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Interregional Relationships in Jordan: Persistence and Change

Introduction

The current spatial organization of the social and economic systems in Jordan can be understood more fully by viewing it in evolutionary perspective. Conversely, insights about patterns that existed at various periods in the past, even remote ones, can be derived from a careful review of recent changes. The physical environment of Jordan can be seen as the geographical setting in which a variety of peoples, societies, cultures, political and economic systems succeeded each other over hundreds of generations. Man-made or artificial environments were imposed on the natural or physical one, and both were necessary to sustain the human occupants.

An abstract general model will make explicit certain basic assumptions about the relationship of human societies to the physical environment. Second, macro-geographical contexts will be described as a basis for understanding the relationships of social systems to the environment. Historical patterns of human occupancy will be reviewed briefly in an attempt to call attention to elements which shaped the past, some of which are no longer relevant today and some of which continue to shape the present. Finally certain aspects of existing patterns of social organization and interregional relationships will be described pointing out similarities with and differences from patterns in the past.

The purpose is to provide the outline of a framework of the history of social systems in space that hopefully will lead to further refinement and serve as a point of reference which may generate further insights about artifacts, structures and relationships. In arguing the usefulness of such an approach, Adams (1981), in a major work that synthesizes large quantities of research on the valley of the Euphrates, says, 'The point is only that all human settlement is patterned in many complex ways, the unraveling of which can provide insights into social change and stability by no means limited to man's spatial disposal over the landscape.' (Adams, 1981, p. 27.)

General model

The concept of ecological equilibrium as it exists today is straightforward, and there is much consensus about its fundamental elements and considerable disagreement about its details. Basically, it relates a physical environment, including natural resources, soils, geological conditions, hydrological conditions and climate, to a population which can be supported by this environment—including not only size, but demographic characteristics and economic activities—through two intervening variables: the complexity of the organization of the society and the level of technological development of the society.

Most models take the form of a growth theory displaying critical relationships as a system develops and becomes more elaborate over time. The starting point is frequently to assume a region with a population engaged in settled agriculture at the subsistence level or at an even earlier stage of development. One of the first models of this kind in the English literature, by Sir James Steuart, begins at the hunting and gathering stage (Steuart, 1767). Economic activities are contained primarily within the household, and food and beverage processing, implement and utensil fabrication, and the production of textiles and shelter are carried out as home industries. Some event occurs which increases agricultural productivity. As a consequence, part of the labor force is no longer necessary for daily subsistence activities. The surplus labor is free to engage in specialized activities resulting in a higher order of division of labor. These artisans or craftsmen can now produce superior goods needed by the agriculturalists and exchange them for the produce of the agricultural households. Division of labor, specialization of production, and trade lead directly to the increase of gross social product and the creation of additional surpluses. Further division of labor and further elaboration of the organization of society then follow. The specialized producers locate central to their markets which are the immediately adjoining agricultural households. Intra-regional trade, therefore, is the first development, and the agricultural producers closest to the centers of artisan and craft activity enjoy the greatest advantage. A symbiotic relationship is established which leads to greater agricultural productivity and prosperity and the development of the entire social system. Adam Smith (1776)

places great stress on this relationship which much later becomes the inspiration for location rent theory.

Interaction between people becomes far more complicated than it was in the previous stage. It is necessary to develop institutions which make possible transactions, trade and transfer of ownership. The capability of protecting surpluses beyond daily needs is essential, and the civil order and peace made possible by some fundamental juridical system is necessary. Substantial development can occur with no change in technology, however, changes in the organization and structure of society are required. Gras (1922) emphasizes institutional change and provides many historical examples.

Continued increasing productivity, growth and development lead to further division of labor and specialization. The production of higher order goods then occurs. These are the sorts of products which are needed less frequently and in smaller quantity and, therefore, require a much larger market area than the first order goods. The production of these kinds of goods takes place at certain centers, and supplies not merely the immediately surrounding region but the next ring of centers as well. A modest form of interregional trade now exists. However, the tributary region is still an extremely small one. The advantages of this form of production result in further increases in productivity and surpluses within the social system. Still more specialized and higher order goods are produced. Third, fourth, fifth and nth order goods eventually follow. The consequence is the emergence of a hierarchy of production centers in a hierarchy of urban concentrations which supply their labor forces. Interregional interaction, trade and, consequently, travel continue to expand. The hierarchical production and distribution centers become the foci of transport networks.

The population in the region has grown as a consequence of this process. In addition to the original agricultural population which is now at a higher level of welfare and probably larger, there has been added an urban population. The size and nature of the urban centers will, of course, vary with the agricultural productivity of the region and its capacity to support a population.

The formal development of this concept by Walter Christaller (1933) assumes a featureless plain of uniform generally high fertility. It is occupied by a population engaged in settled agriculture at a constant density across the plain. As the possibilities of trade occur, central places will grow up so that no one is more than about an hour's walk away from one in which goods and services and information can be exchanged. As the circular service areas are packed onto the plain, the central places will be arrayed as the apexes of equilateral triangles. Bisecting the distance between centers produces a pattern of hexagonally shaped service areas. Second order goods have a range of $1\frac{1}{2}$ to 2 hours walk and extend to include the first ring of first order places. Third order centers serve the first ring of second order centers, and the range of the goods is $2\frac{1}{2}$ to 3 hours walk.

This geometric logic generates a nested hierarchy of central places and service areas such as that shown in FIG. 1. A hypothetical region of a seventh order central place is described in TABLE 1. The number of places, range of region, area and population are indicated. Christaller acknowledges that topographical features, variations in fertility, historical, cultural, social and political variables will distort the pattern. He applies the system to Southern Germany and finds reasonable conformity to his concept, shown in FIG. 2. The service area boundaries and transport routes have been superimposed on the map in FIG. 3. The major point is that we can expect to

1. Hierarchies of service areas and settlements.

Source: Christaller, Walter. *Central Places in Southern Germany*, trans. by Carlisle W. Baskin. Englewood Cliffs, NJ: Prentice-Hall Co., 1966.

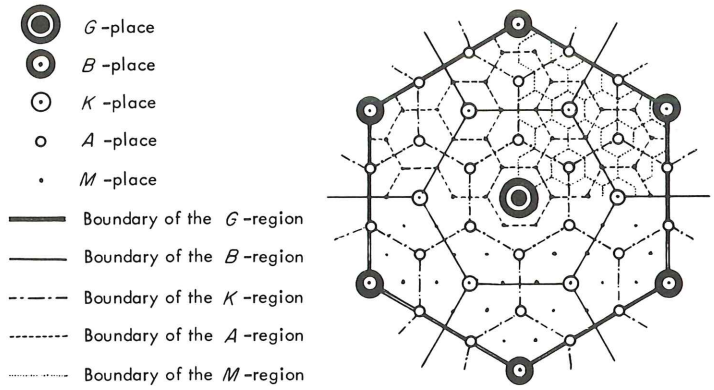


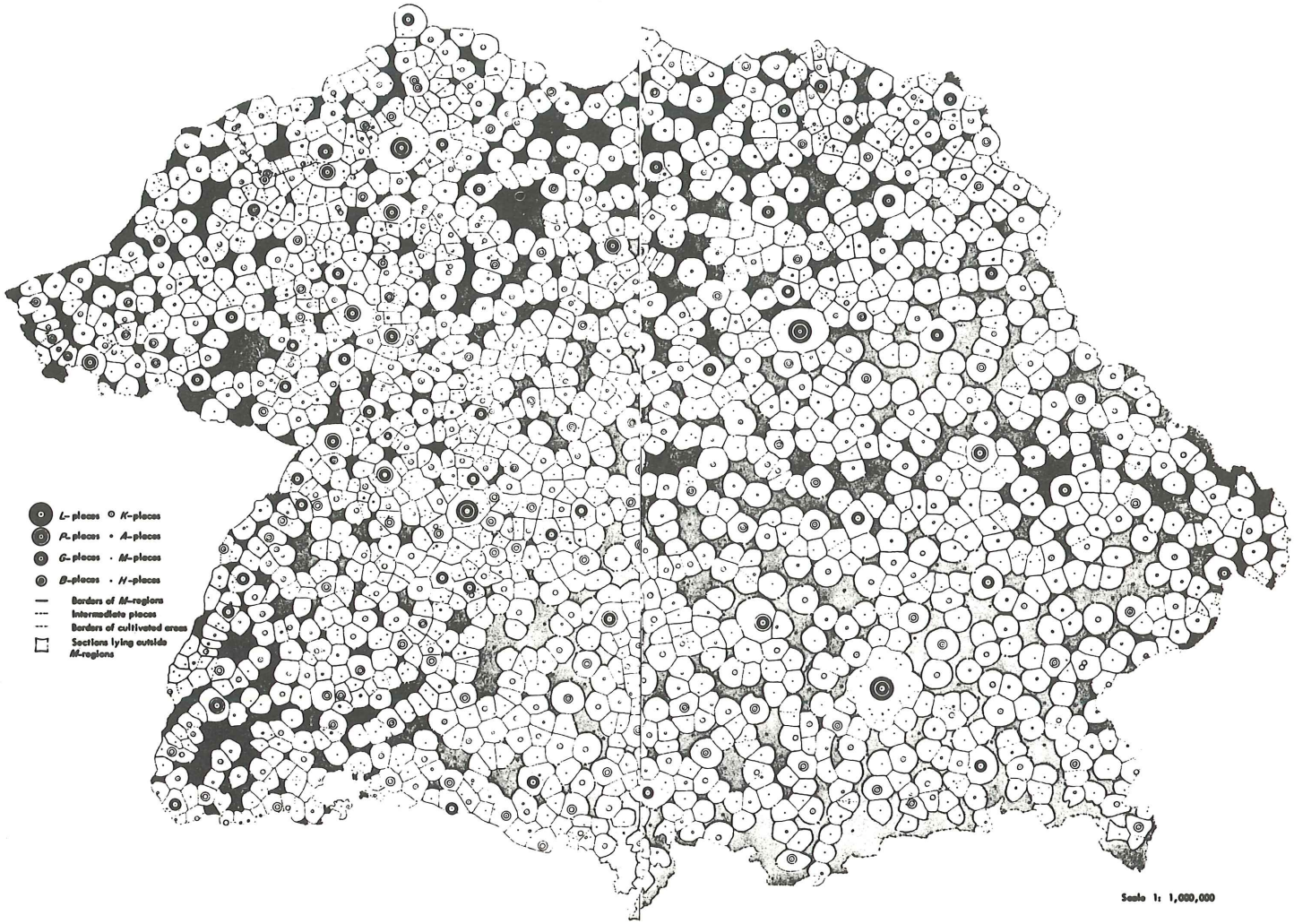
Table 1 Hierarchies of service areas and settlements: numbers, ranges, areas and population

Type	Number of places	Range of region (km.)	Area of region (sq. km.)	Typical population of places	Typical population of region
M	486	4.0	44	1,000	3,500
A	162	6.9	133	2,000	11,000
K	54	12.0	400	4,000	35,000
B	18	20.7	1,200	10,000	100,000
G	6	36.0	3,600	30,000	350,000
P	2	62.1	10,800	100,000	1,000,000
L	1	108.0	32,400	500,000	3,500,000
Total	729				

Source: Christaller, Walter. *Central Places in Southern Germany*, trans. by Carlisle W. Baskin. Englewood Cliffs, NJ: Prentice-Hall Co., 1966

2. Hierarchical central places in Southern Germany and their M regions

Source: Christaller, Walter. *Central Places in Southern Germany*, Englewood Cliffs, NJ: Prentice-Hall Co., 1966.

