

Siting and Patterns of Rural Settlements in Aravallis of Rajsamand and Bangar Plains of Pali in Rajasthan

Abstract

The present study is concerned with the siting and geometrical patterns of rural settlements in the Aravalli hills of Rajsamand, and Bangar plains of the adjacent Pali, district of Rajasthan. This empirical study is based upon the map based analysis, complemented by field observations, of rural settlements in the study area. Siting of rural settlements is seen to be influenced by topography, water and arable land. Geometrical pattern is generally rectangular or square, though circular pattern in areas of insecurity and linear pattern along lines of transport and valleys are also observed.

Keywords: Site, Patterns, Settlements, Rajsamand, Pali, Rajasthan.

Introduction

Siting and patterns of settlements have always drawn attention of settlement, social and cultural geographers. Siting of rural settlements is not a spontaneous process but reflects consideration of factors ranging from physical - natural, social, economic to political. It is, thus, influenced by a wide range of factors. Topography, local weather conditions, fertility of soil, nature and quantity of ground and surface water, agricultural and land holding size, social organization and considerations of security are some of these.

Settlement pattern refers to the geometric design made by the arrangement of settlements in relation to the natural or man-made features like rivers, ridges, canals and roads (Broek & Webb, 1968). These geometric shapes may be linear, rectangular, radial, circular etc. Settlement pattern implies some sort of spatial regularity, which in turn, reflects the working of a regular process. These patterns are the consequences of a long process of development and change caused by interaction of physical and social factors (Singh, 2007). In fact, settlement patterns are manifestations of spatial organization by a cultural group, and reveal much about structure, functioning and perception of the group itself.

Review of Literature

Hall (1931) used the external forms of settled areas in his study of Yamato Basin as a basis for classification of village patterns.

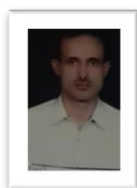
Ahmed (1950) studied settlement patterns of Bangladesh and found almost continuous linear settlements in inundated south-eastern tracts, and on natural levees in south-western districts. Singh (1955) initiated Hall's approach to settlement studies in India while describing the layout of villages in the middle Ganga valley.

Demangeon (1962) stated that evolution of settlements is affected by numerous factors like natural conditions, surface configuration, soil conditions and water resources. Ahmed (1962) found unmistakable connection between the surface configuration of the site, surface water, soils, shape of the field and settlement pattern. Birch & John (1970) showed that location of cultural features and distribution of population are controlled by many factors like topography (slope; exposure to an extent), climate, occupation of people etc. Asthana (1973) studied hilly area of Almora and explained that selection of settlement sites depended upon duration of sunshine in the winter solstice. Mukherjee (1975) reported that Siwalik hills reveal a multiplicity of linear belts of settlements, sited on 'choe' terrace and comprised of uni-caste, uni-clan or multi clan social groups. Panda and Rai (1985) attempted to find out influence of regional geo-morphological factors in distribution of rural settlements in Khasi and Jaintiya hills. John (1991) studied distribution of settlements in Periyar basin in coastal Kerala, while Shekhar (1993) took up settlement structure in North Koel basin of Bihar. Sarkar (2010) used GIS, and RS images of



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West Bengal plains, in order to understand the fundamental processes, patterns and functions of settlements.

Ngah and Ismael (2011) identified the spatial distribution pattern of rural settlements in Shaqlawa district (Iraq) and clarified the economic, demographic and social factors, which influence them. Yu and bian (2011) used RS, GIS and statistical analysis to show that distribution pattern of rural settlements in Huanren County (eastern mountains, China) is affected by elevation, slope, soil erosion and economic level. Zhang *et al.* (2014) employed RS and regression to identify effects of geographical determinants on settlement locations in Wen-Tai region of eastern coastal China. Influences of topographic factors (elevation, slope and aspect) on settlement locations were found to be stronger across hilly regions.

Study Area

The present study on the siting and geometrical pattern of the rural settlements is concerned with the Rajsamand and Pali districts of Rajasthan. Most of the Rajsamand district falls in the Aravalli hills while, excepting a narrow belt on the eastern margin, Pali district is a semi-arid plain locally known as Bangar (Fig. 1). The varying physical and the consequent socio-economic conditions of the study area provide good opportunity to study the siting and patterns of the rural settlements.

