CHAPTER

4
During the medieval period we find a large number of forts and fortifications, spread throughout India including Himachal Pradesh. During this period, the importance of a fort as a politico-military institution came to be realized on a wide scale. Hence the large number of forts and their political or military importance came to be realised, depending of course upon their strategical situation and invulnerability from outside attacks. This increase in the number of forts is mainly due to the increase in warfare, and a changed battle scenario on a large-scale with improvised /improved methods of attack and defense due to induction of advanced equipments and machinery.

Forts which remained sublime in the early period built of perishable materials like brick and mud, began to occupy a place of prime importance in the medieval period in the field of warfare and became the chief objective of attacks for the capture of a fort which meant that during this period, the virtual occupation of the entire land under its command by the victorious king. Hence few forts as a matter of military expediency were large in size, complex equipped with upto-date material, machinery and arsenal. Added to this were the natural potentialities offered by the steep rocks and the availability of strong
building material like granite, besides plain level grounds.

With this brief outline about the nature and importance of a fort, we shall now examine the structure of a fort as seen through the contemporary literature and extinct archaeological remains. Broadly speaking the structure or the idea of a fort as a place of refuge in the times of danger remains more or less the same as in ancient period. But during this period, the importance of a fort increased and it became the chief centre of warfare, attracting the attention of the invaders to besiege it for long periods. In the ancient period while a fort and city were one and the same, it was not the case in medieval period. In this period, forts came to be built away from the cities which did not cover the village population and cities were necessarily fortified.

To take up first, the evidence available from contemporary writings, we find basically that there was not much of change or difference about the importance of a fort. Almost all the contemporary writers as policy followed the earlier practice and advised the contemporary rulers about the importance of a fort.

*Ramayana* describes the different parts of the forts as *prakara, agadta, ahata, vapra* and *vakiti*, which shows only a slight change in terminology. It also says that a fort should be equipped with *vantras* (missiles) *ayudhas* (weapons) elephants, horses, chariot and
soldiers.1

From the above description, it is clear that a fort is important for a king, howsoever, strong he might be. Further it is also becomes clear that the terminology applied for the different parts of the fort, does not differ much, from the earlier Sanskrit works.

SHAPE The main shapes prescribed by Kautilya for a fort, are circular, square or rectangular.2 It also says that forts in the shape of a triangle or oval, are of no avail, semi-circular or disc shaped forts are to be avoided. Semi circular or crescent shaped forts are useful. Only in the case of forts situated on river banks, Vastu Shastra or architectured plans prescribes 8 kinds of forts based on their shape. They are Dandaka, Sarvatobhadra, Nandyavarta, Bhadraka or Padmaka, Svastika, Prastara, Karmuka and Chaturmukha. While the above are prescribed for a capital city of a king or raiadhani and apply largely to land forts Sthaladurga, conspicuously enough. In this context, it may be noted that forts of Himachal during medieval were not always the capital cities of the kings. The shapes prescribed on architectural basis however, are not strictly followed by the forts in medieval Himachal. Secondly, unlike a

2. Kautilya’s Arthasastra, (Delhi, 1970), Ch.III, p.50.
religious structure as a temple, the fort being secular and military in nature, did not always adhere to the Canonical principles laid down in the texts on architecture. Moreover, the plan or shape of a fort, depends to a large extent on the site, where it is built and its contours, and other military exigencies. That is the plan or shape of a site always determines the plan or shape of a fort. However, there appears to be some semblance of adherence to the rules laid down above by Kautilya and others as most of the forts built during this period confirm to one or other of the shapes prescribed. Moreover, the shape or plan of a fort can be determined only in the case of Sthaladurga or land forts and not in the case of Giridurgas or hill-durgas. Where due to geographical condition it is not possible to have such plans.

**STRUCTURE OF A FORT**

While the idea of a fort as a defensive structure remained constant, the fort as a military structure appears to have undergone several changes from time to time in its size, methods of construction, disposition of various structures, addition of defensive equipment etc, depending on contemporary trends of warfare, methods of attack, defense, weapons and armory of warfare. Beginning from hedges, cattle pennon, and palisades of tree trunks, the construction of forts gradually grew
complex in size and strength. Later on construction material were replaced by earthen ramparts and masonry walls. This process of evolution of the fort as a structure appears to be the same throughout the country. But forts in ancient and medieval Himachal Pradesh are mainly built of perishable materials like mud, bricks and stones which became the cheap material of construction in medieval India. This period there also developed a new masonry technique called cyclopean in which large blocks of stones were piled one above the other and tightly fitted together.