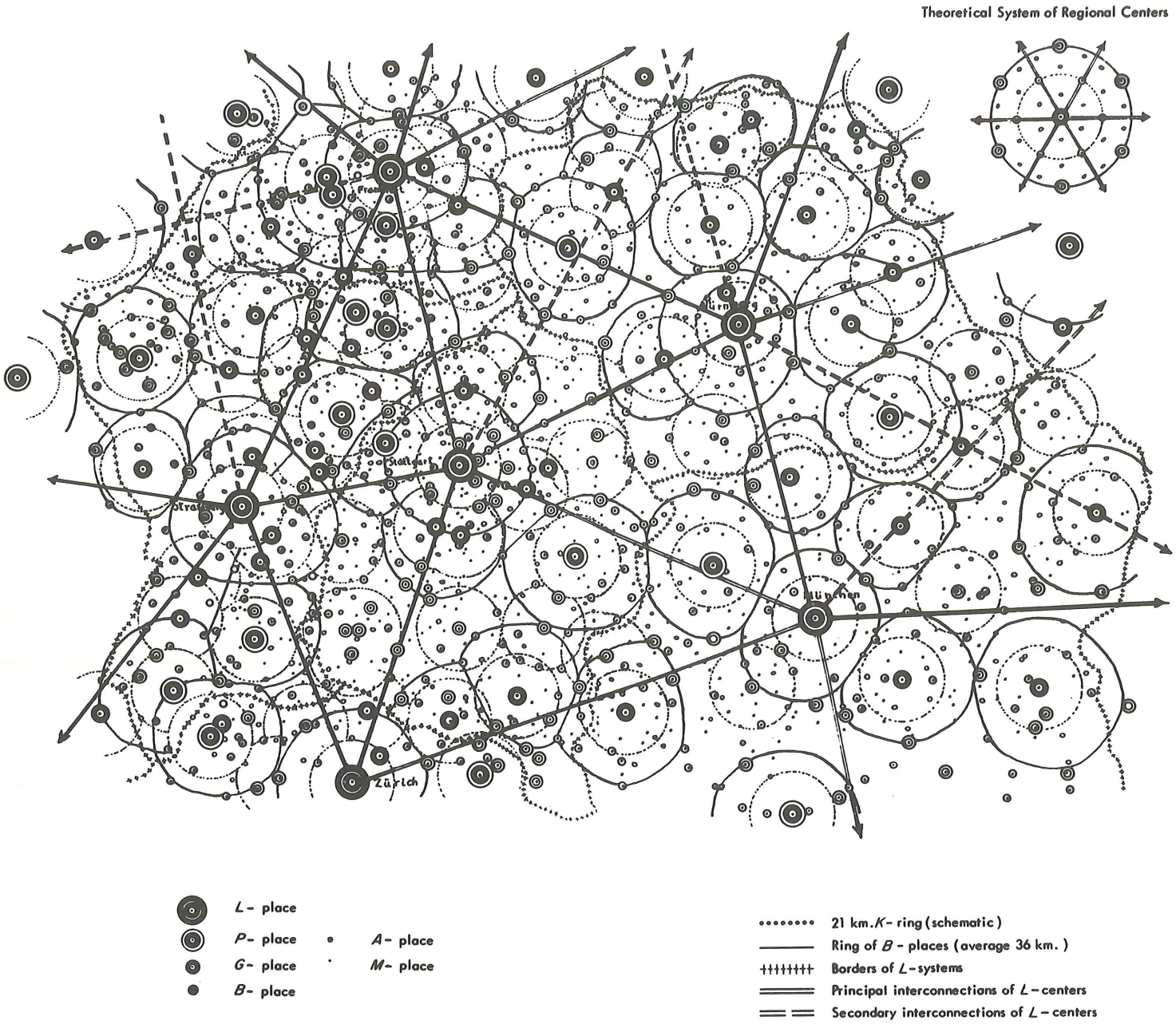


find in all settled regions a widely dispersed system of centers at which the interactions of the social system can take place. Johnson (1970) reviews many studies from many parts of the world at different points in time and investigates the applicability of this concept to developing as well as developed regions. Hodder (1972) has applied the concept to the spacing of Roman settlements in Britain. An exposition of methods for analyzing settlement patterns and citations of applications in archaeology is presented by Hodder and Orton (1976, pp. 53–97) and by Butzer (1982, pp. 211–229).

Finally, true interregional trade emerges. Exchange of the specialized produce of distant regions results in some degree of a regional division of labor. Interregional transport networks superimpose over the intra-regional ones. Greater increases in productivity follow with this higher degree of specialization. Population growth and economic development are made possible. The mechanisms of commerce must be elaborated. While intra-regional fabrication and trade lead to the emergence of towns, interregional trade and these new institutions lead to the development of cities. Storage is necessary and warehousing operations emerge. Transfers of ownership and complex trading operations must be accommodated, and brokers, scribes, legal experts, and financial institutions must develop. Cooley (1894) first pointed out the city-building effects of the 'symbolic machinery of transfer' or legal, commercial and financial services. Rostovtzeff (1932) indicates the importance of the development of such institutions. Cities that are specialized in trading activities and as linkages in a transport network come into existence. A major product of these urban centers is transport commodities. The labor force engaged in the transport industry requires food, clothing, shelter, pack animals and vehicles, harnesses and equipment, containers and many kinds of services including, quite importantly, that of protection. It

3. Hierarchical central places in Southern Germany.

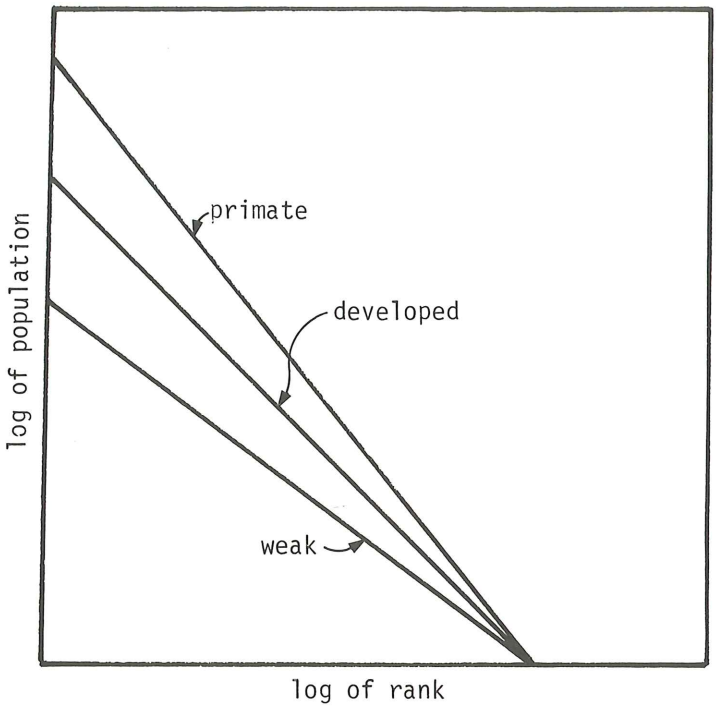
Source: FIG. 2



also needs information about potential markets and ways of reaching them. The communications and information function of the urban center becomes extremely important.

A hierarchy of central places evolves. However, the assumptions of the Christaller logic are too rigid. For a wide variety of reasons, the strictly nested hierarchy seldom emerges either in terms of the distribution of functions or in the sizes of central places. In other words, central places of the same order are seldom of identical size and function as the assumptions of the model would indicate. Instead we usually observe a graduated hierarchy of city sizes. A useful way to describe this is by means of the rank-size distribution which suggests that the rank of a city times its population size will equal a constant which is, of course, the size of the largest city. When plotted on log-log paper with the log of population on the vertical axis and the log of rank on the horizontal axis, a line sloping downward to the right results. The slope of the line usually indicates certain characteristics about the urban system. Hypothetical examples of different slopes have been shown in FIG. 4. The gentle slope of the lowest line suggests a weak hierarchical ordering. There is probably a low degree of specialization and division of labor within the

4. Rank-size distribution of different types of hierarchies of settlements.



social system, and little in the way of highly specialized goods and services are produced. The line in the diagram in the center indicates a fully developed hierarchical system of urban places. The slope of this line is approximately −1. A distribution such as that shown by the most steeply sloping line at the top of the diagram usually indicates the presence of one or more cities which are engaged in interaction with a much more extensive social system than that contained within the diagram itself.