Objectives of the Study

The objectives of the study are -

1. To find out the general patterns of siting of rural settlements in the Aravalli hills of Rajsamand district and semi-arid Bangar plains of Pali district of Rajasthan.
2. To delineate the geometrical patterns of rural settlements in the aforesaid study area.

Data Source and Methodology

This empirical study is based on the analysis of rural settlements in the topographical maps of the study area. For this topographical sheets at R.F. 1:50000, covering the study area, were used. The numbers of these sheets are 45C/13, 45F/4, 45F/15, 45F/16, 45G/1, 45G/5, 45G/2, 45G/7, 45G/12 for Pali district and 45G/11, 45G/12, 45G/16, 45H/9, 45G/1 for Rajsamand district.

The study of siting and geometrical patterns of the rural settlements was complemented by field-based observations and discussion with the local people. The maps of the settlements cited in this study have been redrawn from the respective topographical maps.

Discussions

Siting of Settlements

Natural factors play a pre-dominant role in the location of human settlements in the study area. The topography of the site is generally selected according to the facilities it offers for natural defence or provides a source of adequate water supply. The selection of the site is further influenced by some restrictive forces of physical setting. Extensive hilly tracts, inhospitable jungles or sandy tracts of inhospitable deserts are practically devoid of human habitations.

Inundation of the banks and low lying areas liable to flood during the rainy season prevent men from locating their centres of habitations in such areas, e.g., Kalu, Latoti, Rani villages of Pali district, Khamnaur village of upper Banas basin (Nathdwara tehsil) afford the least attractive sites for human settlements. Machind, Karal, Kadan Ka Gura, Rambhar Ki Bhagal in Nathdwara tehsil are situated on the banks of the Banas river and its tributaries, which are associated with a belt of the badland topography (Toposheet 45H/9). The depth of ravines ranges from 5 meters to 35 meters. Such dissected areas and protected forest areas led to the development of (compact) clustered settlement patterns on elevated unbroken land surrounded by ravines, e.g., Molela (Nathdwara tehsil, Toposheet 45H/9). Linear valley sites include all those sites, which are found along the floors of narrow valleys. They are common in hilly areas of Rajsamand, particularly owing to their relation to the valley routes (Plates 1 and 2).

Kelwara is one such village, which is situated at the head of narrow valley in Rajsamand district. In the region of Pali plains and Rajsamand hilly tracts, the entire rural economy is centred round wells and tanks, consequently, compact villages are located in the vicinity of such wells and tanks.

The western part of the Bangar region of Pali district is largely plain area and has scattered pockets

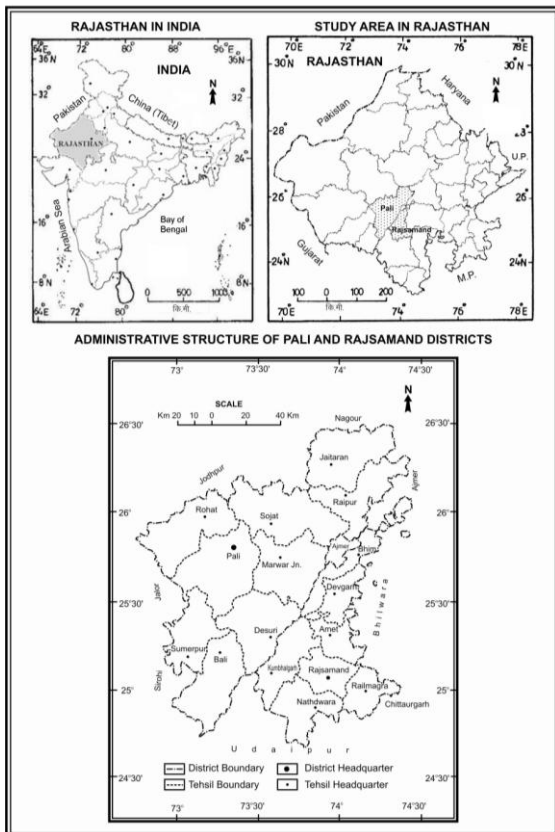
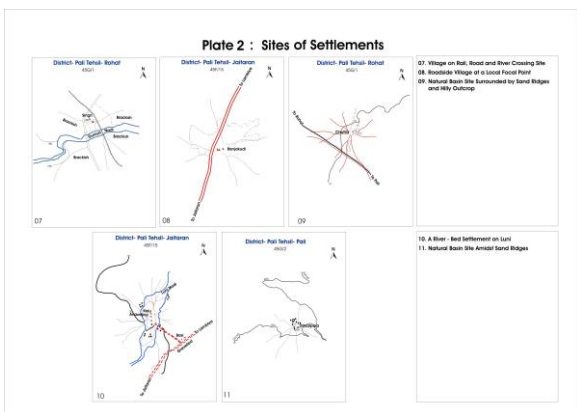
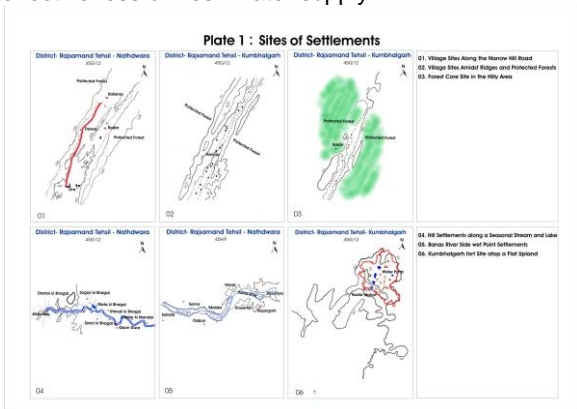


