April 16, 1980

Systems of Cities: An Alternative Approach to Medieval Islamic Urbanism

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Abstract

Over the past half century, medieval Islamic urbanism has been viewed in terms of a single and restricted model, namely the "*Islamic City*" concept. The essence of this paradigm, usually expressed in such terms as "cultural tradition" or "Muslim urban archetype," is that all Muslim cities share a common character derived mainly from the religion of Islam and, therefore, they could be explained only in such context. The "*urban system*" concept, which deals with networks of cities, is suggested here as an alternative framework which will integrate the different approaches to medieval Islamic urbanism and help clarify the place of cities in their regional settings.

Introduction

This paper introduces the urban network approach to medieval Islamic urbanism. This approach is intended to complement the more conventional "*Islamic City*" concept. Such a broader framework, it is argued, will add significantly to our understanding of medieval Islamic cities as they will be viewed within their larger regional settings rather than as isolated units occupying a fixed geographical area. This latter conception has dominated research on the subject for the past five decades, and only relatively recently some of its shortcomings have been recognized.[1] The traditional "*Islamic city*" model can be criticized for its focus on cultural tradition as the only explanatory variable, for its search for an ideal-type construct, and for its unsubstantiated conviction that an urban-rural dichotomy existed in the medieval Islamic East. More specifically, students of the medieval Islamic society have used both archaeological data and literary materials to investigate the nature of Islamic urbanism.[2] Methodologies commonly used include, aside from general discussions of the Islamic city, case studies of individual settlements, emphasizing social institutions and religious bodies that might have affected the development of their internal spatial structure[3]; and finally the analysis of the form, function, and the distribution of religious and other structures as a means to identify stages in Islamic city development.[4] Although shortcomings of the Islamic city model continue to be voiced and its validity as a distinct cultural urban form has been questioned[5] the focus on the cultural identity of the Islamic city remains largely uncontested.[6]

The present work departs from the other studies of medieval Islamic urbanism outlined above in many fundamental respects. The focus here is on cities as members of their regional urban system, and on their role in the larger national urban system, i.e., the whole of *Mamlakat al-Islam* or the Realm of Islam. Linkages and interrelations among cities and regions, implicit in the notion of an urban system, "shape the patterns of settlement, growth, and political organization which follow."[7]

Analysis of the organization of the urban system and the dependency relationships among its members have been sought in many contexts.[8] One example of such studies, which pertains to the present one at least in terms of the mode of analysis, is Alan Pred's study of the interrelationships between information circulation and the growth of large cities in the United States from 1790 to 1840.[9]

The application of the urban system concept to the proposed investigation will help to integrate the different approaches to medieval Islamic urbanism, clarify the place of cities in both the regional and the national structures, and provide a suitable framework for studying urban growth in general. The present analysis is limited, however, to the north-eastern part of the 'Abbasid State, particularly the regions of Iraq and Jazira (Mesopotamia), Adherbayjan, Arminya, and Arran (north-west frontier), Fars and Kirman (gulf region), Jibal, Jilan, Tabaristan, Qumis and Jurjan (mountains and Caspian Sea region), Khurasan, Sijistan, Quhistan, and Makran (eastern region), and Transoxania and Khwarism (north-east frontier) during the ninth- and tenth-century A.D. (Figure 1).

The data was derived primarily from the writings of several medieval Arab geographers and Road Book compilers. For the purpose of this paper, however, the analysis is limited to two particular 'Abbasid institutions, which, I believe, have played important roles in the interdependent growth of different cities. The two medieval institutions were *diwan al-barid* (department of the post), and *diwan al-kharaj* (department of the land tax).

The post-road network and the taxation pattern were described in great detail by our authorities. It is hypothesized that the post-road network follows the established lines of the commercial, administrative, and transportation activities that linked the towns and cities of *Mamlakat al-Islam* into a unified system. The taxation flow pattern is used for the interpretation of the dependency relationship that existed between the cities at both the regional and the Caliphate-wide scales. It is further hypothesized that the medieval Islamic urban settlements exhibit a hierarchical pattern in their distribution and that a functioning system of cities existed in the central part of the 'Abbasid lands by the middle of the tenth-century.
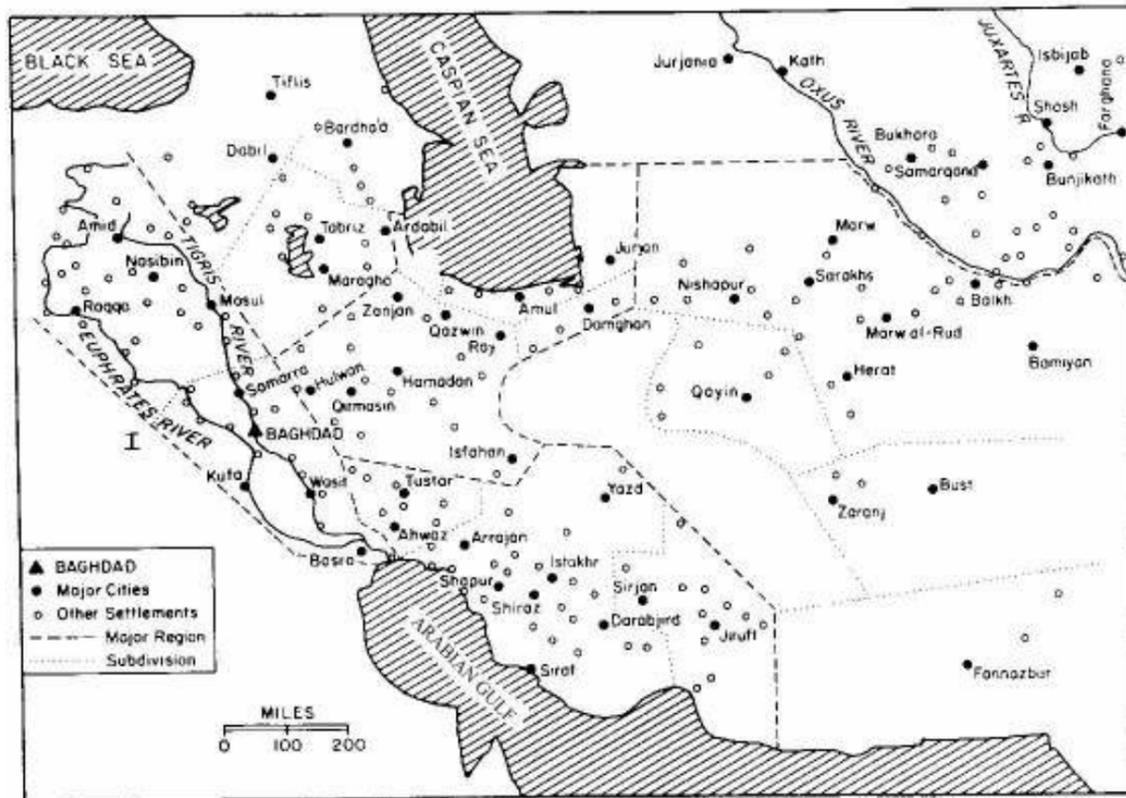
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Figure 1. The eastern 'Abbasid lands in the ninth and tenth centuries A.D. showing the approximate boundaries of the provinces and main cities.

Road Networks

Before proceeding to describe the roads and tracks that crossed the realm of the eastern part of the Caliphate, it will be necessary to give a brief account of two administrative systems that made the recognition and functioning of such roads feasible.

The Postal System. The word for "post" in Arabic is *barid*, which, according to the Encyclopaedia of Islam, is applied to the official post and intelligence services in the Islamic States. It also denotes the mount and the courier, as well as the *sikak* (spost stages) and relays which dotted the post roads all over the 'Abbasid lands. The department of the post, which was in existence since the early years of the Umayyad Caliphate[10], had functioned as a central institution with headquarters in Baghdad and branch offices in all the directly administered provinces. The main role of this important official department was the transmission of

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information between the various cities and provincial capitals and the central government in Baghdad. Thus, the *Caliph* in Baghdad would be continuously informed about the activities of the various public officials, e.g., the commissioner for the *Kharaj* (land tax) and agents of other departments, as well as the monetary and economic situation in general.

Throughout the Abbasid lands, the *sikak*, also known as *ribatat*, were operated along the post-road network at some distance from each other. According to al-Maqdisi, who wrote in A.D 985[11], postal relays were established every two *farsakhs* (six miles) in the provinces of *al-Sham* (Syria and Palestine) and *Khurasan*, and every four *farsakhs* (twelve miles) in Iraq and the desert regions. However, an analysis of the spatial distribution of the *sikak* mentioned by Ibn Khurdadhbeh[12] and Qudama[13] in the previous century reveals that distances between them were not uniform throughout the whole Realm of Islam, and that variations in the distances between them not only occur in different provinces but also within the same region or province. After describing the postal system and the road network associated with it which radiated from Baghdad in all directions, Ibn Khurdadhbeh gives the number of all the *sikak* that covered the central part of the Realm of Islam as 930. The same geographer estimated the annual expenses of maintaining them at 159,100 dinars.

Land-Tax Administration. Another public office of similar importance in the Abbasid administration was that of the *Kharaj* (land tax). This important source of state revenue was one of several taxation types that supplied b*ait-al-mal* (central treasury) with continuous flow of income. However, in terms of importance, the *Kharaj* alone yielded more than all the others combined[14], and as a further indication of its importance, over twenty books were compiled between the eighth and the tenth centuries A.D. describing its history and regulations.[15]

No attempt is made here to describe this taxation system in any detail;[16] however, a word on the organization of this governmental office is in order here. The d*iwan al-kharaj* had its headquarters in Baghdad and at least one branch at every province that was under the control of the 'Abbasids. The duties of the provincial tax commissioners were to collect the land tax from their respected provinces and then send the total, after deducting all the expenses, to the s*ahib diwan al-kharaj* (the general director of the land tax department) in Baghdad. In addition to its role as the principal collector of land taxes, the *diwan* also exerted control over other sources of revenue accruing to the exchequer in Baghdad.