The joints of the stone were perfectly chiselled and then laid one above the other being kept together only by their enormous weight. After the advent of Muslims, a vigorous style of military architecture grew up and the use of guns under the Turkish officers and engineers in the later half of the 14th century brought about still further improvements in the design and materials used for building.

Another aspect of the fort during this period is the additions made in their size and nature. Forts of this period are characterised by their large size and imposing nature, with the addition of several other parts to the fort complex like barbican, loopholes, machicolation etc., and the enlargement of the existing

---
ones like the gateways, walls, bastions towers, turrets, which in height and thickness resembles with structural features of Himachal's forts especially Kangra fort.

According to Sidney Toy "Medieval fortifications in India occupy a distinct position in the history of military architecture from the sequence of development. Apart from design and defense, they impress observer or the enemy with their imposing and formidable aspect as well as depict the power, affluence and style of the ruler. The walls of the forts of this period were constructed so thick and its height were strengthened at short intervals by massive towers and the gateways. Other important additions made to the fort during this period were parapets for defense musketry and heavy guns concentric. Certain walls forming circuits many miles round and bastions of enormous size and height, which according to Henry Cousens 'were square in form with battlements loopholes, machicolations, barbicans and pasterns or sally ports'.

SELECTION OF SITE

(i) SELECTION The first criterion that governs the construction of a fort is the selection of site. Great

---


care were taken during medieval period to see that it is not exposed to external threats and is not easily accessible. The suitability or strength of a site is often determined by its strategical importance and the availability of building material in close proximity and the availability of water resources in plenty.

(ii) AVAILABILITY OF BUILDING MATERIAL The second criterion that governs the construction of a fort is the availability of strong building material available locally or in close proximity. This is amply proved by the fact that several hill forts in Himachal Pradesh are built on high rocks, where granite or igneous rock is easily available.

(iii) STRATEGY The third and most important criterion is the strategical importance of a site both from political and military aspects. According to R.R. Seelman one of the main function of a fort was to cover land and water routes. Another and the most important object was the defence of military stores or naval dockyards from sudden seizure by a surprise attack by enemy, long enough for relief forces to arrive.¹ A fort should be built at such a place where it enjoys maximum strategical advantage and is capable of protecting frontiers or borders of kingdom, either on land or water and other important political and military centres, besides being impregnable

to the besieger. It is difficult exercise to determine
the strategical importance of each fort and also to what
extent these criteria were followed by the builders of
various forts.

(iv) OTHER POTENTIALITIES The last criterion that
governs the construction of forts is the availability of
other potentialities offered by the hills. We also find
from an examination of several fortified places and their
situation that the main consideration that led the
builders of forts was the availability of water resources.
Most of the hill forts situated in Himachal Pradesh are
fed by several natural springs and natural tanks found in
the cliffs of the rocks which are invaluable for any fort.
The fort of Kangra is thus the most natural fort which is
said to possess two vast water tanks i.e. Kapur Sagar and
Sukha Talab and large number of wells.

(v) PARTS OF THE FORT Having studied the main
principles that govern the construction of forts, we shall
now proceed to examine the structure of a fort and its
various component. The main parts of fort are moat,
rampart, gateways, bastions, towers, turrets, secret
passages besides stables for horses and elephants,
magazines, granaries, barracks for soldiers, civilian
quarters and finally the royal palace or citadel. It will
not be out of place here to explain each one of these in
detail as they form an integral part of the fort.
a. MOAT  It is termed as Parikha in Sanskrit literature. According to Kautilya a fort should have 3 ditches with an intermediary distance of 1 danda or 8 ft. The main purpose of a moat has to make the approach of the enemy difficult. Hence Kautilya prescribed not less than 3 moats one behind the other. These moats are of two kinds viz. a dry moat and wet moat. The dry moat is also known as ditch, which is filled up with stocks of hay, wild thorns, creepers, concealing underneath and poisonous weapons. The other i.e. wet moat is filled with deep pools of water up to the brim with crocodiles and other poisonous creatures.