Rank-size distributions for settlement systems in Egypt from 1882 to 1966 are plotted in FIG. 5. The distributions have been summarized by fitting principal axes, or so-called orthogonal least square lines, to the distributions in FIG. 6. Summary characteristics of these fitted lines are given in TABLE 2. The slope in 1882 is very steep, greater than one, and

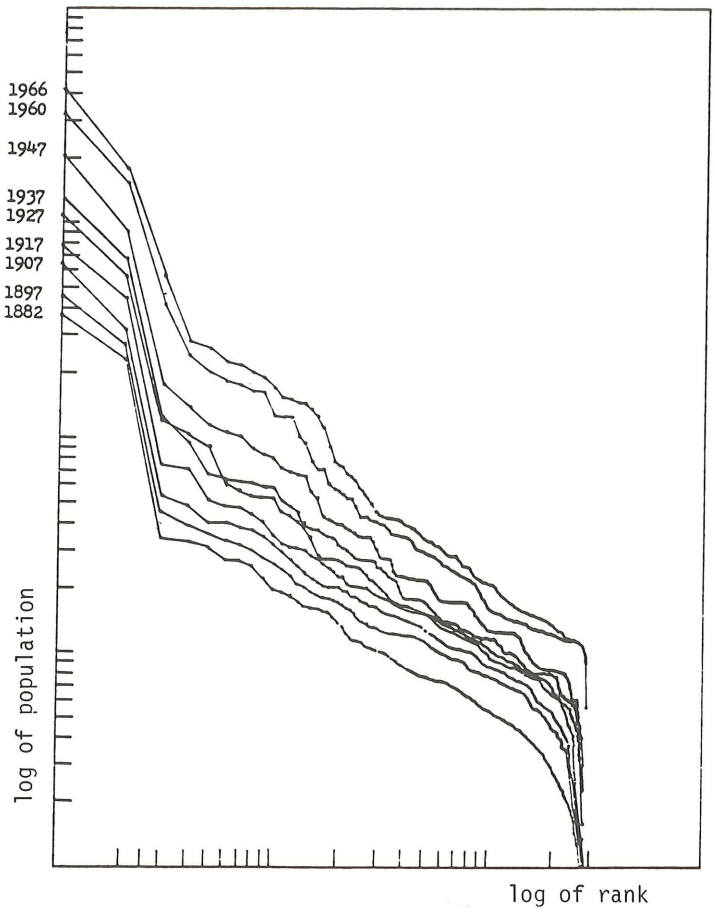
Table 2 Summary statistics, principal axis fitted to rank size distribution of Egyptian settlements, 1882–1966

Year	Slope	Standard error
1882	1.11299	0.16673
1897	0.84432	0.11511
1907	0.78307	0.09925
1917	0.78553	0.11276
1927	0.80732	0.09696
1937	0.79535	0.07573
1947	0.80878	0.05812
1960	0.78640	0.05888
1966	0.84973	0.04931

Source: Farid, Rafik Khalil. *Temporal Analysis of Settlement Size Distributions and Economic Development: Egypt, 1882–1966*, Ph.D. Dissertation. Ithaca, NY: Graduate Field of City and Regional Planning, Cornell University, 1978, p. 341.

5. Rank-size distributions for the Egyptian settlement system, 1882–1966.

Source: Farid, Rafik Khalil. *Temporal Analysis of Settlement Size Distributions and Economic Development: Egypt, 1882–1966*, Ph.D. Dissertation. Ithaca, NY: Graduate Field of City and Regional Planning, Cornell University, 1978, p. 339.

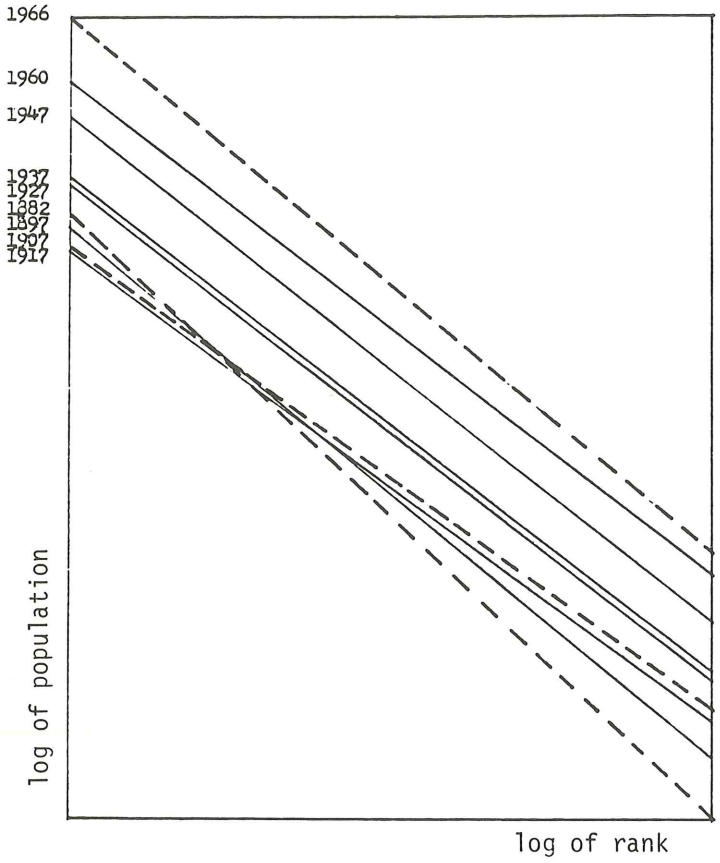


the standard error about the line is relatively large. This indicates a high degree of primacy on the part of Cairo and Alexandria, which belong to an international system of cities, and a very weak hierarchy of moderate and smaller sized centers. Both parameters vary throughout the period, but by 1966 a much stronger hierarchy of urban centers has emerged. As the urban system develops in the manner discussed above, it can be anticipated that a hierarchical distribution will evolve permitting prediction of the size of various urban centers within some range of error. Through analysis of the distribution, certain characteristics of the system can be discovered.

The development of a rather sophisticated social system has been described. An essential condition is the capacity to protect the transactions between individuals. When the ability to maintain peace and to protect transactions disappears for one reason or another, the costs of interregional trade escalate through the tremendous increase in risk. Markets for such commodities at such prices cease to exist, and goods disappear from interregional trade. Eventually such trade may come almost completely to a halt. As the market declines,

6. Principal axis fitted to the rank-size distribution of Egyptian settlements, 1882–1966. Broken lines represent initial, transitional, and final points in time.

Source: Farid, Rafik Khalil. *Temporal Analysis of Settlement Size Distributions and Economic Development: Egypt, 1882–1966*, Ph.D. Dissertation. Ithaca, NY: Graduate Field of City and Regional Planning, Cornell University, 1978, p. 340.



production falls, high degrees of specialization and division of labor disappear, productivity of the society declines, urban centers shrink, the prosperity of their agricultural hinterlands diminishes, technological advances no longer have any use and may disappear and be forgotten completely, the organization of society becomes less complex and simpler, and institutions that are no longer necessary are abandoned and forgotten. Adams (1981) discusses at length the importance of the stability of the state in sustaining social systems in the Euphrates Valley.

Social and economic systems in space ebb and flow over history. They come into being, develop and emerge as highly complex, well-organized, elaborate systems only to sink down to lower levels of development, possibly to emerge again and go through recurring cycles at varying intervals. Ibn Khaldun, writing in the 14th century after the peak of Islamic expansion, develops a very advanced theory of the growth and decline of urban civilizations, drawing heavily on Aristotle. In his model highly developed urban civilizations inevitably become flaccid through luxury and are no longer able to protect their fragile interrelationships from disruptions of less developed peoples who make incursions into their territory (Mahdi, 1964).

In addition to internal factors which affect their fates, systems are subject also to external influences. Social and political changes in a larger spatial context may affect them greatly. The importance of markets and sources of supply for which they were direct connections may diminish and be supplanted by others, and the routes between these new centers may be through different regions. Technological changes, particularly in the nature of transport technology, may lead to shifts in the locus of interregional movement, and former centers of trade may become obsolete and abandoned outposts. The population of certain regions can become quite large and extensive under ideal sets of circumstances only to fall back to a level of social organization where the population that can be supported is a mere fraction of that which existed in former times.

Geographical setting

The systems of urban centers in Jordan demonstrate these theoretical constructs quite well. Settled agriculture, urban centers and evidences of interregional trade were present before 4500 BC. Social systems have emerged, sometimes largely confined to quite highly developed patterns of intra-regional trade within small regions. At other times larger systems have developed in which interregional trade has been the primary source of activity and has led to higher levels of development than at any other time. These too have given way, and cyclical patterns of growth and development and decline have marked the history of the region.

Jordan has witnessed more than six millennia of change. Despite the extraordinary diversity of occupancy, external influence, and rise and fall in level of development, there has been an amazing amount of persistence. Patterns have repeated over and over, and layer upon layer of occupancy and activity characterize many places. Some of this is attributable to the region's topographical formation and other characteristics of the natural environment, but much of it derives primarily from its relative location in a larger geographical context and a larger series of social systems. While the urban systems of Jordan have been sources of supply and market destinations in themselves, they have also been important communication and transport linkages in more extensive interregional interaction systems. Some attempts to chronicle the history of the social-spatial systems in Jordan have emphasized these linkages almost to the exclusion of internal concerns. The existence of some urban centers has been attributed almost entirely to the roles they have played as interregional transport nodes. While some urban centers have developed primarily as transport centers, and while many others owe their existence to the fact that they first came into being to perform such functions, without the possibility of strong intra-regional linkages and interactions, they could not have developed very extensively nor have persisted for very long periods of time. Certainly, strong interregional inter-

action is an essential ingredient in the emergence of a major urban center. This is a necessary but not a sufficient condition. Few major urban centers or elaborate societies can be explained exclusively in these terms.

In describing the line of cities at the juncture between the desert and the mountains, Rostovtzeff (1932) says, 'Not one of them was a "caravan city" in the real sense of the word, that is to say a city brought into existence solely by caravan trade. Yet it was caravan trade that rendered them wealthy and important' (p. 21). An even stronger argument is made by Glueck (1970): 'It is, however, a serious mistake to think of the Nabataeans merely as a group of rich traders and caravaneers, banded together in a loosely organized state, that centered about the tremendous merchandise mart of Petra.' (p. 193). He describes the high degree of civil protection that the state imposed, the expansion of agriculture into previously uncultivated areas, and the extensive system of structures built to develop water resources. Nevertheless, interregional trade is an essential factor in understanding the history of Jordan.