The *kharaj* system formed the primary mechanism by which Baghdad exerted its dominance over its subject cities and towns and through which these cities and towns were interconnected. Its spatial expression was the development in each province of a hierarchy of settlements based on the division of the provinces into administrative districts of different orders.

The requirements of a vast imperial government necessitated the creation and maintenance of a series of principal roads which all started from a single point. By converging on Baghdad, such lines connected the capital with the *amsar*[17] and *qasabat*[18] of the Realm of Islam and with the *thughur*[19] at its frontiers. A second stage of road development occurred as a result of the

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weakening of the grand regime and the subsequent reorganization of the former 'Abbasid lands into the *iqlim* (regional) system. Several semi-independent provinces were created during the tenth century, becoming only nominally dependent on Baghdad. The orientation of the road system changed correspondingly, the roads no longer radiate in continuous lines from Baghdad in all directions. Rather, several radial systems were created each converging on one or two of the major cities of the provinces. These two stages form the framework of the analysis of the road network.

The Imperial Network of
Principal Roads

Five major roads radiated from Baghdad in different directions, leaving the capital from several gates, which were named after the terminus of the road or after a major city along it. A sixth line was formed by river transportation down the Tigris to Basra and the Arabian Gulf ports (Fig. 2).
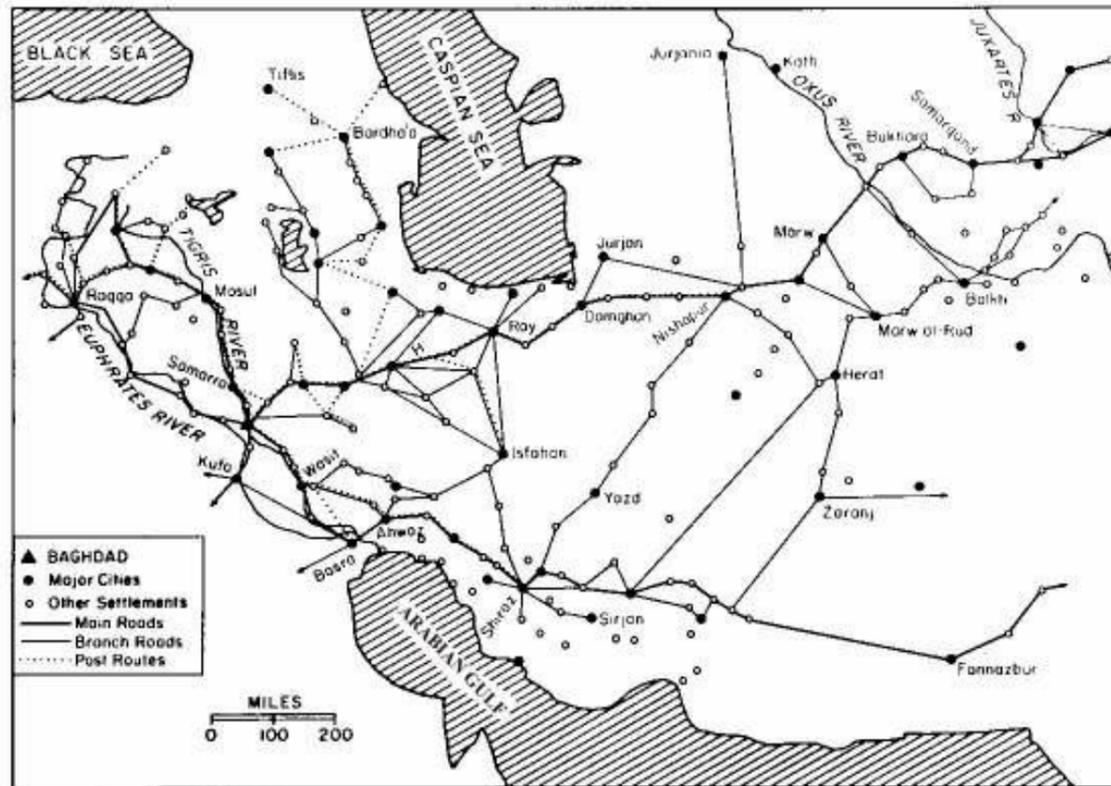

Figure 2. The road network of the eastern 'Abbasid lands in the ninth-century A.D.

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The Khurasan Road. This "great line," as described by al-Ya'qubi[20], united Baghdad with the eastern and northern parts of the Abbasid State up to the northeast frontier lands of the Jaxartes (Syr Daria) River and the borders of China.[21] For most of its east-west course the Khurasan road followed the ancient Silk Road. And, until modern times, "the post roads crossing Persia, but centering in Tehran, near the older Ray, follow the same long track which the earlier Arab geographers have described."[22]

Several secondary roads branched off of the Khurasan road all along its extent. These secondary roads were described by our Arab geographers stage by stage from the point of their departure from the main road to their final destination. At least 20 secondary roads were identified in this way, each forming its own course[23] (Fig. 2).

The Southeast Road. This main road ran almost parallel to the Khurasan one, the two roads being separated by the central deserts of Khurasan and Fars[24]. Leaving Baghdad by the Basra gate, the road followed down the Tigris, going first through Wasit and then Basra. From Basra it ran, first in a northeast direction, then continued eastwards for hundreds of miles until it crossed the Indus River.[25]

The Maghreb Road: via Euphrates.   This main road, named after the territories of the Islamic west, is described stage by stage throughout its full extent until it reached Qayrawan in Tunis.[26]

The Maghreb Road: via Mosul.   From Baghdad another major road ran parallel to the right bank of the Tigris to Samarra and Mosul.[27]

The Pilgrim Road.   Leaving Baghdad by the Kufa gate an important road ran due south to Kufa and then across the Arabian desert to Madina and Makka. It was one of several parallel roads, which started from Iraq and Jazira and were used by pilgrims coming from the east and north to visit the Holy Land.[28]

Post Roads

Most of the principal roads described above and their branches were also known as turuq *al-barid* (post roads). They served as the official routes utilized by agents of governmental departments, especially the *diwan al-barid,* which assumed the responsibility of maintaining them. The main role of this important department was the transmission of information between the central government in Baghdad and the various cities and provincial capitals. Throughout the 'Abbasid lands, postal relays, or *sikak*, were operated along the post roads at some distance from each other (Fig. 3).
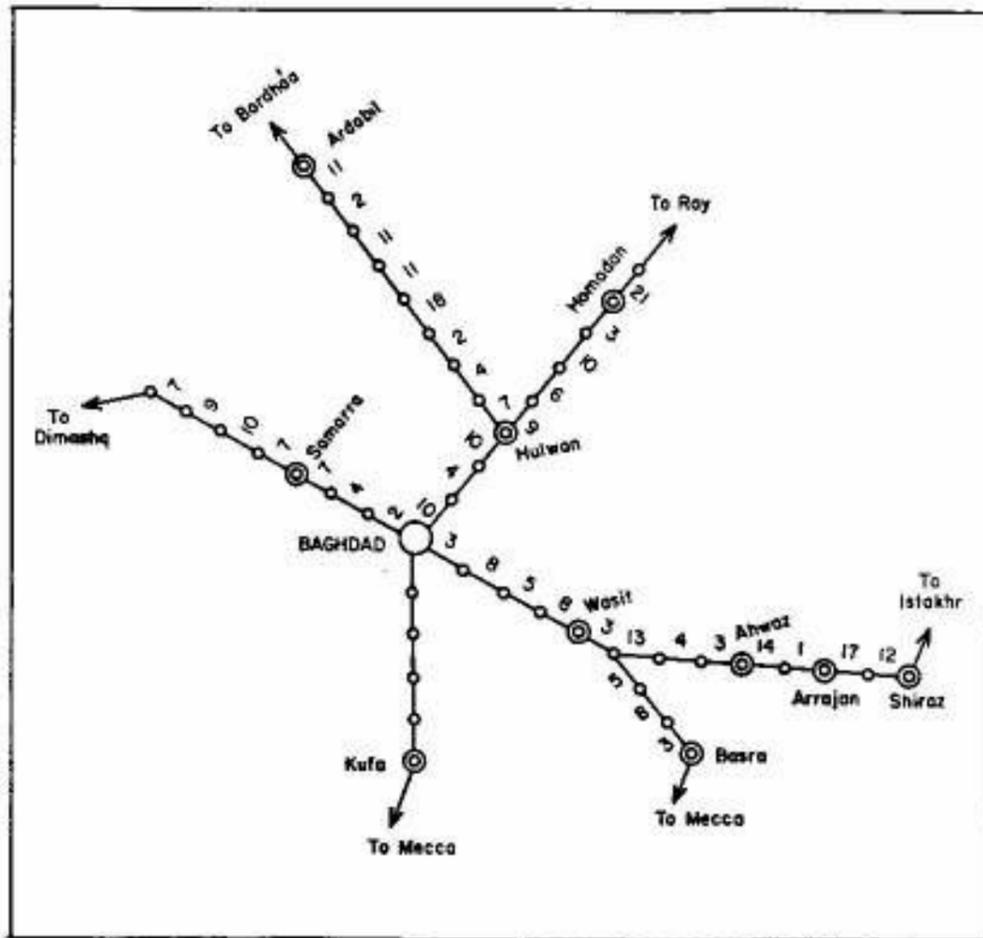
Figure 3. Some of the sikak (post stations) found between cities along post roads in the ninth-century (according to Qudama; figures indicate their numbers).

