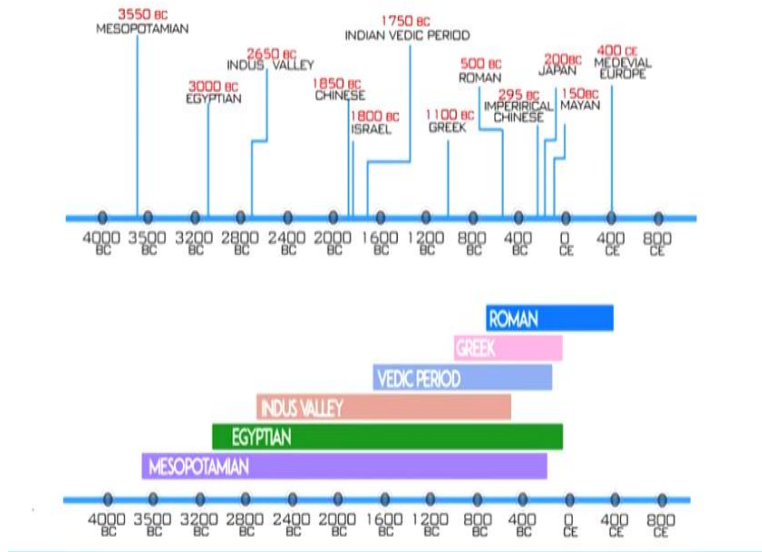


Introduction to Urban Planning
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Module No # 04
Lecture No # 17
Contextualizing Cities (Vedic Period)

Welcome to the course introduction to urban planning in this session today we will continue with our efforts to contextualize our cities.

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In the previous class we reviewed the emplotment and covered Mesopotamian Egyptian and Indus valley civilization. And today we shall review Vedic period.

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Coverage

① Indian Vedic Planning System

② Concept of Manasara

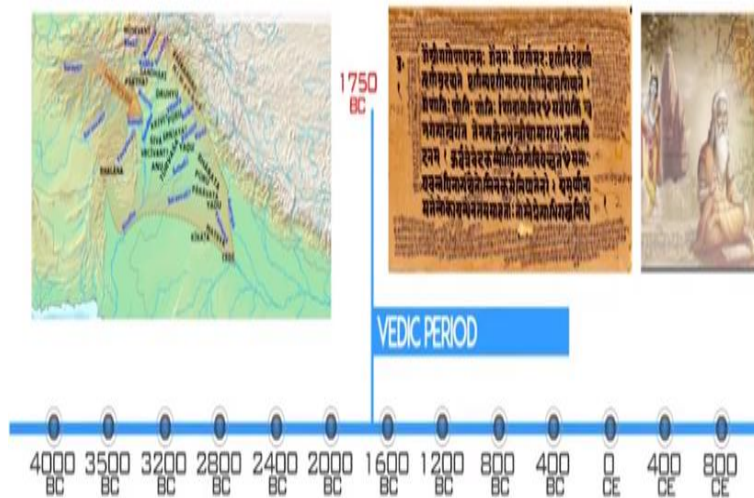
Therefore the coverage of this lecture will include Vedic period we see that these civilization had huge influence on cities of today. Many innovations of that time we see even today in our cities.

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The period is said to stretch from 1750 to 350 BC the geographical boundary of the earlier Vedic period started from northern part of Indian continent.