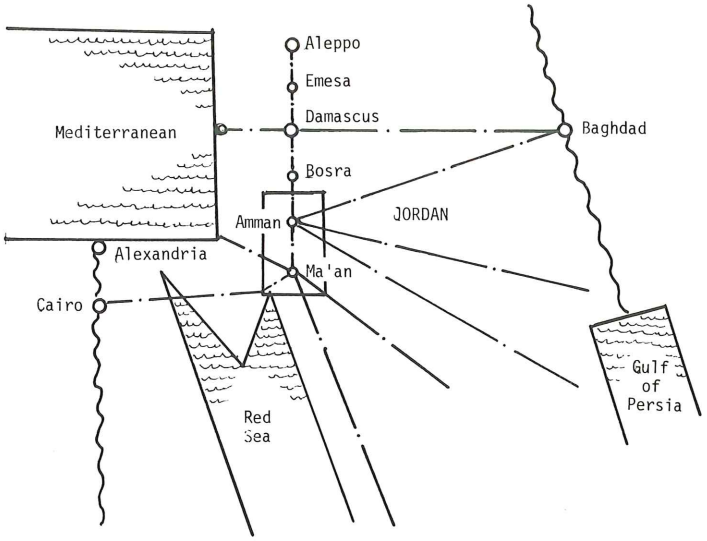
Jordan occupies a critical location with respect to interregional trade and communications routes, and this fact had tremendous effect on the rising and falling prosperity of its cities and urban systems. Many events that have transpired and shaped the evolution of Jordan are a direct consequence of its position in relation to larger external systems.

Three great river systems were the loci of the early development of elaborate social systems and civilizations: the fertile valleys of the Indus, the Tigris and Euphrates, and the Nile Rivers. More than 5,000 years ago interregional trade by means of caravans was conducted between the Harappan, the Sumerian and the Egyptian urban systems. These trade flows have continued between their successor civilizations in much the same manner until relatively recently. Land routes were preferred to sea routes because they were considered much cheaper and safer for long distance transport and quite possibly because they did not involve the same degree of capital investment, and the sharing of ownership and risk was probably easier to accomplish with existing legal and financial institutions.

The Syrian Desert provided one linkage that could be traversed by these caravan routes and the Arabian Desert provided another. Arabia Felix and the Hadramaut Valley were sources of goods themselves as well as a linkage to India and Africa. The Western Arabian caravan route seems to have been particularly important although northern and central routes played vital roles also.

The general configuration of these linkages is shown in highly stylized schematic form in FIG. 7. A string of cities prospered particularly from this interregional trade activity because of their location where the desert ends and the fertile area of the coastal region begins. This string of cities lies almost in a straight line in a north-south direction and includes, from north to south, Aleppo, Emesa (Homs), Damascus, Bosra, Amman, Ma'an (or Petra). It is interesting

7. Schematic map of location of Jordan in relation to interregional routes.



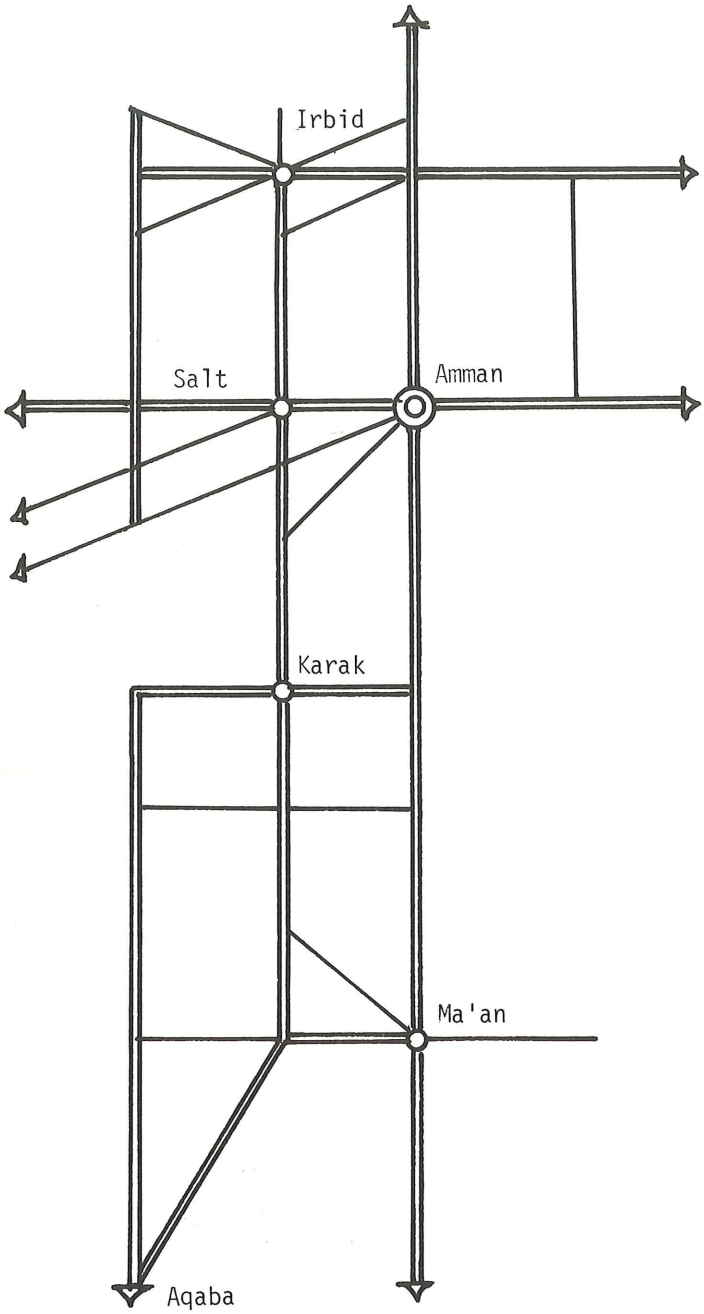
that these cities are spaced almost exactly as Christaller's P place cities, approximately 125 km. apart. A second string of cities lies farther out which includes Edessa, Palmyra, Al Jauf, Taima and Tebuk. The northern routes focus on the northern Syrian cities. However, the southern desert routes converge on Jordan. Land routes connecting Cairo and Baghdad, whether they pass through Damascus or not, must traverse Jordan. In addition, the important land connection between Damascus and the more northerly cities and Cairo is through Jordan.

Indian, African and Southern Arabian goods flowing through the Arabian routes would be deflected towards the east or the west upon reaching Jordan. Therefore, the control of Jordan controlled the flow of goods in one direction or the other. This explains to some extent why political control of Jordan was considered vital at so many points in the past. Its location, as can be seen on the schematic map, is at the interstices between great empires. To some extent it was a critical gateway for flows of trade, and by maintaining a certain neutrality was able to remain autonomous and independent for long periods of time. In the Hellenistic period as the Mediterranean was opened to much higher volumes of shipping, Alexandria became the greatest commercial port in the world as the most direct point of access between the East and the Balkans and the West. Jordan's location became even more favorable at this time. This pattern persisted and was accentuated during the Roman period.

The present major highway system in Jordan is shown in a schematic diagram in FIG. 8. The vertical route on the left, the west, represents the Jordan Valley and the Ghor. The break in the route is the Dead Sea. The middle route is basically the ancient King's Highway and for much of its length follows the road that was paved by the Romans. The easternmost route is the Desert Highway following extremely ancient caravan routes and is the same line followed by the railroad connect-

8. Schematic diagram of major highway systems: Kingdom of Jordan 1979.

Source: Jones, Barclay G. *Interregional Relationships in the Kingdom of Jordan to be Considered in the Amman Urban Regional Plan.* Amman: Amman Urban Region Planning Group, 1979.



ing Damascus and the Holy Cities of Mecca and Medina built by the Ottoman Turks between 1900 and 1909. The central route has been the most important linkage throughout the centuries. The central places that could rise up along this route had much richer tributary regions and could therefore become more important central places than settlements at the edge of the desert which would be highly dependent upon supplies from the west. In the nothern portion of the country the topography changes and requires a modification of this generalization. The springs in the vicinity of Amman and the curious semicircular route of the Zarqa River as well as the fertile plains of Gilead and the more fertile area stretching to the Yarmuk River permit agricultural activities farther to the east. In general, however, the topographical conditions provide the framework on which this transport net is hung. This network is basically unavoidable and is probably as old in its general form as the settlement of the region. The transport net provides the underlying structure for the system of cities.

Historical settlements systems

There is evidence of human occupancy in Jordan from the earliest prehistoric times (Harding, 1967). By the end of the Palaeolithic Period in 8000 BC, a wide variety of implements had been developed. It was in the Neolithic Period between 8000 and 4500 BC that settled agriculture seems to have occurred with the development of farm dwellings and villages. Central places of the first order seem to have existed, and perhaps there was even a modest hierarchy. The manufacture of pottery around 5000 BC probably transformed the possibilities of storing food and water permitting greater surpluses to develop and the organization of society to become more complex. Larger villages and evidence of the beginnings of a hierarchical system emerge in the Chalcolithic Period from 4500 to 3000 BC. Copper was smelted and substantial technological advances were made in tools and implements of various kinds.

By the early Bronze Age, between 3000 and 2100 BC, a line of settlements apparently existed along the route of the King's Highway from the Yarmuk to Shobak or farther. Agricultural central places seem to have been densest in the north which contained the best arable land. There seems to have been a hiatus of settlement in the middle Bronze Age from the middle 19th to early 13th centuries BC (Glueck, 1970, p. 142) when apparently nomads invaded the territory disrupting the peace and protection which had permitted specialization, division of labor and an urban system to develop. Kirkbride (1982, p. 53) suggests most plausibly public health causes instead for such discontinuities in settlement. The Hyksos invaded from the north and restored peace (Harding, 1967, p. 32. However, Peake, 1958, and Glueck, 1970, disagree.) Fortified towns and villages appear suggesting an urban hierarchy in the midst of a fragile social order. Further evidence of interregional trade particularly with Egypt appears. A settlement seems to have existed at Amman in this period.

With the late Bronze Age, 1500 to 1200 BC, the area came under the influence of the Egyptian Empire. Ammon seems to have had a settled population and some sort of a system of settlements. Amman apparently was a town of some consequence. By the end of this period 3 or 4 distinct regions emerge. In the south Edom existed as a well-developed, organized state and the capital seems to have been located at Petra as early as 800 BC. North of the Wadi Hasa the state of Moab extended to the Wadi Mojib or the Wadi Wala. At

various points its capital was at Dhiban and at Karak. The King's Highway was a well-established route with major urban centres along its length. For a period, north of the Wadi Mojib there was an Amorite state with the capital at Heshban near Madaba. The state of Ammon was in the northern part of the region, and its capital was at Amman as early as 1000 BC. When Moses led the children of Israel out of Egypt across the Sinai Peninsula, he requested permission to lead his people up the King's Highway through Edom and Moab on the way to the Promised Land of Palestine. Being refused this permission, he was required to take a route that approximates to the Desert Highway and go north to the Yarmuk before coming down the Jordan Valley back to Moab where he saw the Promised Land across the Ghor from Mount Nebo, where he died and was buried. (Harding, 1974, p. 36. Peake, 1958, specifies a more direct route, p. 10.) Battles between the Israelites, Ammonites, Moabites and Edomites indicate international wars between quite established kingdoms with urban systems at a consequential level of development.