Three main axes were clearly emphasized: (1) Baghdad-Nishapur axis; (2) Baghdad-Shiraz axis; and (3) the western road axis. Obviously the post road network was not described in its entirety and only three directions of it were given. The reason for the incompleteness of the post road network, as the authorities themselves say, was that the post roads generally followed the main roads, and when the former roads were not specifically mentioned the enumeration of distances between cities was considered a substitute for giving the number of postal stages (Fig 4).[29]
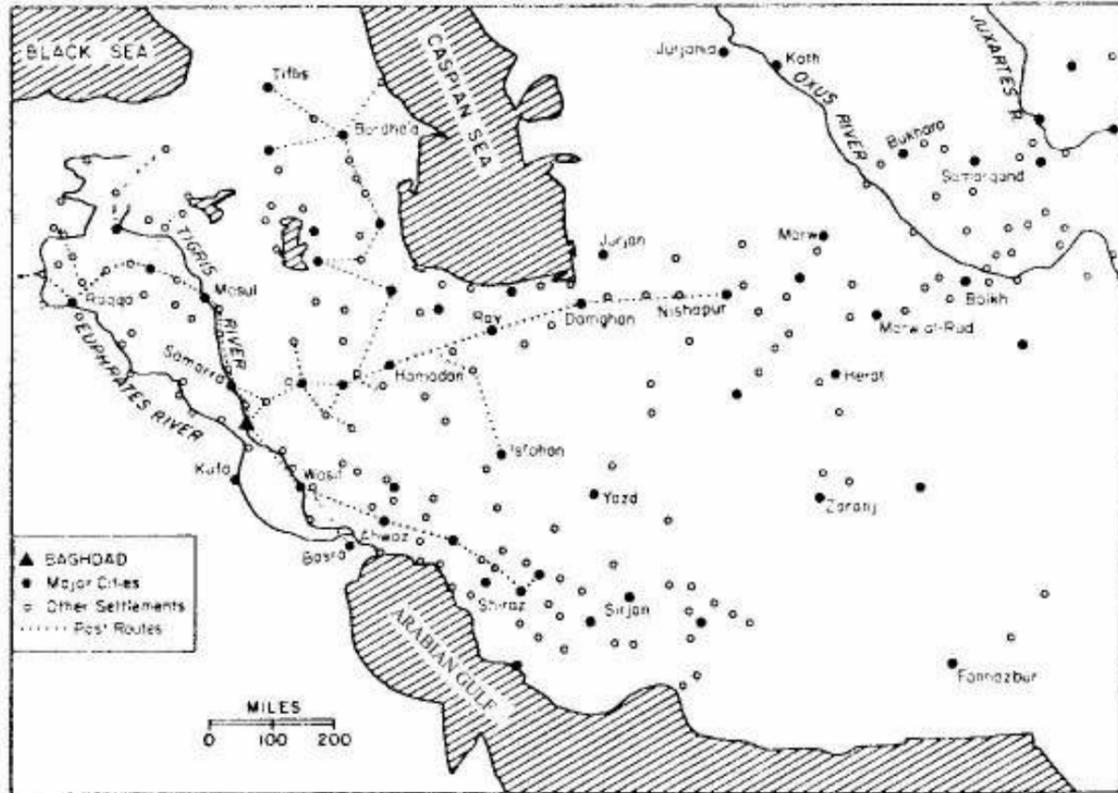
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Figure 4. Post routes described by Ibn Khurdadhbeh and Qudama.

The great emphasis given to the principal and post roads, which existed in the 9th century, by our authors suggests that a conception of a national system of main roads extending from Baghdad into all parts of the Realm of Islam was prevalent. Many factors contributed to the high mobility of medieval Islamic society, which justified the existence of such an extensive network of roads. A centralized administration may stand out as the most essential factor. This and other factors of interaction between the cities of the medieval Islamic east will be discussed later in this paper.

Provincial Roads

Following the dismembering of the 'Abbasid State and the weakening of its central government in the middle of the 10th century, new administrative divisions based first on

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military *iqta'* (feudalism) and later on rival Persian dynasties were created.[30] As a consequence, Baghdad was no longer the preeminent city; its former vast domain had been sharply reduced to its immediate vicinity. This political development and the increased autonomy of the provinces, promoting a reorganization of the urban system separate from the hegemony of Baghdad, a reorientation of the road network, and a different perception of the Islamic east by the geographers of the time. Provincial capitals grew and became more than just links on the old national arterial and post roads. Each now formed the focus of several roads leading to the other major settlements within its own province. Figure 5 shows the road network during the 10th century as depicted by al- Istakhri[31], Ibn Hawqal[32], and al-Maqdisi[33].
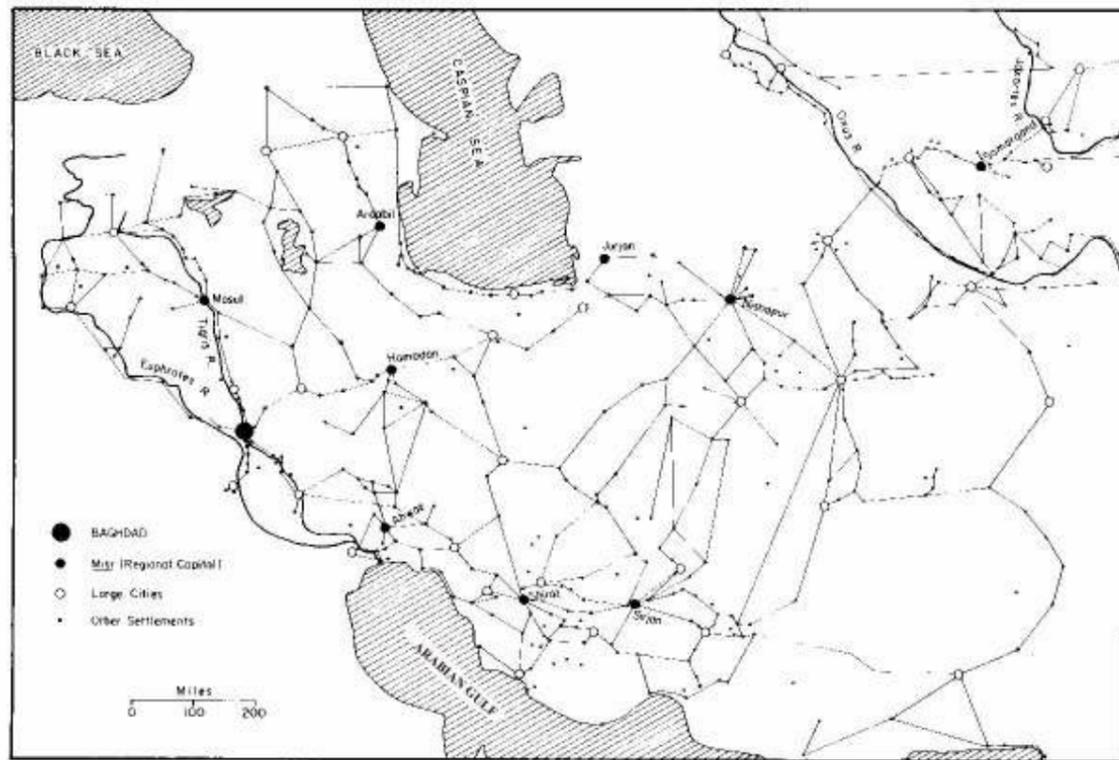

Figure 5. The road network of the eastern 'Abbasid lands in the tenth century, indicating links and distances between cities (according to al-Istakhri, ibn Hawqal, and al-Maqdisi).

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Our emphasis has been so far on medieval roads in the eastern lands of the 'Abbasids as networks, both empire-wide and provincial. These facilitated the flow of goods (taxes, commodities), information (postal services, intelligence reports), and travel (the movement of pilgrims, public officials and military personnel) between the cities and towns of two urban systems. Baghdad dominated one imperial system while the other consisted of several subsystems, each forming its own nucleus and developing mostly independently of Baghdad.

The Urban System

We have seen that urban spatial interaction had been ensued by the development of a network of national and provincial roads at both the level of *mamlakat-al-islam* as a whole during the ninth century, and the regional level that subsequently followed a century later. It is assumed that the prosperity of the Islamic State not only contributed to the development of an elaborate network of roads but also to the growth of cities. We now turn to view the pattern of interdependency among members of an urban system. The imperial tax structure is the feature given primary emphasis in explaining the ninth century spatial organization, while the development of a regional urban hierarchy constitutes the discussion for the tenth century spatial organization.