Fig. 1 : The Study Area

of higher water table. These sandy plain lands absorb and retain the rainwater, prevent evaporation and allow water to percolate slowly to the lower grounds and, thus, make the water table slightly higher than in the surrounding sand hills. Due to these factors, villages in the semi-arid zone occupy low-lying sites of the plain area, for instance, in Khandi (Rohat tehsil) and Dayalpura, Bhagesar (Pali tehsils). The determinant factor in the location of settlement sites in semi-arid environment is primarily the proximity and effectiveness of fresh water supply.



Bangar region's villages are situated on the wells, tanks and riversides, e.g., Hemawas, Garwana, Dhakri in Pali district. Many villages are situated along the narrow strips of arable land on the western side of the Aravallis, e.g., Ghanerao, Kot, Bagol in Desuri tehsil of Pali district.

The nucleated settlements occur on the contact points between the hill area and the plains. In Kumbhalgarh tehsil, where patches of wooded areas become recurrent, the villages are usually located either on the outskirts of these green patches or within their very hearts.

The changes in the distribution pattern of the settlements of Bangar and Aravalli Hilly regions have been few and far between. The only exceptions to the medieval villages are a few changes brought about by wells and tubewells for irrigation, and by roads of local or national importance.

Patterns (Shapes) of Rural Settlement

The spatial organization of houses in a village defines its pattern. As a matter of fact, the street system with in the settlement plays the most important role in defining the pattern. Besides the

street plan, other factors such as the location of well or a pond, or cultural elements such as temples and mosques, give a peculiar pattern to the village. Rural settlements may acquire different patterns - rectangular, star, circular, semi-circular, linear, square and amorphous (Plate 3).

Rectangular

The most frequently occurring form is that of a rectangle basically due to the rectangular shape of the cultivated fields. Rectangular shape of rural settlements are found in both the districts. The rectangular alignment of dwellings is mostly designed to get maximum sunlight and fresh air combined with the need for aggregation, e.g., Dharmdhari (Rohat tehsil); Bhoombaliya, Latoti (Jaitaran tehsil) in Pali district whereas Dhoinda, Pipli (Rajsamand tehsil); Gunddi, Kanuja (Nathdwara tehsil) in Rajsamand district.