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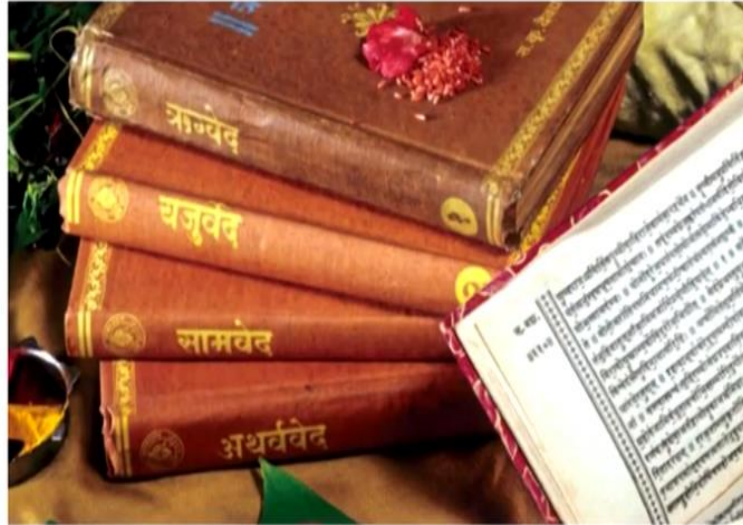


And later on, it is stretched to be entire south Asian continent as we see in the left hand side image Vedic period was the time when the languages and scripts evolved. The period said to stretch from 1750 to 350 BC the geographical boundary of the earlier Vedic periods started from Northern path of Indian continent and later on its stretched to the entire south Asian continent as we can see in the left hand side image.

We also see that Vedic when the period was the time when the languages and scripts evolved. Looking at the origin of Vedic architecture and planning Indian culture and civilization is set to have strong foundation in the understanding of Veda's. And therefore is said to have survive thousands of years. Vastu shastra is an ancient Hindu knowledge of architecture which finds it is origin in Veda's. The Veda's gave principles and theories.

Scholars suggest that planning of the villages, town, cities and capitals of ancient India were considered best as it gave health and peacefulness based on the experience of many generations. The Vedas are the most ancient sacred scriptures of India there are 4 Vedas the Rig Veda which comprises of hymes and versus, Yajur Veda comprising of prayers and formulac so on, Samma Veda which comprises of melodies and chants.

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Vedicfeed,2021

Atharva Vedas we see which comprises of spells and incantations for the practice of magic. These Vedas have 4 supplementary Vedas which we called upavedas among the 4 Upavedas sthapatya Veda deals with architecture.

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Origin of Vedic Architecture and planning

- **Vaastu Shaastra** - an ancient Hindu knowledge of architecture, which finds its origin in Vedas.
- Vedas have their four supplementary Vedas (Upa Vedas).
- Among the four Upa Vedas, Sthapatya Veda deals with architecture.

Vaastu Shaastra the ancient sciences of designing and constructing building is a part of Sthapatya veda considered as an applied knowledge subordinate to the Atharva Veda which is the fourth veda. It is interesting to see that in Vaastu Shaastra the plot for residences were allotted profession wise which indicates developed understanding of zoning like Brahmins the priest were located in the northern part of the city.

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Origin of Vedic Architecture and planning

In *Vaastu-Shastra* the plot for residences were allotted profession wise:

- The **Brahmins** –The Priest in the North
- The **Kshatriyas**- The Warrior class in The East
- The **Vaishyas**- The Business class in The South
- The **Sudras** - The Working class in The West



(Jha 1971:16)

(Rangaswamy Sundar Raj, 2020)

While the Kshatriyas the warrior class in the eastern part of the city and the Vaishyas the business class in the southern part of the city whereas the Sudras the working class as described were located in the west part of the city. So we can see how there was land zoning done in the period however was based on the profession. Which; also indicates the strong social structure which followed segregation at that time. In this period we see that there was good understanding of plot size and location.

However there were elements and non-inclusion communities based on profession we see that we no longer witnessed this scenario in cities lot of efforts were and made and continued to be made by the social leaders, planners and government for equality and inclusiveness in development.

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Fundamentals of Vedic Architecture and Planning

Vaastu Shastra is essentially an art of correct setting whereby one can optimize maximum benefits of the *Panchbhutas* (the five elements):

- **Nature,**
- **Also earth's magnetic field and**
- **The rotational influence of the sun,**
- **Moon and**
- **The other planets surrounding the earth,**

Looking at the fundamentals of Vedic architecture and planning according to the scholar Reena Thackur she expresses that Vaastu Shastra is essentially an art of correct settings were by one can optimize maximum benefits of Panchbhutas that are the 5 elements and of the nature. Also earth's; magnetic field and the rotational influences of the sun, moon and the other planets surrounding the earth.