The sthala-durga or land durgas are invariably provided with a moat generally one out side the prakara or rampart but some times two. There is no instance of a fort provided with a triple or quadruple moat. Although it is not essential in the case of jala or water forts situated on the banks of rivers and hill or Giri durgas, yet it became customary practice to provide one either on the side where there is no river at the foot of the hill. These moats often proved impossible barriers to the besieger and had to be crossed by way of draw-bridges erected for the purpose.

(b)  RAMPART OR FORTIFICATION WALL (PRAKARA)

Rampart is the other important part without which a fort cannot be truely called a fort. Kautilya
prescribes it to be erected at a distance of 4 dandas i.e. 24 ft. height, from the innermost ditch about 8 danda 36 ft. height and twice as much broad i.e. 72 ft. height by heaping up mud upwards and by making it square at the bottom and oval at the centre, pressed by trampling of elephants and bulls.¹ It should be of sufficient thickness and height, which vary according to the contours of the ground. Since it is the main target of attack by the besieger, great care should be taken to see that it does not suffer from breaches and thus give way into the fort.

Kautilya also warns that gaps (if any) shall be immediately filled up with fresh earth.² The main material for building these ramparts are mud, brick and stone. In ancient period we find largely the mud and brick fortifications, whereas in the medieval period stone became the chief material. Another important feature of these ramparts in the medieval period is their formidable and imposing appearance. Generally formidable and impregnable forts are said to possess as many as 7 lines of walls. That is the strength of a fort is determined by the number of ramparts it possesses and their height and width. As improved methods of attacks like artillery and mining came into vogue it became necessary to increase the

¹ Kautilya, Artha Sastra, op.cit., p.51
² Ibid., p.51
height and thickness of existing fort walls or ramparts. The effectiveness or the strength of a fort may be said to lie largely in the strength of the rampart. Hence every care should be taken to see that it does not fall an easy prey to the attacks of the besieger.

(c) GATEWAYS (dvarah) form an important obstacle in the structure of the fort, in preventing enemy next to the rampart. According to Kautilya an entrance gate to the fort should be 1/6th as broad as the width of street, writing about medieval fortifications Sidney Toy remarks "The gateways differ in strength but are often very powerful, and are defended by barbicans, which sometimes- take the form of two powerful walls that extend out beyond the gates with towers at the end and sinuous roads in between and roads being defended by box machicolations jutting out from the parapets"^1. At forts the gateways are stretched with courtyards in between they are generally very large from 12 to 18 ft. wide and 25 ft. high up to the point of arch or the underside of the lintel.

This description of the gateways in medieval forts is confirmed by the actual remains available in the forts. A verse from Niti Sara says that it is impossible even for Lord Indra, the lord of Heaven to rule a city which is not

provided with well guarded entrances or gateways.¹

The next important aspect of the gateway is their plan which grew complex with sinuous curves and angles in the medieval times. The medieval gateways on the other hand are provided with a stately carved pathway flanked by a semi-circular screen wall on the left on the exterior and massive and huge entrances with two or more courtyards in the interim. Separated by barbicans and approached by turns towards left and right alternately at right angles. (d) **BASTIONS** are also known as *buruzu* in Persian, where as in *Arthasastra* they are described as *Attalaka* meaning a tower. It should be square throughout and provided with a moveable staircase or ladder equal to its height.

Next to the rampart, and gateways, the value of a bastion is of immense importance in fort architecture for it is mainly meant to reinforce the strength of the fort wall which run for long distances continuously spaced at regular intervals of distance and at corners. According to world encyclopedia a true bastion is pentagon shaped (with 5 sides and 5 angles) with one side of the pentagon placed along the wall of the fortification, called ‘salient’. The two sides adjoining the ‘salient’ are known as faces and the sides connecting the faces with the wall are called

---

flanks.\textsuperscript{1} A line of these bastions connected by a protective curtain is known as bastion system.\textsuperscript{2}

This system of bastion defense is said to have been developed in Europe.\textsuperscript{3} This type of system of defending forts by means of bastions appears to have been in existence even in the Indus civilization and \textit{Vedic period} and was a well recognised practice which continued from time to time. The structure and plan of the bastions in Himachal Pradesh find two main categories bearing on their shape in Kangra fort these are rectangular and round or semi-circular. The rectangular bastions are believed to be Hindu structure while the latter i.e. circular or Semi-circular have come into existence only after the advent of the Muslims when they became polygonal (many sided) and finally round. This type of the bastions we can see in Nurpur fort in district Kangra Himachal Pradesh.