Interdependence in Urban Systems

The terms "urban system" and "systems of cities" are usually used interchangeably to denote a group of cities which are interdependent on a regional, national, or international level, to a degree that any significant economic or demographic change in one of them results in changes in the others. Similarly, urban subsystems may be defined along these lines, being within a larger framework established by an encompassing urban system. The significance of using this concept in studying urbanism is in its ability to account for inter-urban changes taking place over different time periods. Explanations of patterns of interdependence in urban systems have been proposed, along the lines established by central place theory, in different contexts and measured both in terms of non-physical and physical linkages. The first group of linkage systems consists of inter-urban flow contacts, such as the diffusion of innovations and the circulation of information,[34] while the second group is best represented by communication and transportation networks, such as roads, railways, and telephone lines. The larger the flows between any two regions the stronger the interdependence will be between them, and vice versa.[35]

Another important indicator of interdependence among urban places may be presented by the patterns of inter-regional and local capital mobility. Using United States bank correspondence data for the later nineteenth century as a measure of urban connectivity, Michael Conzen was able to "explore changing patterns of interdependence among cities and the extent, configuration, and internal structure of urban hinterlands at all levels of the urban system."[36] He confirmed the existence by the end of the century of a "modified hierarchical" urban system characterized by "high level interdependencies." He also acknowledges the

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possibility of arriving at different spatial patterns provided that other measures of connectivity were used.[37]

Among the basic assumptions of central place theory is that urban places and regions may be arranged in a hierarchical manner according to any of the following three principles: (1) a marketing principle, (2) a transportation principle, and (3) an administrative principle. These principles have been tested and many empirical studies attest to their validity, both in western and non-western contexts.[38]

It is significant that some of the spatial organization principles mentioned above were recognized at least a millennium before Christaller published his theory of central places in 1933.[39] In particular, the administrative requirements of the Realm of Islam were recognized and adopted by several Arab geographers as the basis for their own classification and hierarchical division of the Islamic regions and urban places.

In the following analysis, the hierarchical ordering of urban places and regions will build on the regional interdependence, which results from fiscal linkages as represented by the *kharaj* flow data. Further evidence of regional interdependence will be drawn from the actual methods adopted by the geographers themselves in their division of the Islamic regions and cities.

Spatial Organization of the
Provinces: The *kuwar* System

The 'Abbasid State achieved a complete assimilation of all Muslim communities and regions in the east. It reached its apogee, politically and economically, during the ninth century and was clearly defined and separated from other nations by the *thughur* in the form of garrison inland towns and ports.[40] The Islamic lands were divided into four major parts, described by some medieval writers as "quarters"[41], each containing several provinces. They were centered on Baghdad, which had unrivaled authority over the rest of the dominion and was its economic, administrative, and intellectual center for most of the time of the High 'Abbasid period.[42]

Early Arab geographers had recognized the importance of the *kharaj* tax system and utilized it skillfully as the basis for their own classification of the 'Abbasid lands and the ordering of their cities. We shall first analyze the spatial organization of the individual provinces as provided by the geographers for purposes of *kharaj* apportioning and collection, and second the flow of the net *kharaj* figures from the chief cities of the provinces to the 'Abbasid metropolis. The latter process of *kharaj* flow within individual provinces and between each province and Baghdad will serve as a simple index of intra- and inter-regional connectivity over a period of one century, from 775 to 874.[43] It is argued that the changing patterns of the *kharaj* flow from the provinces of the Realm of Islam to its center reflect the center-frontier patterns of interdependence and may account for the working of the postulated ninth century national urban system.

Periodic surveys, or cadasters, of the lands of *sawad* (Iraq) and other administered districts, as well as the enumeration of their populations, were made since the time of the conquests and continued under the Umayyads and the "Abbasids. Such frequent surveys and population

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censuses were needed for purposes of apportioning the *kharaj* and in order to adjust its rates accordingly.[44]

Each province or large district was divided into several sub-districts known as *kuwar* (sing. *Kura*), each of which was centered on a *qasaba* (provincial or district capital). The Arab geographers usually equated the names of the *kuwar* with their leading cities, a practice not uncommon among the geographers of modern times. The literary meaning of the term *kura*, which the Arabs substituted for the Persian term *astan*[45] signifies an area composed of several localities, villages, and towns, or a "nodal region" if we may use a modern etymology.[46] Each *kura* was comprised of several *tassasij* (sing. *tassuj*), a Persian word retained in Arabic literature and sometimes translated by the geographers as *nahia* (district, area).[47] Each *tassuj* or *nahia* comprised several *rasatiq* or *rustaqat* (sing. *rustaq,* market place or village).[48] The lowest order of this agricultural/administrative hierarchy consisted of numerous *bayadir* (sing. *baydar,* farm or barn) in each *rustaq*.

The central region, Iraq, was divided according to this hierarchy, and its agricultural districts and sub-districts were completely described by Ibn Khurdadhbeh and Qudama. According to the former, it consisted of 12 *kuwar*, 60 *tassasij*, 281 *rustaqat*, and 6541 *bayadir* as shown in the following table:[49]

<div align="center">

Ibn Khurdadhbeh`s Division of Sawad (Iraq)

</div>

Kura of:	Number of *Tasasij*	Number of *Rustaqat*	Number of *Bayadir*
1. Hulwan	5		
2. Shad Hurmuz	7	35	775
3. Shad Kubadh	8	28	490
4. Nahrawan	5	28	587
5. Astan of Kaskar	4		
6. Astan of Shad Bahman	4		
7. Astan al-`Ali	4	35	104
8. Astan of Ardashir Babgan	5	47	1042
9. Zab Canals	3	12	244
10. Upper Bih Kubadh	6	43	885
11. Middle Bih Kubadh	4	28	1000
12. Lower Bih Kubadh	5	25	478
Total	60	281	6541

Source: Compiled from *Ibn Khurdadhbeh Kitab al-Masalik wa al-Mamalik*. Ed. M. J. De Goeje, Leiden,: Brill, 1889.

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The two geographers give the average annual *kharaj* levied on the products of the districts of Sawad in detail, both in money and in kind. Qudama started with the year 819 as the base year for his figures. It was the earliest year with official records he could find in the archives of Baghdad because records for the preceding years were destroyed during the civil war between Amin and Ma'mun, the rival sons of Harun al-Rashid.[50] The *kharaj* on wheat and barley was estimated at 177,200 *korr*[51] and 99,721 *korr*, respectively, while the *kharaj* in money yielded 8,095,800 *dirhems*. After converting the *korrs* of wheat and barley into their average market values in dinars[52] and adding the annual *sadaqa* (poor tax) paid by the city of Basra, Qudama arrived at the following figures for the annual *kharaj* of Sawad in *dirhems:*[53]

Wheat and barley ……………………..	100,361,850 *dir.*
Monetary unit ……………………..	8,095,800 *dir.*
Sadaqa (from Basra) ………………	6,000,000 *dir.*
Total………………	114,457,650 dir.

In his estimation of the *kharaj* of Sawad, Ibn Khurdadhbeh divided the region into eastern and western *kuwar* and included the *kura* of Hulwan among the latter group. He came up with similar figures to those of Qudama and was more comprehensive in his treatment of Sawad, as he also enumerated the two lowest orders in the administrative hierarchy, i.e., *rasatiq* and *bayadir*.

Another example of the spatial organization of the individual provinces based on *kharaj* may be drawn from the province of Khurasan. It was the most important province to the `Abbasids, as it provided first the manpower which helped them to wrestle the caliphate from the Umayyads in the middle of the eighth century and later formed the largest source of *kharaj* revenues after Iraq itself. Traditionally Khurasan contained all the lands east of the central Iranian deserts, including the fertile lands of Transoxania. When the governorship of Khurasan was entrusted to the family of the Tahirids (820-872), their authority extended westwards to include even Kirman, Jurjan, Qumis, and Ray. Khurasan's total *kharaj* for the year 826-27 was 44,846,000 dirhems. This figure did not include tax in kind and was divided among the *kuwar* and districts of Khurasan as reported by Ibn Khurdadhbeh.[54]

Interregional *Kharaj* Flow:
Interdependency among Members
Of a National System of Cities

Several indicators of the externalities of the early 'Abbasid urban system may be drawn from the following: (1) interregional relations resulting from *futuh* expansion; (2) interregional

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relations resulting from transport expansion and *barid* services; (3) interregional relations resulting from trade; and (4) interregional relations resulting from *kharaj* mobility. The first measure has been discussed by the author elsewhere[55], and we have already discussed some aspects of the second measure early in this paper, while the fourth measure will be taken up below. Lack of comparable data for interregional trade prevents us from making a detailed study of the third measure. However, it is understood that the first century of 'Abbasid rule was an era of enormous economic growth and prosperity during which the whole dominion functioned as an integrated economic unit. This situation is described by the economic historian E. Ashtor as "gigantic…, based on commercial exchange, a unit never before equaled in the history of the old world."[56]

Three different *kharaj* budgets are available for all the directly administered districts and provinces of the 'Abbasids. They list the average annual *kharaj* money paid by the chief cities of the provinces to Baghdad over a period of one century beginning 20 years after the construction of Baghdad. Ibn Khaldun, the fourteenth-century Arab historian and philosopher, covering the period 774-786 report the first of these fiscal records.[57] This early budget contained *kharaj* paid in both money[58] and in kind by 34 districts and provinces. Ibn Khaldun gives the aggregate *kharaj* figures for all the provinces except Iraq and the two adjacent provinces of Jazira and Jibal, whose *kharaj* is distributed among their major *kuwar*. Thus Iraq was divided among its three main parts, Sawad proper and the two districts of Kaskar and Tigris; Jazira was divided into two major parts, Jazira proper including the Euphrates and Mosul districts; and Jibal was divided among its various *kuwar*.

Qudama gives the *kharaj* paid by the same geographical areas half a century later, while Ibn Khurdadhbeh reports the *kharaj* figures paid during his lifetime in the middle of the ninth century. They devoted much detail in the treatment of Sawad for obvious reasons. For the rest of the Islamic Realm, Qudama lists the aggregate figures for each province as a whole except Jazira and Jibal. The first he divides into seven *kuwar*, while the second he divides into nine, among which he includes the *kuwar* of Isfahan and Qum which were not mentioned in Ibn Khaldun`s list. However, Qudama and Ibn Khurdadhbeh delete the southeast frontier province of Sind and the small Caspian province of Jilan, both mentioned by Ibn Khaldun, from their lists.