So we see that it brought understanding of the local environment as well as the understanding of the largest universe. And it is interaction with hum beings based on those Vedas laid down several principles for constructing building such as houses commercial complexes industries layout, towns and temples. You may think of it as building bylaws of that time the guidelines provided the doctrine of orientation to take maximum benefits of sun rise.

Also provides guidelines and process for site planning. It emphasize strongly the examining of the soil the size the shape, the taste, the colour, the smell the vegetation of the land. If the plot of land was found to be satisfactory on these criteria then it was selected for the purpose of building a house village, town, port and so on. It; also provided measurements and proportions to be used in architecture and planning.

We also see that it provides specific guidelines based on the site specification on the 6 aspects of the building such as foundation structure and so on. The period also shows strong understanding of aesthetics at the building level as well as planning level. So we see considerable understanding

was developed under various factors such as orientation, topography built form aesthetic and the experience. We also see understating of measurement in proposition in the built form called Manna to attain harmony in the built environment.

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Measurement and Proportion

The Vedas indicate further division of measurement into six categories –

- Measurement of height,
- Breadth,
- Width or circumference,
- Measurement along plumb lines,
- Measurement of thickness and
- Measurement of inter-space.

(Chakrabarti 1998:)

The Vedas indicate further division of measurement into 6 categories measurement of height, breadth, width or circumference, measurement along plumb lines, measurement of thickness and measurement of inter-spaces. So you also see the elements of architecture and urban design being employed in the townscape. Aligned with the building construction guidelines we see extensive details including foundation which is the base each have its associated terms like Adhithana, column padha or tamba and tablatures prestara, ears wings karna, roof shikara dome stupid.

Further they developed formulas ayadi to assess the qualities of the house called Guna these guidelines are termed as ayadi sadverga the 6 cannon of Vedic architecture. So we see that they had guidelines for construction as well as had framework to measure the health of the built environment.

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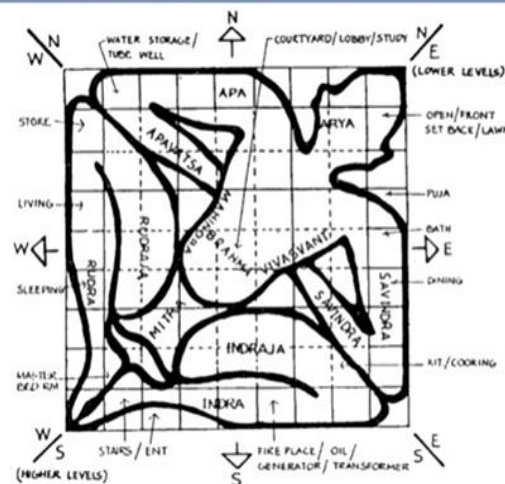
Aesthetics

- Ornamentation
- Texture, Flow, solemnity, symmetry, colour, granularity
- The interaction of sunlight and shadows
- Transcendence, and harmony

We see there is Aesthetics one of the key elements it was attained through ornamentation, texture, flows, solemnity, symmetry, color, granularity. The interaction of; sunlight and shadows transcendence and harmony. Now looking at the vastu purusha mandala;

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Vaastu-Purusha-Mandala



Vastu purusha mandala is considered a model of the universe and provides the basis for architectural design. Here vastu means environment site or building or purusha means men and mandala means diagram of the universe. It had metaphorical expression of the plan of the universe and the potable link between people, building and nature. As a concept it extended to improve village town country and whole earth in all it manifestations.