Further both the types co-existed in several forts during one and the same period. It may also be noted that the shape or design of a bastion depends not exclusively on the fancy or preference of builders but on the nature of the site on which it is built and the principles of

\textsuperscript{1} Kautilya, \textit{op.cit.}, p.51.

\textsuperscript{2} \textit{World University Encyclopaedia}, (Delhi, 1942), p.6.

\textsuperscript{3} Straith Hector, \textit{Treatise on Fortification and Artillery}, (Bombay, 1971), Para 375, p.5., p.5.
construction in vogue in a particular period. Percy Brown
remarks that "the Indigenous architecture of India was of
'trabeate order' that is placing stones one above the
other and spacing the gaps by means of beams laid
horizontally thus making the pressure vertical and
directly onwards involving no structural problems. But
the Muslims, on the other hand brought a new scientific
and mechanical formula of arcuate that is arch system as a
method of bridging space. Such formula when put into
practice is applied to counteract the effects of oblique
or lateral, thrust and resist the forces, stress and
strain by means of which greater strength and stability
were obtained, materials were economized and a wide range
and flexibility given to the builders art.¹

This view from the angle of superior defense
 technique and functional utility coupled with economy,
round or circular bastions appears to bear improvement
over the earlier practice of square or rectangular
bastions. This can also be explained by the fact that in
earlier times the Hindus did not know or use artillery and
mining and their warfare was confined to infantry only
using bow, arrow and swords as the main weapons for long.
This system continued in besieging and defending forts
square or rectangular bastions did not face danger. But
when improved methods of attack like mining and artillery

¹. Percy Brown, Indian Architecture Islamic Period, (Delhi,
by way of cannons and heavy guns came into vogue it became necessary for the bastions of the old order to give way to the new ones i.e. round or semi-circular.

(e) PARAPET WALL The next important part of a fort that demands consideration is the parapet wall. Described by Kautilya as Vish Kambha it stands over the rampart, built in odd or even numbers with an intermediary space of 12 to 24 hastas from each other and raised to a height twice their breadth.¹

Next to the bastions it is these parapets that provide additional security to the inmates of the fort and enable them to face the attacks of the besieger from a vantage position. Some times they are continuously built a long outer edge of the rampart, sometimes broken by means of intermittent opening in between and consist of solid rectangular structures with a downward slope on the top towards front and some times by means of upright stones erected at several places leaving wide gaps in between. Lastly the most common parapets seen on several fort walls is a chain of arched hood stones, built horizontally along with entire length of the wall, leaving a very narrow space in between.

These parapets are often pierced with several loop holes in several rows one above the other and side by side both horizontally and vertically thus enabling the

¹. Kautilya, Arthasastra, op.cit., p.52.
defenders of the fort to peep through them. The approach of the besieger to insert weapons of smaller size and fire without being seen. These loopholes again are of different kinds like horizontal, vertical and cross sectioned in the interior thus providing sufficient angles to the inmates to fire from different angles ranging from 90°, 45° to 60° when seen from outside.

Apart from the above mentioned structures, there are the usual stables for horses and elephants, magazines for storing arsenal and military equipment, the jail, granary, the barracks for soldiers, quarters for the civilians, the treasury and finally the citadel or the palace complex of the ruler or commander of the fort.

(vi) FORT ARCHITECTURE The architecture of forts depends to a large extent upon the building materials and methods used for construction in vogue in a particular period. It may be noted that no strict principles or rules were laid down by the works on architecture i.e. vastu in the matter of construction forts except in regard to their plan for a fort is primarily a military and secular structure and not a religious. Even the rules regarding the shape or plan were not strictly adhered to in the construction of forts for a variety of reasons such as the nature of the site, its strategical importance. However, a general study of Kangra fort reveals that there are clear phases of architectural evolution on the basis of the materials of construction used which can be
termed as early, medieval and late medieval.