The incursions of the Assyrian Empire into the region started about 800 BC. The kingdoms of Ammon, Moab and Edom, with developed urban systems, were under one degree of influence or rule from then until the rise of the Babylonian Empire in 612 BC. The amount of control exercised by Babylon fluctuated greatly. It was during this period, perhaps around 580 BC, that the Nabataeans started to occupy Edom. During the height of the Persian Empire from 549 to 331 BC Jordan was placed under a satrap, but warfare between the Ammonites and Moabites continued.

Alexander the Great conquered the area in 331 BC, and with his death in 323 control of the region went to his General, Ptolemy, who ruled from Egypt. A new phase of urbanization was launched, new cities were built and old ones embellished. Amman was renamed Philadelphia and became an even more important central place. The Seleucid Dynasty which had inherited Syria contested control of the region with the Ptolemaic Dynasty of Egypt. To the east the Nabataeans were able to extend their dominions and their control of trade. Remaining independent, the Kingdom eventually stretched from the Gulf of Aqaba to southern Syria by 85 BC (Peake, 1958, p. 26). The Nabataean Kings are recorded from 168 BC to 106 AD (Browning, 1977, p. 60).

Pompey imposed Roman order over Jordan about 64 BC. He restored the Greek cities which had fallen into decline by that time and established the basis for the development of a new urban system. The related urban centers of the Decapolis emerged. A higher degree of Roman order was imposed by the Emperor Trajan who suppressed the independence of the Nabataeans in 106 AD. A new province was established, Arabia Petraea, its capital first at Petra and later at Bosra. The King's Highway started to become paved from Aqaba to Bosra, and paved side roads connecting lower order urban centers in the hinterland were constructed also. The road was not completed until the reign of Hadrian. During the following period the highest degree of peace and protection that had ever been experienced in the region was achieved. As a consequence the urban system became a more elaborate hierarchy and the urban centers achieved their highest state of embellishment.

The Emperor Theodosius established the Byzantine Empire in 395 AD. Byzantine rule was much weaker and decay of the urban system set in. The next two centuries witnessed a period of general decline and diminishing levels of development.

It was inevitable that the first clash between the Muslims and the Byzantine Empire would occur at that critical juncture occupied by Jordan. Coming out of the Hejaz in the Arabian Peninsula, the Muslims first engaged Byzantine forces in battle at Motah near Karak in 629 AD (Peake, 1958, p. 45). The Muslim forces were defeated, and three great leaders charged by the Prophet to carry out the campaign were killed. Nearby at Mazar the three, Zaid ibn Harith, Jaafar ibn Abu Talib and Abdallah ibn Ruaha, were buried. The Muslim forces regrouped, another army was sent out, and the second battle also took place in Jordan. Just south of the Yarmuk River, the army of the Emperor Heraclius was defeated in 636 AD and the Muslims advanced on to Damascus.

The Umayyad Caliphate established its capital at Damascus, and Jordan was again in a critical location lying between Damascus and Arabia and Damascus and Egypt. The urban systems again became important. In the ninth century the Abbasid Dynasty replaced the Umayyads and relocated the capital of the Caliphate to Baghdad. The location of Jordan was no longer so central, and another period of neglect and decay of the urban system set in. The Fatimid Dynasty which had arisen in Egypt conquered Jordan, Palestine and Syria in 969 AD. This regime lasted until 1071 AD when the Seljuk Turks invaded the country. (Peake, 1959, pp. 55–59).

At the end of the eleventh century the crusades were launched. Godfrey of Bouillon took Jerusalem in 1099 AD. The following year his brother Baldwin I succeeded to the throne of the Kingdom of Jerusalem. Because of its location astride the major transport routes connecting Syria, Egypt and Arabia, the crusaders came to the conclusion that the southern part of Jordan was of strategic importance. Montréal, or Shobek, was built in 1115 AD. Other fortified outposts were built on the Island of Graye in the Red Sea, at Aqaba, Tafila, Ma'an, and elsewhere. The great fortress at Karak, not finished until 1142 AD, became the most important crusader stronghold in Jordan. The crusaders were finally driven out of Jordan in 1189 AD by Saladin, the founder of the Ayyubid Dynasty.

In 1250 AD the Mameluke Dynasties were established in Egypt and within a decade had spread their rule over Jordan and Syria. During the 250 years of Mameluke rule fortifications were restored in Jordan and the transport routes kept open. Throughout this period a high order of peace and protection prevailed. Agriculture prospered particularly in the north, and the urban system remained intact. In 1516 AD the

Ottoman Sultan of Turkey attacked the Mameluke Sultan of Egypt and defeated him the following year, abolishing the Mameluke Dynasty and making Egypt, Jordan and the Hejaz provinces of the Ottoman Empire. Although Jordan was of great importance to the Turks, primarily because of the pilgrim route through the middle of the country, the ability of the Turks to maintain civil order was relatively weak, and the agricultural and urban system declined drastically for lack of defense against Bedouin raids. Migration from the interior of Arabia to Jordan was extensive at this point and civil order collapsed. Once prosperous villages and towns shrank to a fraction of their original size and were even completely deserted. That condition continued to persist with relatively little improvement until the end of the Empire with the First World War.

The system of urban settlements in Jordan and the hierarchy of urban centers that had developed and survived through so many changes of fortune reached the lowest point of development during this period. Since we can learn a great deal about the nature of urban systems through their decay and decline, as well as through their growth and development, it is valuable to have evidence of the state of the system at its lowest point. Fortunately there are more copious and complete descriptions of the environment at this moment in time than at almost any other. These first-hand accounts portray vividly a state which is even less developed than our model would have led us to expect. One would have thought that the urban system that existed was too robust and resilient to vanish almost completely. Contraction and decline perhaps, but abandonment could not be anticipated while under the rule of a strong central government whose vast territory stretched from Roumania to Yemen.

Early in the 19th century a number of European explorers made journeys into Syria, Palestine, Jordan, Egypt, the Hejaz and the Sudan. They gathered the first real fresh information on the region that was available in the West. Some of these accounts are extremely useful in describing the state of the social system at that point in time and also in providing information about the physical remains of ancient structures, some of which were considerably altered before systematic recording started to occur at the end of the century.

The first descriptions were recorded by a German, Dr Ulrich Jasper Seetzen, who had studied at Göttingen. He reached Aleppo in 1803 and spent two years learning the culture and the language. His journals begin in 1805 and record journeys in Syria, Jordan, Palestine, Egypt and the Hejaz. In 1807 he made a trip through Jordan and discovered the deserted sites of Jerash and Amman. He died in 1811 on the way from Mecca to Muscat and his journals, which have never been translated into English, were not published for some years (Seetzen, 1854–59), although brief summaries in both German and English appeared before his death (Seetzen, 1810).

The first readily available detailed recording was that made by John Lewis Burckhardt. A Swiss, also educated at Göttingen, he devoted himself at an early age to the exploration of the Middle East. Financed by the English Association for Promoting the Discovery of the Interior Parts of Africa, Burckhardt learned to read, write and speak Arabic, and studied the Arabic culture and the Moslem religion so thoroughly that, like Seetzen, he was able to travel as an Arab throughout these lands. In 1810 he arrived in Syria and became very familiar with the cities and towns and abandoned ruins there. Burckhardt acknowledges that he is retracing Seetzen's steps and is attempting to explore new territory also.

In April and May, 1812, Burckhardt made a brief trip from Damascus through southern Syria into Northern Jordan. He left Damascus on April 21 and arrived at Bosra on the 27th. 'Bozra is situated in the open plain, two hours distant from Aaere and is at present the last inhabited place in the southeast extremity of the Haouran; it was formerly the capital of Arabia Provincia, and is now, including its ruins, the largest town in the Haouran.' (Burckhardt, 1822, p. 226). The largeness is apparently due to the ruins. Nothing remains of the vineyards celebrated from the days of Moses. 'There is scarcely a tree in the neighborhood of the town, and the 12 or 15 families who now inhabit it cultivate nothing but wheat, barley, horse-beans, and a little Dhourra.' (Burckhardt, 1822, p. 236). He passes through Remtha, a station on the Hadj Route, and estimates its somewhat dispersed population at 100 families. Seven and a half hours farther he reached the village of Souf, the chief village in the district, which had about 40 families. Burckhardt gives a fine and accurate description of the completely deserted city of Jerash. From there he turned west through thick forests of oak trees to the village Ain Djenne which contained 80 families that earned their living principally from olive plantations. In the castle at Ajlun, he found 40 persons of the family of the chief of the district living. El Hossn contained more than 100 families. Burckhardt returned to Damascus stopping to visit the completely deserted site of Umm Qais.

On June 18, 1812, he left Damascus again to go to Cairo intending to traverse the length of Jordan. Burckhardt proceeded down the Jordan Valley past the mouth of the River Zarqa then climbed the escarpment and stopped at Es Salt. He claimed it was the only inhabited place in the Province of Belqa and contained about 480 families (Buckingham (1825) estimates 500 to 600 people). Most of the population was engaged in agricultural activities in fields as far as eight miles distant from the city. In addition there were a few weavers and about 20 shops selling goods imported from Nazareth, Nablus, Jerusalem and Damascus. The produce raised was wheat, barley and grapes. Sumac leaves were collected and sold to tanneries in Jerusalem (Burckhardt, 1822, pp. 349–352).

From there he proceeded to Amman passing the ruins of a large number of settlements. He remarks, 'It is evident also, that the whole of the country must have been extremely well cultivated, in order to have afforded subsistence to the

inhabitants of so many towns.' (Burckhardt, 1822, p. 357). Burckhardt explores Amman thoroughly drawing a plan and describing the ruins at length. He found it completely deserted. Proceeding south he passes the ruins of many places including Naur and notices the vestiges of ancient field enclosures. There are ruined reservoirs and cisterns. At Madaba the ruins were impressive, not a single edifice was still standing (Burckhardt, 1822, p. 366). Burckhardt finds many sections of the King's Highway with the Roman paving still intact, many deserted ruined settlements, many ancient monuments, some lands seasonally cultivated but no permanent settlements.