Ibn Khurdadhbeh is the most comprehensive of the three authorities. He gives the aggregate *kharaj* paid by the provinces but also specifies the *kuwar* of each province, delimits their territorial extent, and identifies their major cities. For the two provinces of Jibal and Khurasan (the latter administratively included several other provinces during his time) he breaks down their *kharaj* among their *kuwar*. In this way, Khurasan is divided into 55 separate *kuwar* and smaller localities and their *kharaj* are given individually.

Amsar-Qasabat Interaction.

The pattern of *kharaj* flow to Baghdad is depicted in the following series of maps for three periods, corresponding to the chronological order of the three *kharaj* budgets. The first of these

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maps (Fig. 6) shows the pattern shortly after the founding of Baghdad. A nodal structure centered on Baghdad was created. The city received the bulk of the *kharaj* money (60 percent) from its own *kuwar* and those belonging to the three adjacent provinces of Jazira, Jibal, and Khuzistan. Sawad contributed about a quarter of the nearly 325 million dirhems of *kharaj* money collected each year during the first period. Jazira, including Mosul and its tributary areas, was second with a contribution of nearly 18 percent of the total sum, followed by Jibal`s *kuwar* (10 percent),[59] Khurasan (8.6 percent), Fars (8.3 percent), and Khuzestan (7.7 percent). Other important contributions to the first period's *kharaj* came from the two outlying provinces of Armenia (4 percent) and Sind (3.4 percent),[60] and the two important *kuwar* of Ray and Jurjan, supplying 3.7 percent each. The other *kuwar*, which contributed between 1 and 2 percent each included Kirman, Sijistan, Jilan, Tabaristan, and Adherbayjan.
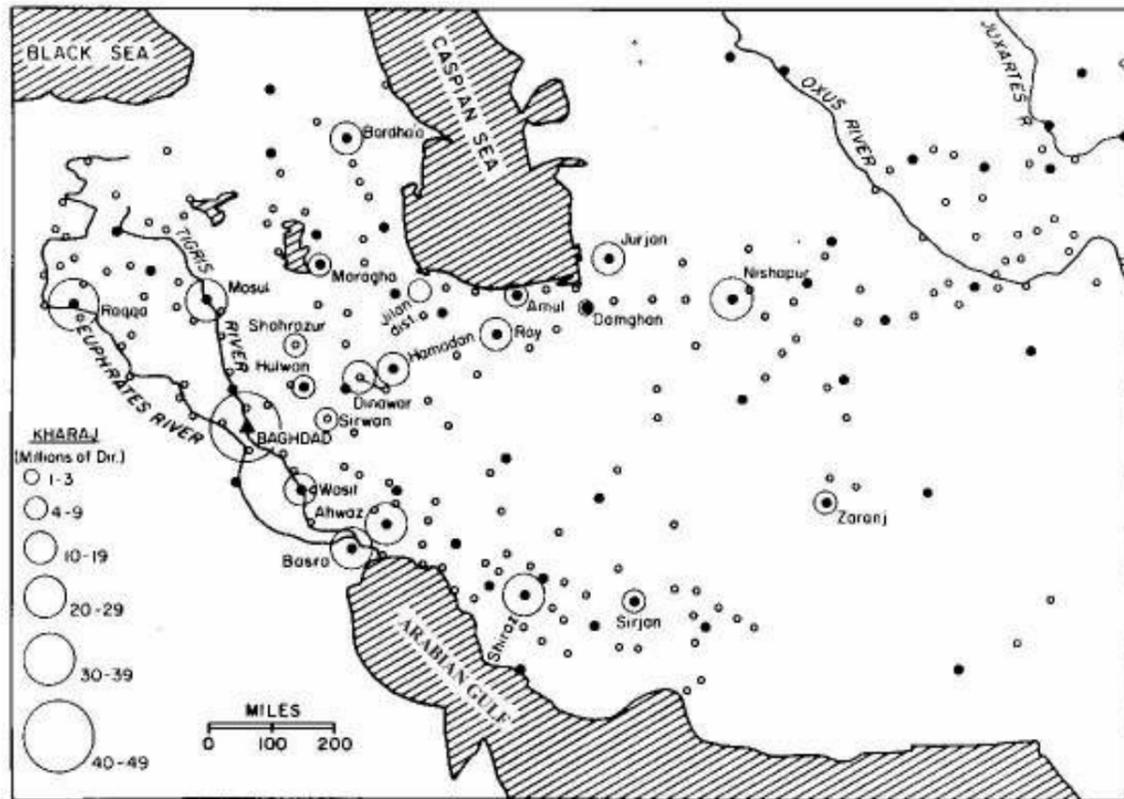

Figure 6. Baghdad-*qasabat* interaction based on *kharaj* linkages, 774-786 A.D. (Circles indicate the amount of *kharaj* sent to Baghdad annually).

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The total *kharaj* was reduced by 24 million *dirhems* during the next period (819-851), but the share of Sawad increased by almost 35 million dirhems. This was reflected in the pattern of *kharaj* distribution among the rest of the *kuwar*. With over 38 percent of the total amount, Sawad was far ahead of the others. Next came Khurasan (12.7 percent), followed by Jibal[61](11 percent), Jazira (9 percent), Fars (8 percent), Ray (6.7 percent), and Khuzistan (6 percent). The remaining 8.4 percent of total *kharaj* value was divided among the rest of the *kuwar*, of which Kirman, Adherbayjan, Jurjan, and Armenia were the most important, exceeding 1 percent each (Fig. 7).
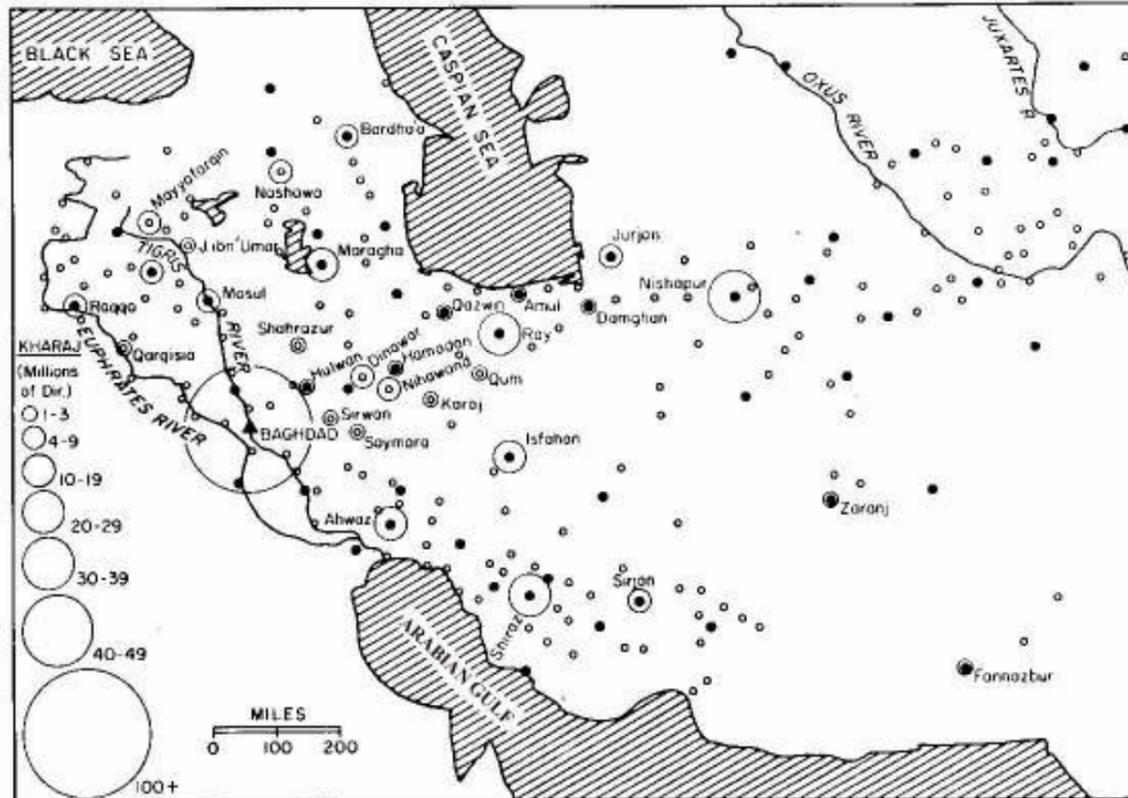

Figure 7. Baghdad-*qasabat* interaction based on *kharaj* linkages, 819-851 A.D. (Circles indicate the amount of *kharaj* sent to Baghdad annually).