(a) EARLY This is the earliest phase of fort architecture built of mud, morum, brick and stones. In earlier period there were three popular methods applied for construction of the forts. The first built of heaped up mud, brick and the 2nd of rubble and the third of stones. The mud and brick continued to be used even in the medieval and later medieval period.

(b) MEDIEVAL The earlier traditions of using mud and brick in fort constructions continued up to 7th century A.D. Afterwards new building material and methods of construction were used. These included the use of heavy blocks of stone of irregular size and form, crude in shape laid horizontally and vertically one above the other without any binding material as Chuna and mortar to fill the joints.

The beginnings of a new type of architecture called cyclopean masonry technique is a typical characteristic feature of all Hindu style of fort constructions. The main reason for ascribing this architectural style to Hindus is the existence of several sculptural carvings on the walls of the fort, intact till date and the use of Hindu temple pillars with all their architectural and sculptural embellishment in several gateways of forts. Another and the most important reason is the nature of Pillar-beam lintel style a characteristic feature of all the Hindu buildings.
In the stone walls of Kangra fort we find neatly dressed cut stones arranged on either side i.e. exterior and interior with the hollow space inside being filled up with earth. The nature of stones varied from irregular and crude to elegant and neatly cut blocks of stones with their edges arranged vertically in symmetrical fashion and also significant feature of the military architecture until the advent of the Muslims.

(c) LATE MEDIEVAL This phase is also known as Indo-Muslim and Indo-Sarcenic in which are perceptible several foreign influences as Persian and Turkish. This is the period which witnessed several Muslim constructions. During this period developed a vigorous style of military architecture. Its chief feature lies in the use of lime and mortar as joining material besides bricks and tiles to serve as decorative or ornamental devices in the super-structures over the gateways and ramparts.

The most important feature of the period is the new device of arcuate order as against the indigenous order of trabeate i.e. pillar beam lintel style. During this period the Islamic buildings gave preference to arch shape as a method of bridging the space.¹ This was achieved by the use of mortar masonry which appears for the first time. This is supported by the fact that all

Muslim constructional activity is confined only to the upper levels of the fort walls and gates.

**DATEING AND DEFCENCE OF FORT**

**VII METHODS OF DEFENCE** The main basis for dating forts is their architectural style comprising its shape, material and methods of construction. We have already studied that cyclopean masonry is the chief key to date a fort to the Hindu period whereas the use of lime, mortar and brick to the Islamic period. But it should be noted that no fort retains all its original features intact that can be termed as strictly Hindu or Muslim for they were the chief targets of attack and destruction by invaders and were frequently repaired and renovated. Thus they present a blend of both Hindu and Islamic features, sometimes making it difficult to clearly differentiate them.

The Hindu architectural pillars extant in several gateways in the Kangra fort provide clues to the beginnings of the fort. This is proved by the fact that the fort still has its Hindu gateways on all sides in the stone wall with all the architectural requirements such as pillar, beam-lintel, order, and carvings of Hanuman, and Bhairava etc. Which can still be noticed on the Ranjit Singh gate in Kangra fort. Further the Hindu nature of construction is also attested by the carvings of images like Durga and Ganesha on a rock boulder stone in the defence tower number 3, 4, in Kangra fort. Similarly **Darshani Darwaza** of Kangra fort show evidences of Hindu
gateways with all the architectural motifs. The Mulsims super-structure in the interior are several gateways and pillars belonging to Muslim period.

(b) **DEFENCE OF FORT** Kautilya does not prescribe any specific methods for defending a fort. But we find a good deal of information in Sanskrit works on polity and contemporary literature about the several measures to be taken for protecting a fort. We also find during different periods a vast improvement in the field of military engineering by means of new devices and methods of construction. Before proceeding to study in detail, it may be noted that the strength of fort or its capacity to defend lies primarily in its natural situation new military devices incorporated into it and a strong garrison consisting of abundant stocks of men material wealth, weapons, water, food and other essential requirements. With this brief outline, we shall now examine the defence of a fort in a little more detail.