Burckhardt found Karak a high point of development in Jordan. The inhabitants consisted of about 650 families. In addition the Sheikh controlled the Beni Ammer Bedouin tribe of about 200 tents. The population cultivated the plains in the neighboring mountains by camping out in the fields two or three hours distant from the town. In addition, they raised quantities of cattle, sheep and goats. The only interregional trade was carried on with Jerusalem by means of a caravan which made the trip six times a year. The shops in Karak were managed by merchants of Hebron, and the only artisans in town were a blacksmith, a shoemaker and a silversmith. He mentions carpets as being manufactured at Karak, some of which were used to pay tribute to southern Arabs. Between Karak and Tafila, Burckhardt visited three villages of about 80 houses each. Tafila had 600 houses surrounded by plantations of apples, apricots, figs, pomegranates, olive and peach trees. The figs were dried and exported to Gaza. He found two villages of about 40 houses each between Tafila and Shobek. The castle at Shobek contained about 100 families and was the principal place in the region.

The passages in which Burckhardt describes his discovery of ancient Petra are very well known and one of the most thrilling pieces of the literature of discovery. He approaches through the Siq from Ain Mousa by the same route taken by the traveler today. The experiences he describes are much the same, but here they are written by the first westerner to visit this remarkable place. The description is as fresh and crisp as if it had just been written. Burckhardt clearly recognized he was in the midst of a major center. '. . . I issued upon a plain 250 or 300 yards across, bordered by heights of more gradual ascent than before. Here the ground is covered with heaps of hewn stones, foundations of buildings, fragments of columns, and vestiges of paved streets; all clearly indicating that a large city once existed here; on the left side of the river is a rising ground extending westwards for nearly a quarter of an hour, entirely covered with similar remains. On the right bank where the ground is more elevated, ruins of the same description are also seen. In the valley near the river, the buildings have probably been swept away by the impetuosity of the winter torrent; but even here are still seen the foundations of a temple, and a heap of broken columns; close to which is a large birket, or a reservoir of water, still serving for the supply of the inhabitants during the summer.' (Burckhardt, 1822, p. 427). He mentions that the Siq is still part of the caravan route connecting Ma'an and Gaza. Stopping at the village of Eldjy above the entrance to the Siq he describes it as surrounded with fruit trees of all kinds, vineyards and other cultivated areas. There were also many looms and much weaving was done. Their produce was sold to the pilgrims at Ma'an and Aqaba.

Burckhardt found Ma'an a major center raising pomegranates, apricots and peaches. However, the surrounding region did not provide it with sufficient provisions of food, and these were imported from Hebron and Gaza to sell to pilgrims on the Hadj Route. Burckhardt describes Aqaba as consisting of nothing but the castle surrounded by large groves of date trees. It was garrisoned by 30 soldiers, and inside the castle were many Arab huts. There is no indication of any settlement in the vicinity. (Burckhardt, 1822, p. 510).

Although Burckhardt's journals of his trip through Jordan were published ten years after the event and five years after his death, the knowledge of his discovery considerably preceded publication. William John Banks, an Englishman, set out from Egypt in 1816 to visit Palestine and Jordan. He was joined by a curious figure, James Silk Buckingham, who had recently arrived in Alexandria from India by the Red Sea. He intended to aid in establishing sea transport between India and Egypt through the Red Sea, and was planning to return to India by land across Jordan and Syria. Banks and Buckingham traveled from Palestine to Jordan visiting Es Salt, the deserted sites of Jerash and Amman. Going west from Jerash to Ajlun, Buckingham mentions the village of Kittey with 50 houses, Anjerah with 520 families, and Cufr Injey with a population of 400 (Buckingham, 1825, pp. 135–149). At one point he says the Castle at Ajlun is occupied only by a garrison of 10 soldiers and in another place he states there were only two.

While Buckingham describes in detail the people he met, the experiences he had and the events of the journey and includes copious compass readings and estimates of distances in travel time, his physical descriptions are curiously vague. It is extremely difficult to reconstruct the sites he saw or the structures he visited. This is anomalous for one who later produced useful travel books on the United States and proposed the establishment of a Model Town Association to build Utopian communities on the pattern of his prototype, Victoria, which is designed to the last detail. It is to be regretted that the only one of these early travelers who was ever to be included among theorists of urban systems produced such incomplete and confusing reports of the urban system in Jordan at that point. Buckingham proceeded to Sidon where he visited the niece of and hostess for William Pitt, Lady Hester Stanhope, who had settled near there after travelling in Egypt, Palestine and Syria. He then returned to India where he arranged for the publication of his *Travels in Palestine* in 1821. Banks furiously accused him of using his material and of many inaccuracies.

In the meantime Banks had continued his explorations. In

1818, accompanied by two officers of the Royal Navy, the Honorable C. L. Irby and Mr J. Mangles with a Mr Legh, he visited Petra, starting from Palestine and going past Karak and Shobek. They too, record the complete absence of civil order and the hostility of and difficulties with the local population. Small villages were the most extensive signs of urban settlement that they found. While both Karak and Shobek were occupied, they seemed to have had relatively small populations and were surrounded by the ruins of the unoccupied buildings of the former towns. The only mention they make of cultivation were the terraced gardens at Shobek and thick plantations of figs. 'The whole of the fine plains in this quarter are covered with sites of towns, on every eminence or spot convenient for the construction of one. As all the land is capable of rich cultivation, there can be little doubt that this country, now so deserted, once presented a continued picture of plenty and fertility.' (Irby and Mangles, 1868, p. 370).

The Marquis Léon de Laborde, a prominent Frenchman, had traveled extensively in Egypt producing extremely valuable drawings of the state of the major monuments at that time. In 1828 he set out in the company of M. Linant, his engraver, for Petra. Laborde crossed the Sinai Peninsula and went up the Gulf of Aqaba producing maps and drawings of all the remains that he saw. The engravings that he published on his return are the first visual record that we have of Petra. After staying eight days in the ruined city of Petra in 1828, they returned to Cairo by the same route (Laborde, 1836, p. 51). In addition to chronicling everything he saw on the journey, Laborde produces a brief essay on the Nabataeans and on the prosperity and power they developed dominating the caravan routes over the desert from India and Ethiopia. He draws primarily on Greek and Roman writers in antiquity, and this essay is an early attempt at the reconstruction of the Nabataean people. In one passage he summarizes the growth process. 'Add to this, the sort of industry of which a sedentary life is naturally productive, and we arrive at the fabrication of articles of use or convenience, manufactured from the raw materials, which they procured from those caravans; the value of such materials was increased ten fold by their industry. The population increased in consequence of the tranquility and security in which they lived; their connections became multiplied; their opulence augmented, in the midst of huts and houses erected here and there as necessity suggested. Public edifices including, perhaps, temples, were added, in the course of time, and the name of the place thus inhabited assumed a degree of importance.' (Laborde, 1836, p. 277).

Subsequently Léon de Laborde set out from Palestine for Eastern Jordan accompanied by his father, Count Alexandre de Laborde, M. Becker, and a Traveling Fellow from Oxford. The Oxford Fellow, G.H., describes agricultural conditions in the Jordan Valley vividly. 'We observed hereabouts many spots of cultivated land and crops of corn ready for the harvest; which in some degree relieved the desolate appearance of the surrounding country. These patches of cultivation were the property of the Arab tribe, whose chief was our guide, some families of which were accustomed to descend from their mountain resorts at the season of sowing, and pitching their tents for awhile in the plain, to prepare the soil in the rudest manner, and depart, leaving the seed scarcely beneath the surface, to be drawn forth to perfection rather by the fructifying operation of a brilliant sun, than by the influence of an arid soil. They return at the season of the harvest to gather in the ripened grain, when it sometimes happens that enemies, of another tribe, have already robbed them of their anticipations, or the wild boars of the woods have destroyed the expected crops.' (G. H., 1852, pp. 9–10).

The tribes with whom these visitors had contact lived in tents and raised camels and horses and flocks of sheep and goats and practised only in a slight degree cultivation of the land. The author indicates that the population of the whole tribe is from 10,000 to 11,000 in the territory that stretches from Jerash to the Jordan. The deserted ruins of the city of Jerash are described accurately and in some detail. No village is mentioned but instead he discusses contact with some Arabs from a local tribe who dwelt at Jerash at that season of the year to collect the produce of a few patches of arable land there. The party proceeded from there to Amman. He describes riding for six hours with more than ordinary speed through the fertile plain of Gilead without coming across a single village or any population at all. At Amman he speaks of a party of herdsmen who had taken up their abode for the night in the ruins of the ancient city. He briefly describes the major ruins of Amman with reasonable accuracy.

In 1838 an American, Professor Edward Robinson, traveled extensively in the area. He was accompanied by the Reverend Eli Smith. A similar trip was made in 1852. The purpose of these journeys was to identify sites mentioned in the Bible in an attempt to confirm the historical and geographical accuracy of the Bible. The systematic and scholarly studies produced from this research are credited with doing much to establish the field of Biblical archaeology (Robinson, 1856, 1857).

The following year, 1839, a prominent British painter who specialized in architectural subjects, the Royal Academician David Roberts, retraced the routes that had been followed by Laborde including extended travels in Egypt and a visit to Petra. While Roberts had traveled extensively on the continent he had always dreamed of visiting the Holy Land. Roberts spent five days in Petra and the drawings he produced provide an important and valuable record of the state of that city at that time. He then crossed over to Palestine and proceeded north through Syria, departing from Beirut.

Roberts kept a fairly detailed journal, an unfortunately edited version of which was published after his death. He describes the Fort at Aqaba as being modestly garrisoned and inhabited but mentions no evidence of a village at all. In the entire journey from Aqaba through Petra to Hebron, he mentions no villages or other signs of settlement. He makes note of some Bedouin encampments but no settled population

or agricultural cultivation. He notes seeing a caravan of 40 camels in the Siq traversing the ancient route from Gaza to Ma'an. Roberts was immensely impressed by Petra and reached the conclusion that the population must have consisted of hundreds of thousands because of the large area and the extensiveness of the ruins. He remarks, 'for miles after leaving the city, terraces are seen on the hills, supporting the soil, showing that the whole must have been under cultivation' (Ballantine, 1866, p. 123). On his return to England, Louis Haghe produced lithographs of his drawings. While Roberts did many paintings of scenes in Egypt, Palestine and Syria, he seems to have done only one oil of Petra and this is described as being the well known view of the termination of the Siq.