Square

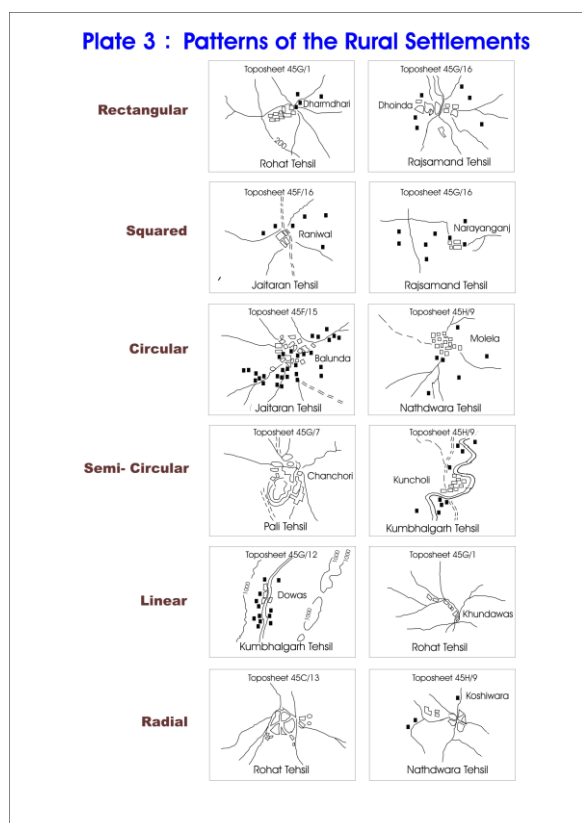
Square and rectangular shapes generally occur together. The square shape is generally associated with villages lying along the roads and other physical barriers in the region. Pali and Rajsamand districts have several square shaped settlements, e.g., Rawatan ki Dhani, Raniwal, Garniya (Jaitaran tehsil); Mandli Khurd (Rohat tehsil) in Pali district and Narayananj, Devgaon, Naugaon (Rajsamand tehsil); Jhalonk ki Mandar (Nathdwara tehsil) in Rajsamand district.

Circular

Circular shape is generally characterized by very high degree of concentration. This form is a natural result of maximum aggregation for the purpose of defence, around the mansion of landlords who used to protect the peasantry against attacks by a neighbouring chief. Examples are common in Pali district like Baloonda, Digarna, Bassi, Patwa (Jaitaran tehsil); Roopawas (Pali tehsil) and fewer in Rajsamand district, e.g., Molela (Nathdwara tehsil).

Semi-Circular

Sometimes the settlements occur in semi-circular form. These generally develop on the crescent shape of a meander. It is a physical constraint which is responsible for the growth of this shape in the Luni river and Banas river beds in Pali and Rajsamand districts respectively, e.g., Ras, Bahjakuri (Jaitaran tehsil); Chanchori, Jooni Endla (Pali tehsil) in Pali district and Kuncholi (Kumbhalgarh tehsil) in Rajsamand district.



Linear

Linear settlements have emerged along the roadsides, railway lines and valleys. These develop in a single line to an early approach road. The national highway No. 8, 14, 65, 76 and western railway pass through Bangar and Aravalli regions. So many linear settlements have developed strictly along the roadside. Sometimes a settlement may consist of two or more strings depending upon the other smaller roads, e.g., Dowas (Kumbhalgarh tehsil); Cheekalwas (Nathdwara tehsil); Mokhampura (Rajsamand tehsil) in Rajsamand district while Khudawas (Rohat tehsil); Bhut ki Dhani (Pali tehsil) in Pali district.

Radial

In this shape, a number of streets converge on one center, which is significant for commercial activity, or simply is an open space. Thus, the streets seem to be radiating from a common center, e.g., Malpuriya (Jaitaran); Mandawas (Rohat tehsil); Jetpur (Pali tehsil) in Pali district and Koshiwara (Nathdwara); Samantri (Kumbhalgarh tehsil) in Rajsamand district.

The shapes of settlements, thus, vary in both areas. The rectangular forms are characterized in those villages, where economic base is agriculture. In some parts, the dominant form is linear, reflecting that the most of the settlements have developed along the roadside and railway lines. Generally, rectangular, square, circular, semi-circular, radial, linear shaped settlements are seen in the study area.

Conclusion

The siting of rural settlements in the study area is influenced by topographical factors, as well as availability of water and of arable land. The geometrical pattern is generally rectangular or square,

showing influence of agricultural fields of rectangular shape. Circular pattern is often visible, which signifies very high concentration due to defence priorities. Linear settlement pattern is also denoted along transport routes, and along narrow valleys of the Aravallis.

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