During the third period (845-873), the total *kharaj* accruing to Samarra, which is now the `Abbasid capital, diminished by another 50 million dirhems, and the pattern of flow altered markedly. Although Sawad continued to contribute nearly the same percentage as the previous period (37 percent), the position of the *kuwar* of its immediate periphery, especially those of

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Jibal, had weakened, while areas farther to the east gained more strength. Thus while Jazira`s and Jibal`s contributions were reduced to 6.8 percent and 7.5 percent respectively, those of Khurasan,[62] Fars, and Khuzistan were increased to 21 percent, 13 percent, and 12 percent respectively (Fig 8).
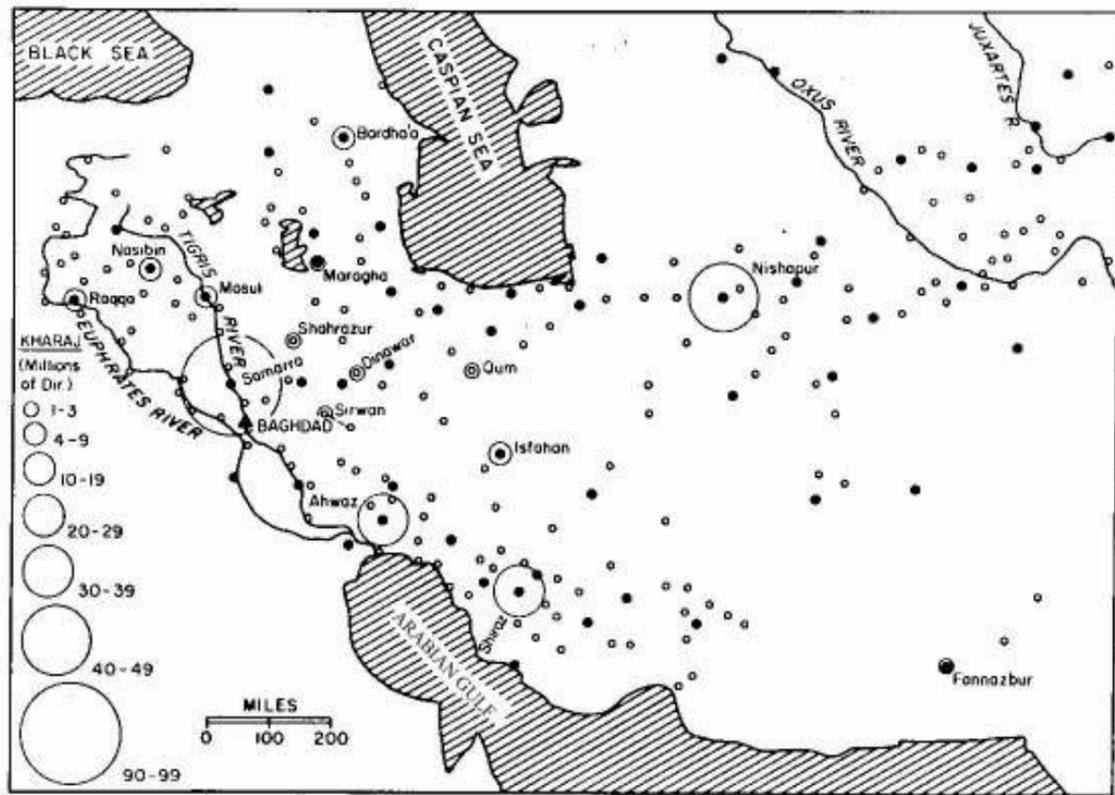

Figure 8. Samarra-*qasabat* interaction based on *kharaj* linkages, 845-873 A.D. (Circles indicate amount of *kharaj* sent to Samarra annually).

    The reduction in the total amount of *kharaj* delivered to the `Abbasid capitals each year and the fluctuation of the position of the *kuwar* and provinces in terms of volume of flow over the three periods did not affect the State-wide nodal structure centered on Baghdad since the beginning of the middle of the eighth century, and controlled by Samarra during the later half of the ninth century. Figures 7-9 depict the volume of *kharaj* sent to the `Abbasid capitals which each *qasaba* collected from its tributary areas. The effect of Baghdad's and Samara's proximity or remoteness from the *kuwar* of the provinces is clearly evident in the flow patterns.
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While the nearby *kuwar* of Jibal and Jazira supplied their *kharaj* directly first to Baghdad and later to Samarra, those of the other provinces sent their *kharaj* through their respective *qasabat*.

Qasabat and *Kuwar* Capital Hinterlands

The hierarchical origin of *kharaj* money within individual provinces has been discussed above in conjunction with the organization of the *kuwar* system. The *qasabat* of the provinces formed the secondary level in the *kharaj* hierarchy, acting as focal points that received *kharaj* revenues from the smaller urban units such as the *kuwar* capitals and *mudun*. These two latter urban centers constitute the third and fourth order levels respectively. They also formed their own hinterlands and became focal points for *kharaj* from their tributary areas.

Figure 9 shows the *kharaj* linkages to second-order centers (*qasabat*) from third-order centers (*kuwar* capitals) and fourth-order centers (*mudun*) during the second period.
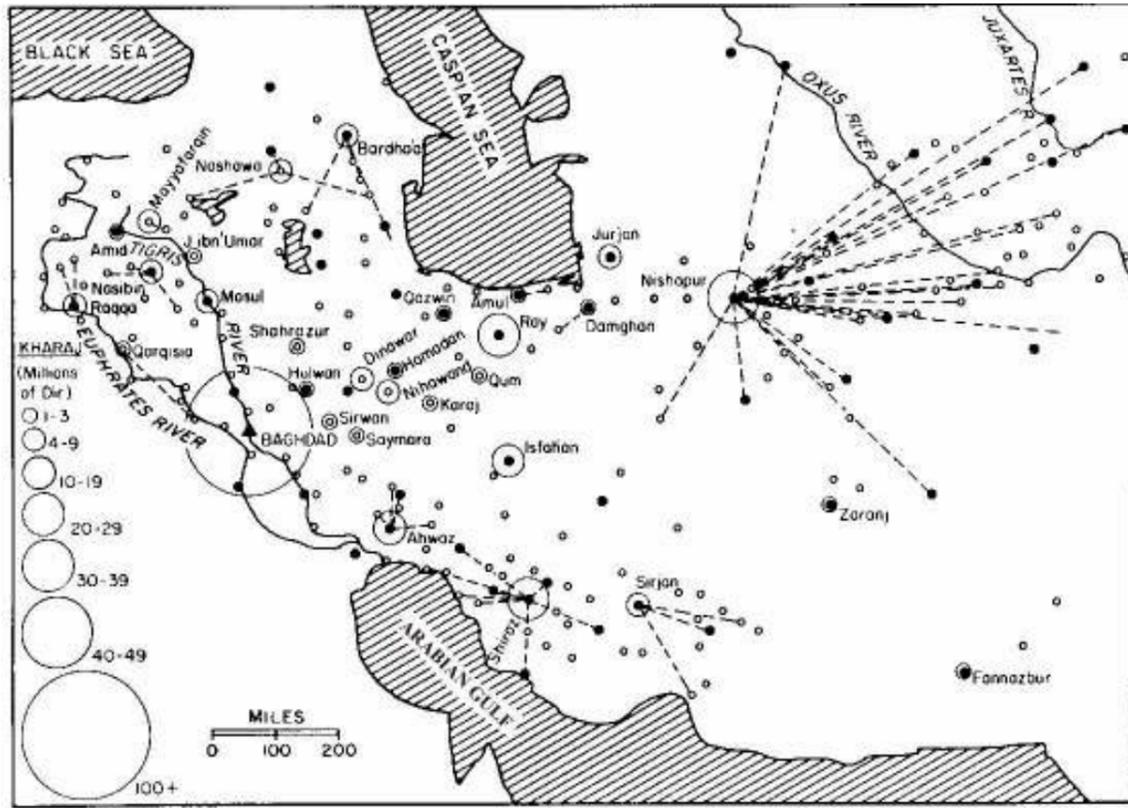

Figure 9. *Kharaj* linkages to second-order centers (*qasabat*) from third- and fourth-order centers (*kuwar* capitals and *mudun*), 819-851. (Circles indicate amount of *kharaj* sent to Baghdad annually).

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Figure 10 combines the pattern of interaction among the four highest levels in the urban hierarchy based on *kharaj* collection and mobility during the third period, while figure 11 shows the urban hierarchy of the eastern 'Abbasid lands near the end of the tenth century as depicted by al-Maqdisi.
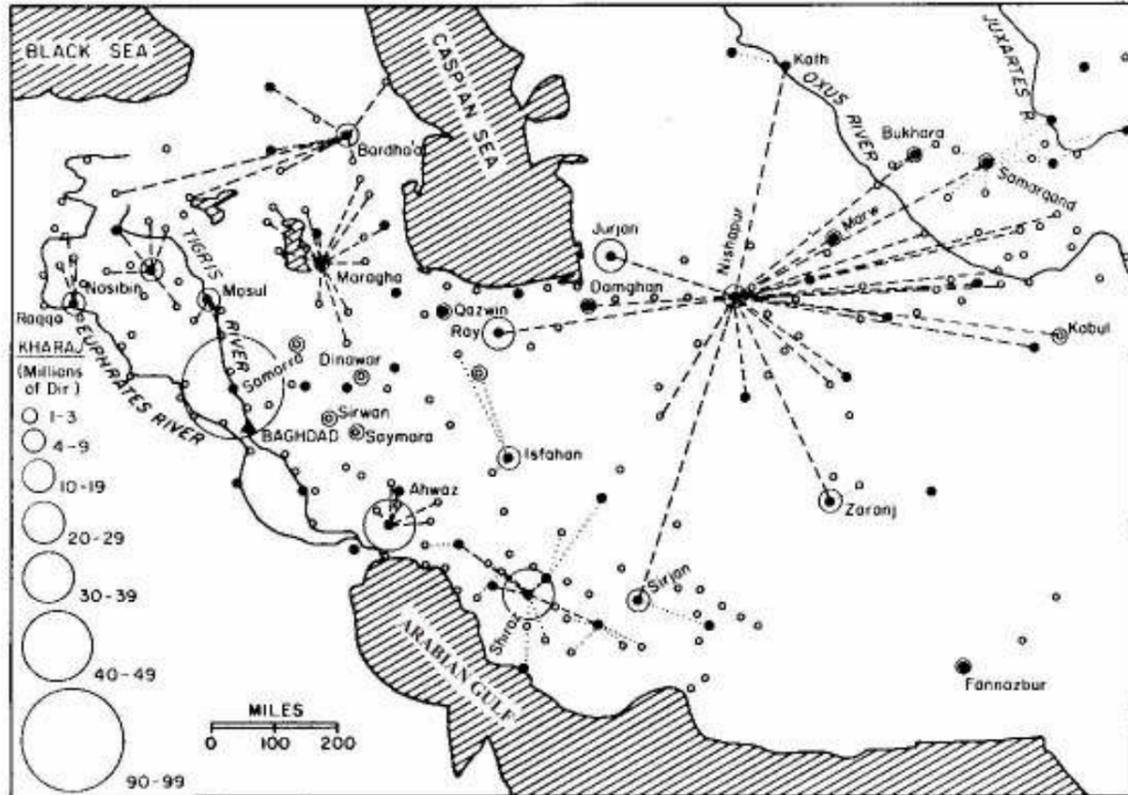