Henry Layard, an eminent early archaeologist, made a trip through Jordan reconnoitering the remains of monuments. A Dutch naval officer, C. W. M. Van De Velde, made a journey through Syria and Palestine in 1851 and 1852. He published his notes in two volumes and at several points in his journey he accompanied Professor Robinson and Dr. Smith. He made only one short excursion to the East bank of the Jordan, visited the ruins of Pella and climbed to the top of the mountains. Fine oak trees and much vegetation are described but only a single village is mentioned and no agricultural cultivation.

Conditions had changed really very little a generation later when Charles M. Doughty made two trips through Jordan in 1875 and 1876. He visited Umm al Jamal and found a small number of villagers occupying parts of the extensive ruins. Doughty is unimpressed with the ruins of Amman which he compares to 'the site of some very inconsiderable English town' (Doughty, 1936, p. 57). Further he says the Kingdom of Ammon was 'as one of our counties hardly three score small townships and villages.' In spite of this apparent underappraisal of the urban systems of the ancient past, Doughty remarks that the monuments of the past civic glory are astonishing in the midst of the desolation of the present landscape. He testifies that the plains of Moab once contained an extensive settlement pattern and remarks that in two days of riding he was able to visit the sites of approximately 40 ruined hamlets and towns. To be able to accomplish this would require a settlement density approximating the kind described by Christaller.

His description of Karak resembles earlier ones. He calls it a small rude town but so populous that it is considered a great city by the people in the region (Doughty, 1936, p. 62). He describes the cultivation taking place in the vicinity and indicates that much of the population camps out in the fields during the growing season. He says the lands are plowed to the depth of a hand and produce very high corn yields which would produce a high level of prosperity if they could be exported, which is impossible because of the high cost of transport. He finds the land from there to Shobek desolate except for 4 to 5 good villages remaining from antiquity. The population of Shobek cultivates the soil in the same manner as those of Karak by spending the growing season in camps at some distance from the castle.

Ma'an is an important rest station on the Hadj road with about 200 inhabitants. Half a mile west is the sister village of Shemmia with something more than 100 inhabitants. The ruins at Ma'an are extensive because of the important role it played in Roman, Nabataean and earlier times as a major junction of caravan routes particularly with respect to the Sabaean trade. He describes it as five hours from Petra. The Nabataean capital was extremely distaseful to Doughty (Doughty, 1936, p. 81).

The first detailed systematic survey of sites and monuments in Jordan was carried out in 1881 and 1882 by a small party under the command of Captain C. R. Conder, RE. Five hundred and ten square miles were triangulated and maps, plans, elevations, perspectives and photographs produced. This invaluable record of the state of ancient remains before development occurred makes no attempt to describe settlement patterns at that time beyond noting that most sites are deserted (Conder, 1889).

How can one explain the almost complete collapse of such an extensive urban system and highly developed society? A possible hypothesis would suggest that under Ottoman rule other parts of the empire including the Balkans played more important roles in the total economy. Jordan was neglected and the expense of maintaining civil order did not seem to justify the return received. As internal defensive systems collapsed, high risks increased the costs of caravan trade and this diminished considerably. The Bedouins who had prospered under the old pattern by supplying camels, sheep and goats, and milk to the caravans now found their standards of living falling. They migrated northward preying upon the settlements and exacting tribute from them as payment for not attacking and despoiling the area. As civil order declined agricultural production fell, surpluses disappeared, both intra- and interregional trade diminished to the vanishing point, and the urban system that could be supported contracted to a tiny fraction of what it had been in the past.

Throughout its history the urban systems of the Ottoman Empire can best be described as having survived rather than developed and grown. In contrast the urban systems of Western Europe developed and burgeoned. Comparisons are made in TABLE 3 of the populations of a number of major urban centers in 1500 AD at the onset of the Ottoman Empire and in 1850 AD, the middle of the period that has just been described. While Constantinople almost quadrupled in size in that 350-year period, its population growing from 200,000 to 785,000, there was little in the way of comparable growth. The population of Cairo fell from 450,000 in 1500 to 256,000 in 1850. Damascus grew slightly from 70,000 to 108,000 and Aleppo grew from 67,000 to 95,000. Adrianople fell from 125,000 to 76,000. Major growth occurred in port cities such as Smyrna and Alexandria. Alexandria increased its population almost 4 times from 35,000 to 138,000. Apparently sea routes took over much of the

Table 3 Estimated population, selected cities, Europe and Ottoman Empire, 1500 AD and 1850 AD

City	Estimated population 1500 AD	1850 AD
Europe		
London	50,000	2,320,000
Paris	225,000	1,314,000
St Petersburg	—	502,000
Berlin	—	446,000
Vienna	45,000	426,000
Naples	125,000	416,000
Madrid	—	263,000
Lisbon	70,000	259,000
Amsterdam	—	225,000
Brussels	31,000	208,000
Milan	104,000	193,000
Venice	115,000	141,000
Ottoman Empire		
Constantinople	200,000	785,000
Cairo	450,000	256,000
Smyrna	40,000	150,000
Alexandria	35,000	138,000
Damascus	70,000	108,000
Aleppo	67,000	95,000
Baghdad	—	80,000
Adrianople	125,000	76,000

Source: Chandler, Tertius and Gerald Fox. *3000 Years of Urban Growth*. New York: Academic Press, 1974.

function that had been performed by land routes previously, and even at that there was very little growth, if indeed any at all, in interregional trade.

By contrast in Western Europe in 1500, only one city was estimated to have had a population greater than that of Constantinople. This was Paris with a population of 225,000 (half of the size of Cairo), and it increased almost six times in size to 1,314,000 in 1850. The most astounding growth was on the part of London which went from a relatively small city of 50,000 in 1500 to 2,320,000 in 1850. In 1500 no city in Western Europe was as large as Cairo, and the urban system in the Eastern Mediterranean clearly rivaled the emerging one in Europe. By 1850 the situation is entirely reversed, and the urban systems of Europe are vastly more extensive than those in the Middle East.

By the end of the 19th century conditions started to improve (Mousa, 1982). Public security which had reached a low point in the middle of the century commenced slowly to be restored. Ottoman administrative centers and military garrisons began to be established as early as 1851 in Irbid, a decade and a half later at Es Salt and eventually in Karak and Shobek by the end of the century (Peake, 1958, pp. 91–92). Circassian and Chechen populations, relocated from Russia to Turkey, were settled in Jordan by the Sultan. As a consequence, some deserted ancient cities again acquired populations. Jerash was resettled in 1878 and Amman in 1880 in this manner (Harding, 1974, p. 80, p. 67). Chechens were settled in the north. In 1880 a group of Christians from Karak reoccupied Madaba and started to rebuild it (Peake, 1958, p. 95). Organized attacks and minor rebellions continued to disturb the countryside and threaten the authority of the government. Intra- and interregional trade and movement were still almost impossible because of continual tribal harassment (Forder, 1905; Peake, 1958, p. 92). The sequence of the process seems clear. Even though the security of interregional routes is maintained, with the collapse of civil protection at the local level, intra-regional trade is reduced to a mere trickle, productivity declines and the local economy subsides to a low point. Governmental revenues fall and administrative, juridicial, and military services can no longer be provided. Consequently economic activity declines further, populations shrink, and local anarchy replaces government.

A major event was the decision in 1900 to initiate work on a railroad to connect Damascus with the Holy Cities of Mecca and Medina. The line was completed by 1909 and the garrisons, stations, and supply and provision points along the railroad brought a new measure of order to the eastern part of the region (Peake, 1958, pp. 95–97).

However, other events were in progress which would have far reaching repercussions. Dissension in Turkey led to the development of the Union and Progress party which resulted in increasingly strained relations between the Arabs and the Turks. The British had maintained a policy of supporting the Sultan of Turkey for more than a century. The new government of Turkey sympathized with the Central Powers, and Turkey entered World War I on the side of Germany.

The diminishing authority of the Sultan and the eventual abolition of the Caliphate eliminated the Moslem bonds of the Arabs to the Turks. In 1916 Sherif Husain ibn Ali of the Hejaz revolted against Turkish rule and embarked upon a series of military campaigns to expel the Turkish administrative and military forces (Abdullah, 1950, p. 142). The Arab revolt rapidly moved northward spreading into Jordan, Iraq and Syria. Sherif Husain was proclaimed King in late 1916 and the Turkish forces in the Hejaz finally capitulated in 1918. In 1917 disruptive military activities under Col. T. E. Lawrence had been carried out in Jordan, and by January 1918 Sherif Faisal, the third son of King Husain, moved his headquarters to Aqaba. The Turkish army in Jordan surrendered to the British army which had joined with the Arabs on September 28, 1918, and the organization of independent Arab states was ready to proceed. Syria was declared a monarchy in 1920 and Faisal proclaimed King only to have the French occupy the territory and drive him out the same year. In November, 1920, Amir Abdullah occupied Jordan in the name of his brother, as Vice-King of Syria, and established his headquarters at Ma'an (Abdullah, 1950, p. 195). In 1921 Amir Abdullah, the second son of King Husain, became the ruler of Transjordan. The next several years were spent in restoring public security. The Arab Legion was established in 1923, and in 1930 the Desert Patrol was created (Peake, 1958, pp. 108–109). With the re-establishment of civil order, it was again possible for the population to engage in produc-

tive agricultural activities and for an urban system to re-emerge.

Rebuilding a country which had been desolate for centuries was no simple task. Imposing order in a region in which there had been none required great effort. The demographic regeneration of a population in itself required a substantial amount of time. Remarkable accomplishments were achieved within a generation, and by the time Transjordan became recognized as a fully independent state in 1946 under the sovereignty of King Abdullah of the Hashemite Kingdom of Transjordan, tranquility had been restored, an urban system re-established, and the foundations laid for a new period of growth and development (Abdullah, 1950, p. 223).

Present interregional relationships

In the brief period that has elapsed since World War II, Jordan has entered a new era of development that promises to rival in absolute and even in relative terms any of the peak periods that constitute the major achievements of its long past. A brief review of certain characteristics of these accomplishments in the context of the previous discussion may be illuminating.

An early section of this paper presented a model of the development process as a framework against which to view the ascendance and decline of the succession of social systems. For the purpose of the discussion that follows, another theory of development will be used which is not incompatible with and indeed quite complementary to that discussed before. This theory identifies two principal conditions for the development of a social system: linkages to other social systems and differentiation within the system itself (Clavel, Capener and Jones, 1969). Linkages provide information from other systems which is essential for economic, social and cultural transformation. Differentiation, which is the measure of the complexity of organization of the social system, determines the system's capacity to process information and consequently to benefit from the linkages that it has. Both conditions are necessary, and the ability to acquire information and the capability to ingest it must be in balance before development can occur.