The theory from Vedas suggested that when a building is perfect state or order it is viewed as a purusha the man of the universe representing pure energy soul or consciousness and a kind of creative intelligence and the universe. According to the theory it is believed that Vaastu Purusha is form of human in a plan site in a planned house in a planned palace in a planned village in a plan city which is characterized by the symbol of zodiac sign, constellation and planets.

The vaastu purusa mandala theory was considered to be universal that it could be applied to an alter temple, a house, a city or entire cosmos. It is more worth noting that the relationship with the environment and the human being much understood in respected in the period. The relationship for studied at the intermediate level and also at large scale levels considering the properties of the universal a whole.

However in this period human in particular plan was seem to be in the center and not the environment. This may indicate the challenge of perspective of that period of man centric approach. And also we see gender squatness in principle and approaches. The Veda is also gave the procedural understanding of town planning and all the factors which resulted in functional settlements such as consideration of location, orientation, climate water, protection, sources and topography.

Further we see that it has also provided different types of plans based on topography of the site. Vaastu Shaastra recommends plans of 5 shapes for the towns.

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Different Types of Plans Based on Topography

Vaastu Shaastra recommends plans of five shapes for the towns:

- (1) *Chandura* (square)
- (2) *Agatara* (rectangle)
- (3) *Vrta* (circle)
- (4) *Krta Vrta* (elliptical) and
- (5) *Gola Vrta* (full circle)

The *Chandura* square, *Agatara* which means rectangle *Vrta* which means circle *Krta Vrta* which is elliptical and *Gola Vrta* which means full circle. A city resembling *Vajras sukai* or diamond octagonal shape suggested to be in auspicious. The *Mansara silppa Shashtra* which is Vedic book one of the ancient formal book on Hindu town planning provides various types of plans like *Dandaka* which is like a cross stick.

SarvathoBhadra which; represents equality *Dandaka Nandyavarta Vrta* which is the shape of a flower *padmaka* which is shape of the lotus flower.

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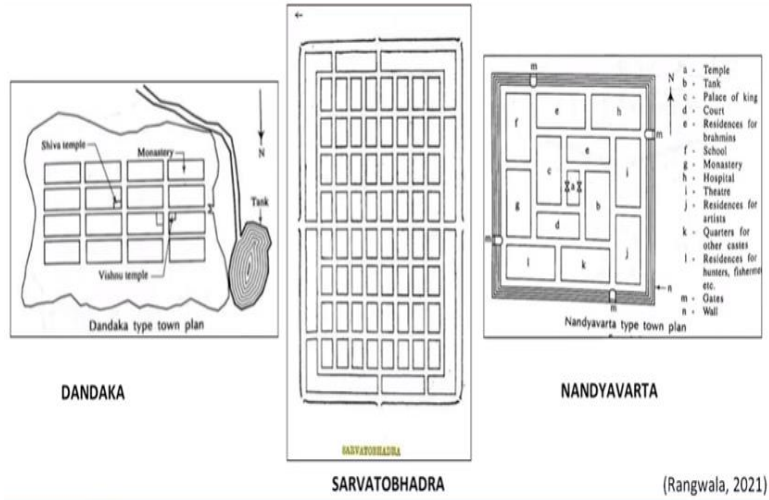
Ancient Town Classification



Swastika which is a religious symbol Prastara like which is meeting place Karmuka which indicates the bow shaped chatrumukha which indicates 4 gated complex.

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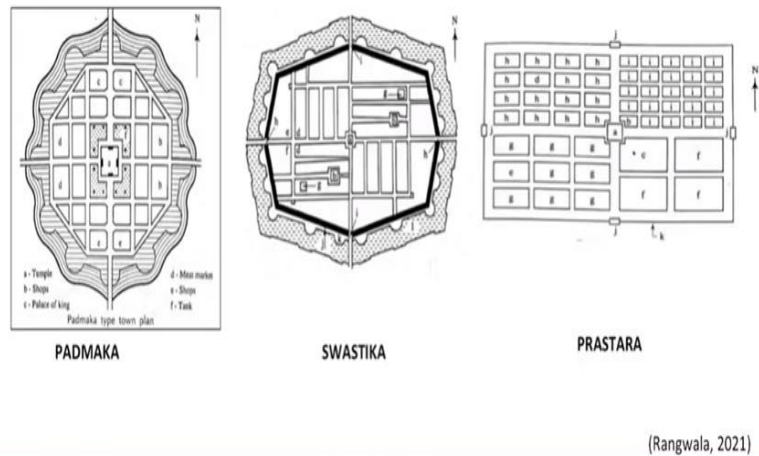
Types of Plan: Mansara