Figure 10. *Kharaj* linkages indicating patterns of interaction among the four highest levels in the urban hierarchy, 845-873: - - - - - qasabat-*kuwar* capitals and *mudun* linkages
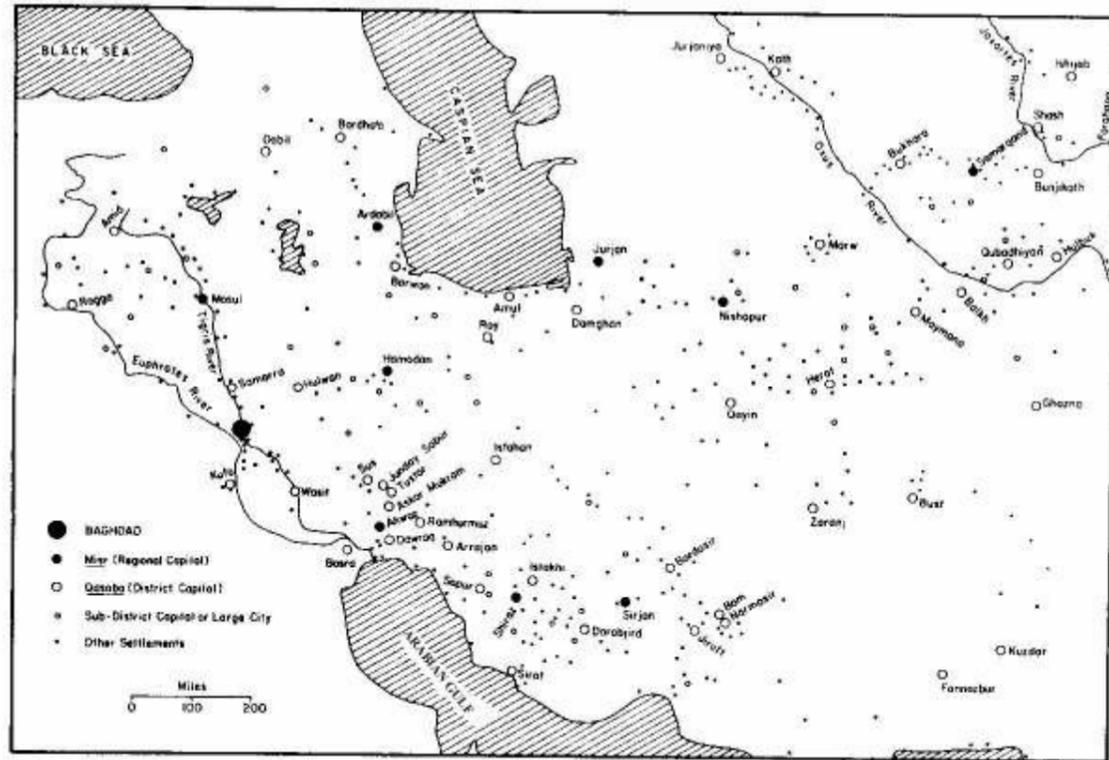**…......** *kuwar* capitals-*mudun* linkages

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Figure 11. The urban hierarchy of the eastern 'Abbasid lands near the end of the tenth century (according to al-Maqdisi).

Conclusion

A vast road network had developed extensively, traversing *Mamlakat- al-Islam,* connecting equally vast regions, and linking one city with another. It formed the necessary framework through which inter-urban contacts were channeled. Two periods of road development have been identified. The ninth-century was characterized by the existence of a network of principal roads all converging on Baghdad, the central point of the empire. This network formed the main axis of movement and communication needed by a central authority charged with the administration of vast territories and by a relatively mobile society whose religious faith and secular needs placed travel high on their priorities. Such official and civilian travel was further facilitated by an elaborate chain of post stations which was operated and financed by the central government, linking points along the entire length of the major roads. A reorientation of the

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former road network occurred during the tenth-century, following the reorganization of the urban system away from the hegemony of Baghdad. A provincial road network was superimposed upon the original domain wide routes and post roads. Provincial capitals and other large cities became more than just links on the old road network. Each formed the focus of several roads leading to other settlements within its own province as well as to the major settlements of neighboring provinces.

Contrary to the somewhat limited *"Islamic city"* concept, the urban system approach provides the necessary framework for ordering empirical data and for rendering different areas of the Islamic world open to comparative analysis. Thus by applying the same approach to other parts of the Islamic regions, at different historical periods, we will be able to compare the stages of their urban development. We also will have established the means by which to compare cross-culturally Islamic regions with other regions of the world. Finally, the present study calls, though implicitly, for a fresh reinterpretation of the indigenous sources. The geographical lore of the early and late medieval Islamic periods should be treated as an integrated whole and not as fragmented and isolated attempts, as has been the case so far. Undoubtedly, this will help fill a gap in the history of geographical thought in general.

Notes

[1] See, for example, Ira M. Lapidus, ed., Middle Eastern Cities: *A Symposium on Ancient, Islamic, and Contemporary Middle Eastern Urbanism.* Berkeley: University of California Press, 1969; A.H.Hourani, "The Islamic City in the Light of Recent Research," in A.H.Hourani and S.M.Stern, eds., *The Islamic City*, Oxford: Bruno Cassirer, 1970, 9-24.

[2] Those include, among others, G.E.von Grunebaum, "The Structure of the Muslim Town," in G.E.von Grunebaum, ed., *Islam: Essays in the Nature and Growth of a Cultural Tradition*. London: Routledge and Kegan Paul, 1961, 141-58; Ira M. Lapidus, *Muslim Cities in the Later Middle Ages.* Cambridge: Harvard University Press, 1967; and Oleg Grabar, "The Architecture of the Middle Eastern City from Past to Present: The Case of the Mosque," in Ira M. Lapidus, ed., *Middle Eastern Cities*, ibid, 26-46;

[3] S.D.Goitein, "Cairo: An Islamic City in the Light of the Geniza Documents," in Ira M. Lapidus, ed., *Middle Eastern Cities*, ibid., 80-96; Jacob Lassner, *The Topography of Baghdad in the Early Middle Ages*. Detroit: Wayne State University Press, 1970; Gaston Wiet, *Baghdad: Metropolis of the Abbasid Caliphate.* Norman: University of Oklahoma Press, 1971; and Janet Abu Lughod, *Cairo: 1001 Years of the City Victorious.* Princeton: Princeton University Press, 1971; Richard W. Bulliet, *The Patricians of Nishapur: A Study in Medieval Islamic Social History.* Cambridge: Harvard University Press, 1972.

[4] Christopher Winters, "Traditional Urbanism in the North Central Sudan," *Annals of the Association of American Geographers*, 67 (1977): 500-520; M.A.Othman, *al-Madina al-Islamiya,* Kuwait: 'Alam al-Ma'rifa, 1988.

[5] Janet Abu Lughod, "The Islamic city: Historic myth, Islamic essence and contemporary relevance. In H. Amirahmadi and S. El-Shakhs, eds., *Urban Development in the Muslim World.* New Brunswick, N.J.: Center for Urban Policy Research, 1993, 11-36.

[6] See, for example, Dona J. Stewart, "Middle East Urban Studies: Identity and Meaning," Progress Report, *Urban Geography*, 22 (2001): 175-81.

[7] L.S.Bourne and J.W.Simmons, eds., *Systems of Cities: Readings on Structure, Growth, and Policy.* New York: Oxford University Press, 1978, 5.

[8] James W. Simmons, "The Organization of the Urban System," in L.S.Bourne and J.W.Simmons, eds., *Systems of Cities,* ibid.,61-69.

[9] Allan R.Pred, *Urban Growth and the Circulation of Information: The United States System of Cities, 1790-1840.* Cambridge, Mass.: Harvard University Press, 1973.

[10] A. Von Kremer, *The Orient Under The Caliphs.* Philadelphia: Porcupine Press, 1977, 200.

[11] Al-Maqdisi, *Ahsan al-Taqasim Fi Ma'rifat al-Aqalim*, ed., M.J. de Goeje, Leiden: Brill, 1906. First ed. 1877.

[12] Ibn Khurdadhbeh, *al-Masalik wa al-Mamalik*, ed. M.J. de Goeje, Leiden: Brill, 1889.