In the preceding review, it became quite apparent that the region of Jordan is bound together by extremely important major transport routes that have persisted for not centuries but millennia. External linkages beyond the region were identified as major factors critical to the periods of pre-eminence of the social system. Differentiation was discussed in terms of hierarchical systems of urban centers and the degrees of specialization and division of labor that accompanied them. When both external linkages were strong and active and hierarchies of centers well established, the highest levels of development occurred. In periods in which external linkages were less active and important but strong hierarchies of urban systems existed, high levels were still achieved. However, when the converse situation prevailed and there were only weak hierarchical systems of urban centers with little differentiation, active external linkages resulted in considerably lower levels of economic and social development.

The transformation of social and economic systems is closely related to the diffusion of knowledge. Merchants, commercial travelers, migrants and other voyagers play critical roles in transmitting information about technologies, products, methods and ways of life. Channels must exist over which various kinds of interaction can occur and the institution of them is of vital importance (Jones, 1979).

Tremendous strides have been made over the past generation in the installation of the infrastructure of transportation and communication channels in Jordan that facilitate intra-regional linkages as well as interregional connections. Jordan has been more effectively linked to sea transport routes through the construction of the port of Aqaba than at any time in the past for perhaps two millennia. The reconstruction of the railroad from Aqaba to the Syrian border provides the region with effective means for rail goods movement for the first time in its history. Two commercial airports with a new one nearing completion at a more central location in the region provide effective nodes for interregional linkages of immense importance. Pipelines and power transmission lines are rapidly working their way across the landscape.

An excellent modern road system has been constructed: its major outline is shown schematically in FIG. 2. It basically reconstructs the pattern of ancient routes which proved so effective in the past. The system provides a very efficient and effective means of linking the subregions of the Kingdom together. A highly developed paved rural road system makes every point of the country accessible to nearby and distant centers. External linkages to centers which have provided Jordan with so much of its importance in the past are of excellent quality and are experiencing increasing levels of usage. Of the more than 6,300 km. of roads in the Kingdom, almost 2,000 km. are in the primary road system. The distribution of the road network by subregions or governorates is remarkably even (Jones, 1979, p. 21). Inaccessibility of populated areas has largely been eliminated. The number of motor vehicles has increased at an extremely fast rate bringing the possibility of rapid movement from place to place within the reach of larger and larger segments of the population. Not only are the facilities and equipment available but the intensity of usage is increasing indicating higher and higher levels of both intra- and interregional interaction on the part of a more and more mobile population.

The postal system has been immensely expanded so that all but the smallest villages are served by post offices and branches. Each branch of the post office has a telephone, so telephone service has become ubiquitous also. While the number of telephones per 1,000 population is not very high, it has been increasing quite rapidly and is highly dispersed with relatively narrow ranges of differences from one governorate to another. More than 80 per cent of rural households and more than 90 per cent of urban households own radios. Again the disparity between regions is extremely small. Rural–

urban differences in the ownership of television sets are much greater. However, disparities are decreasing and already two-thirds of the households own sets. Telex service is expanding rapidly and should be readily available in all regions within the near future.

Intra- and interregional personal interaction is already high and is growing continually. There is evidence of high levels of commutation and that the journey to work is steadily increasing. A major measure of this is the continued growth of resettled towns and villages that had formerly been abandoned and which have experienced declining opportunities for employment. Commutation patterns have not been formally studied but they seem to be extensive and extremely complex. Labor markets in Jordan seem now to have radii of 30 km. or more which facilitates increasing specialization and division of labor without the disruption of family and friendship patterns. Commutation substitutes for migration and expands the range of social interactions of the population. Additional facilities to accommodate travelers such as hotels and restaurants are needed, but these have been increasing steadily also. Access to goods and services through consumption trips has been facilitated. Great strides have been made to distribute goods and services making them available in all regions. Major improvements are still necessary in this regard.

The population density west of the Desert Highway is sufficiently high in all regions of the Kingdom to permit substantial levels of differentiation and complex social organization. It is beyond the threshold normally associated with settled agriculture and at the level that will sustain manufacturing and commerce. The growth and distribution of the population over the past generation has resulted in this condition which did not previously exist.

An analysis of the population by various characteristics such as level of education and occupation indicates that a high level of differentiation has already been achieved and movement to higher levels is proceeding rapidly. In addition comparisons between expected levels and actual levels of workers in hierarchical occupational classes show that there is remarkably even distribution throughout the regions of the Kingdom (Jones, 1979, pp. 49–73).

A strong hierarchy of urban centers has evolved and policies and programs currently underway should continue to strengthen the emergence of the system of urban centers (Khoury, 1980). It is remarkable that ancient sites, some of them completely deserted 150 years ago, have re-emerged as the important nodes in this system. Amman, Irbid, Es Salt, Madaba, Karak, Tafila, Ma'an and Aqaba are resuming their venerable roles.

Migration patterns can be expected to be as complex as they were at any point in the past or even more so. Individuals relocate themselves with two primary motivations: as producers and as consumers. As producers, individuals change their place of residence seeking better employment opportunities and filling vacancies created by expanding local economies. More extensive labor markets made possible by a greater ease of commutation tend to reduce some of these pressures. As consumers, households relocate to places where they have better access to wider ranges of goods and services. The installation of paved roads, water supply, and waste water disposal systems, electricity, fuel for cooking and space heating, communication such as postal delivery and telephones, as well as services such as education and health and medical services diminish disparities in levels of living between places and mitigate the pressures to relocate for consumption purposes. The provision of regional shopping facilities, restaurants, opportunities for recreation and amusement and similar efforts are extremely important in this regard also.

Nevertheless, migratory flows are inevitable. Sophisticated higher educational services cannot be made ubiquitous and it is necessary for students to relocate to take advantage of them. Upon completion of their academic preparation, they must embark upon careers and this requires relocation also. Career advancement often also involves moving. The population of Jordan is already highly urban. In 1975, 74 per cent of the population lived in urban places with populations of 5,000 or more. Most of the migration in the future will necessarily be on the part of the proportion of the population which is largest, and that is urban. Urban to urban migratory flows will dominate migration and lead to new patterns of social interaction. These migration patterns are not new but will resemble those that existed long in the past when highly developed systems of urban centers were present in Jordan. In those times urban to urban migration flows were probably highly prevalent. Available evidence certainly indicates that it existed, but we do not know how extensive it was or how it varied from period to period.

Once again a large, vigorous, complex social spatial system has emerged in Jordan. It has curiously adapted itself to spatial patterns that have roots deep in the past. Some of this is inevitable. There are limited and obvious ways in which populations can occupy environments characterized by distinct topographical, geological, and hydrological features. However, to some extent spatial patterns are the consequence of a matrix of inertia imposed by the artificial. For example, a site is selected because it is defensible. Its security permits it to become a prosperous and important center. Intra- and interregional interactions with the center become more important. Transport and communication facilities and routes are built to it. After defensibility ceases to be an important criterion, the accessibility achieved through transport linkages continues to make the site a preferred location. The locations and continued viability of many urban centers throughout the world are usually some odd mixture of natural and artificial factors.

In any case, the rich evidence of extremely varied human occupancy over long periods of time is everywhere present in Jordan. It is vital that this record be protected and preserved at this point at which it is in great danger of being obliterated

and buried under a burgeoning, newly emerging social spatial system. Preserved elements of the past are important in developing linkages and therefore play critical economic roles. A major use of leisure time is visiting sites and monuments, and cities and environments rich with archaic elements. Taking family trips on holidays is to all appearances a major form of recreation for Jordanians. Intra- and interregional tourism whether for relatively short excursions, day trips, overnight trips or longer stays is always the major basis of any touristic activity. It adds a measure of richness to the lives of people to discover their heritage. Facilities must be provided to accommodate these visitors. Sites must be protected, restored, made accessible and interpreted. Refreshment, eating and lodging places must be provided. These then constitute the infrastructure that accommodates other kinds of travelers on business and other purposes and promotes higher degrees of interaction. A multiplier effect sets in (Jones and Goldsmith, 1969).

Physical objects from the past whether structures or artifacts contribute to a sense of identity on the part of the population. Orientation in time and space is achieved by finding out where you are and who has been there before you (Copur, 1976). Racial, ethnic, social, political identity are achieved in this fashion. Furthermore this identity can be communicated to outsiders who visit the area for business or pleasure from other regions, other countries, other continents (Jacobs and Jones, 1960).

To accomplish the purposes of communicating a shared heritage, it is essential that objects and structures be truly representative of the diversity of peoples who occupied the place and the range of activities in which they engaged. The social strata through time should be made as clearly visible as geological strata (Jacobs, 1979). In Jordan with its immense history this is a formidable undertaking. Layer piles upon layer. One must consider not only pre-historic sites but Prehellenic, Hellenic, Nabataean and Roman, Eastern Roman, Islamic, Crusader, Turkish and Modern. The regeneration of Jordan with the resumption of Arab control after World War I is so important to current understanding and identity that special attention must be given to evidence of these events. In many ways the monuments of the recent past are the most fragile. Venerable objects receive respect whether individuals know what they are or not. The merely archaic seem obviously and desirably replaceable by the modern. Recent history is often less accessible than the distant past because it has not yet been codified, researched, interpreted and written about. And yet the most important elements of the patterns of today were cast in the immediately preceding period. The physical evidence of the past must not be merely a research laboratory for scholars but must be a library accessible to the whole population. To perform its educational and cultural function well, it must be representative of the full march of history through time including yesterday.

The persistence and modification of interregional relations in Jordan is a fascinatingly strange chronicle. The ebb and flow of social spatial systems is astounding in the violence of its expansions and contractions. Vast quantities of research remain to be done to determine clearly exactly what the spatial relationships were and how preceding patterns shaped and modified successive ones. It is not possible at this stage to report the results of research. The preceding discussion is not a chronicle of conclusions but rather an agenda of hypotheses. Many of the pieces of information have been painstakingly assembled. Much is already known. A major effort at synthesis reconstructing the social spatial systems that prevailed at various periods needs to be undertaken. In addition to the knowledge it would assemble, it would also serve to indicate gaps and omissions in that knowledge that need to be filled.

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