Firstly the defence of a fort requires strict guarding of its approaches on all sides. Kautilya prescribes 3 moats or ditches one after another filled with water to the full and poisonous creature or concealed weapons under stocks of hay or thorny bushes. He also refers that a knee breaker called *Janubanjani* should be erected.\(^1\) This devise has been strictly followed by almost all the

\(^1\) Kautilya, *op.cit.*, p.53.
holders of forts by guarding all the approaches to the fort. In the medieval period counter mining by means of planting inflammable material under the earth was resorted to counteract the sap and mining of the besieger. ¹

Next to the approaches comes the gateways or entrance that should be effectively protected. The importance of gateways in a fort in no way be minimized, for it is the most vital part of a fort and is the target of attack for a besieger. Fort should be defended by means of strong gateways placing armed barracks at appropriate places. Guarding of all approaches and patrolling the entire fort area around including the gates by appointing sentries and sepoys both day and night.

Fort should be properly repaired and renovated by raising watch towers, over the bastions and uprights in the parapets along the entire wall fixing a beam across the entrance, filling the moats with water making arrangements for lighting acquiring stone balls or slings and fire balls in plenty. Strengthening the gateways by means of heavy door frames fitted with sharp and pointed iron spikes and by setting up barracks at appropriate places and by collecting weapons and missiles in large quantities.

The advent of Muslims brought about new changes not only in the methods of attack but also in defence as

1. J.N. Sircar, Siegecraft in Medieval India, (Delhi, 1970), p.106.
well. During this period new methods of construction, building material and innovations in military engineering, has given greater strength to fort.

(a) Barbican is an outer gate or structure meant to protect the main entrance. In the interior it also exists in the form of a cross wall, projecting from the main one with the object or preventing the ambush of the enemies.

(b) Machicolation: According to Sidney Toy "it originated in the west". It is a hole formed in the roofs of passages through the gateways projected out on corbets from the parapets of walls and gateways through which boiling oil, water, stones and other missiles were throws down the enemy below.

(c) Loopholes Another device of military engineering is the loopholes arranged in several tiers either 2 or 3 vertically or horizontally. These are meant for inserting fire weapons of smaller nature like guns and pistols and enable the defenders to peep through them, where abouts of the enemy. In the interior they look lateral but when seen from outside they slope downwards with angles of 45°, 60° and 90°, projecting vertically down below. Some of these loopholes have cross sections in the interior by means of a small dividing wall of bricks thus making it possible for the defender to change the direction of his

2. Ibid.
gun in any manner he likes either towards left or right angularly.

(d) Garrison is the most important aspect of a fort that deserves consideration. It means the abundant availability of all sorts of material like food, grains, wealth, men, material, weapons and missiles etc, without which a fort cannot be effectively defended. Almost all the works on polity lay emphasis upon this. Manusmriti in verse 75 inform us that "a fort should be supplied with weapons, money, grain, and beasts of burden with brahmanas, artisans, engines, fodders and water."

The importance of a strong garrison is realised by forts and is proved on the basis of granaries, barracks, stables, treasury and magazine which are used for storing food grains, keeping armies, horses, elephants, wealth, weapons and arsenal safely.

The foregoing study of the structure of forts during medieval period leads us to draw certain inferences. This study not only gives us an idea about the structure of fort in general. The fort of Kangra in particular as a case study will be undertaken in the next chapter in which deals with different structures popularly prevalent during medieval period.

The forts during medieval period occupied a place of eminence for various purposes it served. We have seen

how with the passage of time, there is a gradual change in the general structure of fortification. The material used were also changed with the change of place and the type of fort constructed. Medieval period brought about several warfares for expansion of territory and material wealth. This also encouraged forts inhabitants priority for a secured and safe place to live in, resulting in the development of fort architecture keeping in view the defence mechanism in such a way so as to strengthen it from any untoward incidents leading its destruction. This gave way to form several means of defenses which have been already discussed in the present chapter. Now our focus of attention is being diverted from general to particular i.e. Kangra fort which we shall be dealing in our next chapter from architectural point of view, and all points discussed above with regard to Kangra fort.