the marine basin. The sand was covered with a layer of clay mud extracted from the lake and mixed with coal, a composition that would form a homogeneous and solid soil (Crosnier-Leconte et al., 200



Source: <http://dvd4arab.maktoob.com>

Figure 10. Al-Thalathini Street at the Beginning of the Establishment of Port Said City in 1870



Source: www.PortSaid-OnLine.com

Figure 11. Buildings Resting on High Bases at the Beginning of the Establishment of Port Said

6.1. Housing Morphology:

Physical factors are taken into account when constructing housing. For Port Said, the buildings were based on high bases (Figure 11), due to floods and the intrusion of water during the period of high levels in Lake Manzala, and to avoid high humidity in the soil. Subsequently, the ground floors were approximately two meters above the ground (Crosnier-Leconte et al., 2006).

The climate is also considered one of the most significant physical factors that are taken into consideration when building houses. Port Said houses were distinguished by the construction of arcades with arched vaults (Al-Bauki) that allow pedestrians to roam and cross the streets along them in shelter and protection from the sun and even rain (Figure 12). On the floors, spacious balconies gave a reflection from the wide shaded spaces. Along some other streets, the facades were provided with balconies that protruded at a depth of two meters, and were raised on a series of columns that were erected on the surface of the sidewalks. Their height ranged between 5.0 and 6.0 m (Figures 13 and 14), and they added to the apartments an additional space along with the protection they provided from the sun.



Figure 12. Constructing Arcades with Arched Vaults (Al-Bauki) in Old Residential Buildings in Port Said



Source: <http://dvd4arab.maktoob.com>

Figure 13. Balconies Raised on a Series of Columns Standing on the Sidewalks in the Arab Neighborhood of Port Said

In fact, all these east-west streets were bordered by these closely packed wooden arcades, which completely protected the southern facades from the sun. In search of symmetry and consistency, it provided the same treatment for the northern facades, and only wide streets were provided such as Eugenie Street. However, this was also due to the fact that these streets once overlooked the sea, which results in the existence of a single row of facades that face the north. As for the streets with a north-south façade, they alternate and change in terms of shape, so that the street with leaves with arches (arcades) is followed by a street with wooden balconies. For instance, the Arab neighborhood is completely surrounded by avenues with arches, such as Muhammad Ali Street and Eugenie Street, as well as another street decorated on its borders with arched arcades, which is Al-Thalathini Street (Crosnier-Leconte et al., 2006).

Other buildings that combine the European and Arab character were also found. They are protected by slanted roofs (pyramidal in shape) from winter rains (Figure 15). In these buildings, there are also many balconies and mashrabiyyas, showing how to treat them climatically, as they allow the entry of pleasant air easily due to the roundness of their parts, control the humidity in the air as a result of being made of wood that absorbs moisture, and do not allow the entry of

direct sunlight (Figure 16).

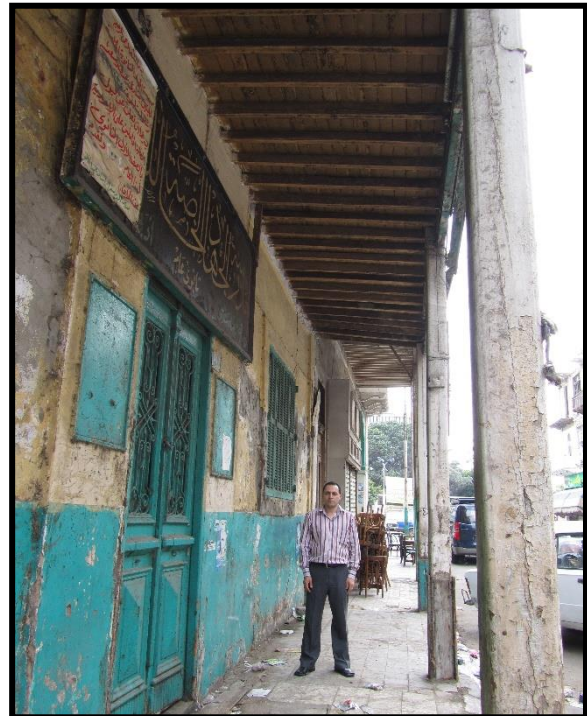


Figure 14. A Series of Columns Erected on the Sidewalks in the Al-Manakh Neighborhood in Port Said

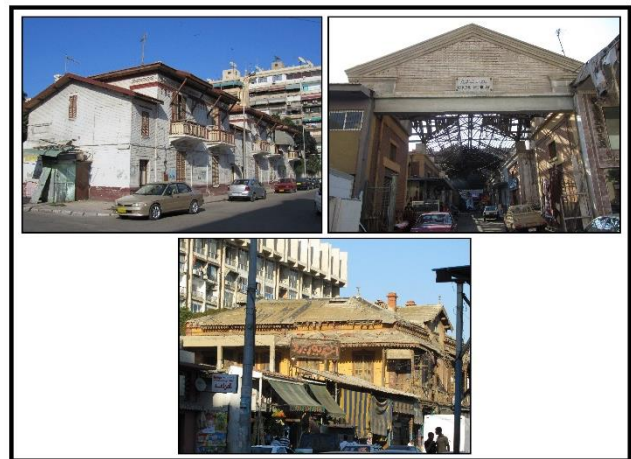


Figure 15. Old Buildings Protected by Slanted Roofs (Pyramidal in Shape) from the Winter Rains in Port Said



Figure 16. Balconies and Mashrabiyas in the Old Residential Buildings in Port Said

Conclusion

The physical conditions played their role in selecting the appropriate location for the emergence of the city, in which human activity was only responsive and subject to the order of these factors. However, the human factor had a clear and tangible impact on the emergence and development of the city, leading to changing many topographical features to show a new picture of life in this region that does not have any components for human life. Instances of such are its low level and small area and thus its exposure to the flood of sea water constantly, the problem of sedimentation of silt and sand in Port Said port and the difficulty of using it as a berth for large ships, and the problem of lack of building materials and fresh water as well as other problems. Hence, it needed a constant struggle to overcome harsh physical conditions to reach its purpose.

The proponents of Possibilism acknowledge that not all the possibilities of the environment are equal. Some of them require little effort, some of them require continuous struggle, some of them give generously, and some of them are ungenerous. We can consider the ratio between efforts and giving as the price that nature charges from man in return for the specific choice he desires (Ghallab and Abu Al-Lail, 1987, p. 221).

In conclusion, Allah Almighty says, (It is He that made the earth subservient for you; so walk in the tracts thereof, and eat of His provision; and to Him is the Resurrection)—Surat Al-Mulk, verse 15. The relationship is within the framework of

the Islamic vision emanating from the Book of Allah Almighty, which does not see the earth as a match for man, but rather sees it as “subservient”; that is, easy, not difficult, and subjected to man to walk on its tracts (slopes) and reap its bounties.

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