[13] Qudama, *Kitab al-Kharaj*, ed. M.J. de Goeje, Leiden: Brill, 1889

[14] E. Ashtor, *A Social and Economic History of the Middle East in the Middle Ages.* London: Collins, 1976, 63.

[15] A. Ben Shemesh, *Taxation in Islam, Volume 1 Yahya Ben Adam's Kitab al-Kharaj.* Leiden: Brill, 1967, 3-6.

[16] For discussions of the *Kharaj* and other tax regimes that were imposed during the Islamic Middle Ages, see: *The Encyclopaedia of Islam,* New Edition, Vol. IV (1978), pp. 1030-1056; Ibid., Vol. I (1960), pp.1141-1149; A. Von Kremer, *The Orient Under The Caliphs,* ibid, especially pp. 296-303; Adam Mez*, The Renaissance of Islam.* London: Luzac & Co., 1937, pp.107-131; Ann K.S. Lambton, *Landlord and Peasant in Persia.* London: Oxford University Press, 1953, especially Chapter II, pp. 31-52; and S.M. Imamuddin, *Arab Muslim Administration: 622-1258.* Karachi: Najmahsons, 1976, pp. 69-74.

[17] *amsar* (sing., *misr*), regional capitals.

[18] *qasabat* (sing., *qasaba*), provincial or district capitals.

[19] *thughur* (sing., *thaghr),* fortified borderline cities.

[20] Al-Ya'qubi, *Kitab al-Buldan*, ed. M.J. de Goeje, Leiden: Brill, 1892, 276-79.

[21] The Khurasan road ran from Baghdad diagonally in a northeast direction through the cities of Hulwan, Hamadan, Ray, Damghan, Nishapur, Marw, Bukhara and Samargand. Beyond Samargand at the town of Zamin and before reaching the Jaxartes, the road bifurcated and crossed the Jaxartes at two points. One branch crossed the river near Shash (Tashkent) and went northwards to Isbijab and then proceeded in an easterly course to the Chinese frontier. The other branch from Zamin proceeded to the right, where it crossed the upper course of the river near the city of Akhshikath , the capital of the district of Farghana, and continued to the Chinese desert.

[22] G. Le Strange, *The Lands of the Eastern Caliphate.* Cambridge: Cambridge University Press, 1905, 10.

[23] For example, a branch-road ran to the cities of the northwest frontier by the way of Dinawar which lay a short distance from the left side of the main road near Qirmasin (Kirman Shah). From Dinawar the road continued to Maragha, where it divided into two branches. One of these ran northeast to Ardabil, then from Ardabil northward to Bardh'a, while the other branch left Maragha in a northwest direction to Dabil. Similarly, Hamadan, Ray, Nishapur, and Marw were the starting points of important secondary roads, each running through many cities and districts.

[24] This central desert was described by ibn-Hawqal as formidable, devoid of settlements and largely uninhabited compared with other deserts in Arab lands known to him.

[25] From Basra the road entered Khuzistan in a northeast direction until it reached Ahwaz. From there it continued eastwards to Arrajan, Shiraz, Istakhr, Sirjan, and the cities of Makran (Baluchistan) district. Its final section

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crossed the Sind (Indus River) and reached the garrison city of Mansura. The few secondary roads that branched from this main line ran mostly in a northerly direction across the central deserts, connecting the major cities along the Khurasan road (Fig. 2). From west to east the four major crossings were (1) Shiraz through Isfahan to Ray; (2) Shiraz to Nishapur ; (3) Sirjan to Herat; and (4) the eastern cities of Kirman province through Zaranj to Herat.

[26] It left Baghdad by the Damascus gate in a northwest direction until it crossed the Euphrates at Anbar. From Anbar it followed the course of the river to Raqqa and proceeded from there to al-Sham (Damascus), Misr (Cairo), Barqa (al-Marj), Tarabulus (Tripoli), and Qayrawan (Ibn Khurdadhbeh, 72-87; Qudama, 216-25).

[27] It crossed the river at Mosul and ran in a northwest direction to Nasibin. From there a branch went to raqqa to join the Maghreb road while another continued northwards to Amid (Diyarbakir) and other cities of the upper Tigris. A secondary road from Raqqa connected the frontier cities of the upper Euphrates.

[28] Two other important pilgrim roads, which were in use during the 9th century, crossed the Arabian desert from Basra and Rusafa near Raqqa (Fig.2).

[29] Qudama, 229.

[30] The following two dynasties controlled most of the provinces, including Iraq the seat of the Caliphate, during the 10th century: (1) the Samanids ruled over Transoxania and Khurasan, and (2) the Buwayhids extended their authority from their home land on the southern shore of the Caspian Sea to include the provinces of Jibal, Kirman, Fars, Khuzistan, and Iraq.

[31] Al-Istakhri, *Masalik al-Mamalik*, ed. M.J. de Goeje, Leiden: Brill, 1927. First ed. 1870.

[32] Ibn Hawqal, *Surat al-Ardh,* ed. J.H.Kramers, Leiden: Brill, 1938. First ed. 1873.

[33] al-Maqdisi, *Ahsan al-Taqasim Fi Ma'rifat al-Aqalim*, op. cit.

[34] Torsten Hagerstrand pioneered research dealing with innovation diffusion in the early 1950's. For his work and the later developments made by geographers and others in the field, see the review by Olof Warneryd, *Interdependence in Urban Systems*, Goteborg: Regionkonsult Aktiebolag, 1968: pp. 19-22; see also Alan Pred*, Urban Growth and the Circulation of Information: The United States System of Cities, 1790-1840*, Cambridge: Harvard University Press, 1973.

[35] Olof Warneyd, *Interdependence in Urban Systems,* ibid, 46.

[36] M.P.Conzen, "The Maturing Urban System in the United States, 1840-1910," in David Ward, ed., *Geographic Perspectives on America's Past: Readings on the Historical Geography of the United States,* New York: Oxford University Press, 1979, 253-74.

[37] Ibid, 272. In another study, Conzen also used bank capital flows to measure settlement interaction on the regional level. See his "Capital Flows and the Developing Urban Hierarchy: State Bank Capital in Wisconsin, 1854-1895," *Economic Geography*, **51** (1975): 321-38.

[38] See, for example, Brian J.L Berry and A. Pred, *Central Place Studies: A Bibliography of Theory and Applications*. Philadelphia: Regional Science Research Institute, 1961; Michael E Bonine, Yazd and Its Hinterland: A Central Place System of Dominance in the Central Iranian Plateau. Marburg: *Marburger Geographische Schriften*, No. 83, 1980.

[39] Walter1 Christaller *Central Places in Southern Germany*. Englewood Cliffs, NJ: Prentice-Hall, 1966 (First published in German in 1933).

[40] Qudama, 253.

[41] Ibn Khurdadhbeh; al-Ya'qubi.

[42] Baghdad's position was interrupted briefly when Samarra became the 'Abbasid capital from 836 to 892.

[43] This period is conditioned by the availability of detailed *kharaj* data.

[44]For example, *sawad* underwent several such surveys since the time of ʿUmar ibn al-Khattab, see Paul G. Forand, "The Status of the Land and Inhabitants of the Sawad During the First Two Centuries of Islam," *Journal of Economic and Social History of the Orient*, 14 (1971) :25-37.

[45] Ibn Khurdadhbeh, 5-6.

[46]The Arab geographers had derived the terms *kura* and *kuwar* from the Greek word *choros* meaning region, hence we have chorography and chorology in modern geographical etymology.

[47] Ibn Khurdadhbeh; Qudama, 237-39.

[48]The Arab geographers do not give a translation of the Persian term *rustaq*. M. J. de Goeje has translated the term into French *bourgade* (market town). See his translation of *Ibn Khurdadhbeh* and *Qudama*.

[49]Qudama adjusted the number of the original *kuwar* of Sawad to 10 and their *tassasij* to 48 as two of the original *kuwar* (i.e. Hulwan and Tigris) and their respective *tassasij* were no longer part of Sawad at his time and were added to other districts (p. 236).

[50] Qudama, 236-37.

[51]1 *korr* of wheat = 2,925 kg. And 1 *korr* of barley = 2,437.5 kg. See Robert McC Adams, *Land Behind Baghdad: A History of Settlement on the Diyala Plains.* Chicago: University of Chicago Press, 1965, 101.

[52]Qudama has based his calculations of the monetary value of wheat and barley on the average price of two *korrs* of the two types of grain, which he gives as 60 dinars.

[53]One dinar equaled 15 *dirhems*.

[54] Ibn Khurdadhbeh, 34-39.

[55] Mansour M. El-Babour, "Urban Networks in Eastern 'Abbasid Lands: An Historical Geography of Settlement in Mesopotamia and Persia, Ninth- and Tenth-Century A.D." Unpublished Ph.D. Dissertation, The University of Arizona, 1981.

[56] E. Ashtor, A Social and Economic History of the Middle East in the Middle Ages, op.cit., 71.

[57]Reported in Alfred Von Kremer, Kulturgeschichte des Orients unter den Chalifen, Vol. 1, W. Germany*: Scientia Verlag Aalen*, 1966, pp. 356-59.

[58]Dirhems for the eastern ʿAbbasid lands and dinars for the western "Abbasid lands.

[59]Ibn Khaldun did not specify the contributions of Isfahan and Qum, but it is presumed that they were included among the figures given for other *kuwar* in Jibal, possibly Hamadan.

[60]Sind`s contribution was deleted for later periods.

[61]Including Isfahan and Qum

[62]The *kuwar* of Ray, Qumis, Jurjan, Kirman, and Sijistan were counted among the dependencies of Khurasan during this period.