In the image here we see Dandaka type of plan SarvathoBhadra and Nadyhavarta.

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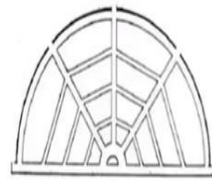
Types of Plan: Mansara



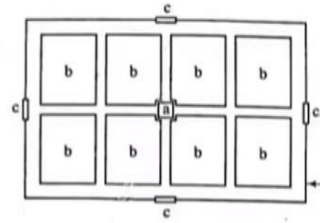
In the image here we see Padmaka type of plans Swastika and Prastara.

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Types of Plan: Mansara



KARMUKA



CHATURMUKHA

(Rangwala, 2021)

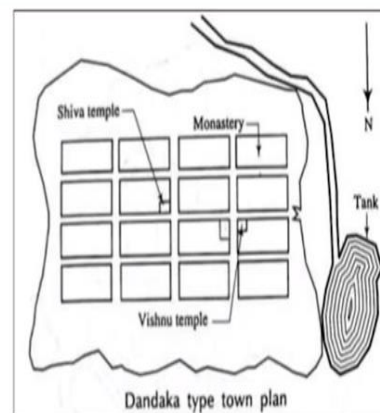
In the images here we see Karmuka type of plan and Chaturmukha in the mention types of town plans the main street called Rajmarga oriented east west with idea that roads gets purified by the sun rise. All the sub lanes were kept north south 1 road was kept running around the town for the use of priest only we can call it as reserved path this road was known as Mangalwati which means auspicious path.

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Types of Plan: Mansara

Dandaka

- Straight streets crossing each other at right angle
- 4 gates on four sides
- Village is rectangular / square



(Rangwala, 2021)

Looking at Dandaka we see that in this type of plan streets are straight and cross each other at right angles at center.

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TYPES OF PLAN DESCRIBED IN MANSARA

- Width of the street varies from one- five *danda*
- 2 transverse street at the extremities have single row of houses
- The village offices located in the east.
- The female deity/ *Yama devata*-located outside the village and the male deities in the northern portion

Villages had 4 gates on 4 sites village would be rectangular or square shaped width of the street would vary from 1 to 5 Dandas. 2 transverse streets at the extremities would have single row of houses. The village offices would be located in the east the female deity *Yama devata* located outside the village and the male deities in the northern portion.

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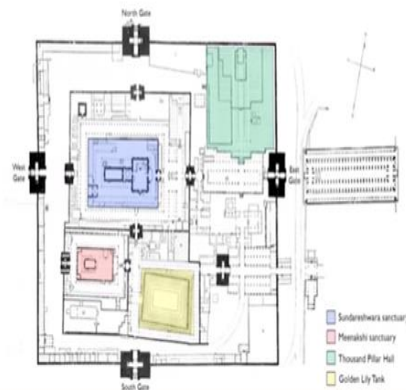


Looking at SarvathoBhadra type of plan one of the example which we see in our cities is Sadasivapet in Telangana is plan as per SarvathoBhadra type plan. Further we see that Madurai Temple earlier it was a town is based on Nadhyavarta town plan. The streets run parallel to the central adjoining streets with the temple of presiding deity in the center of the town.

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Types of Plan: Mansara

- NANDYAVARTA- Madurai Temple (Earlier it was a town)



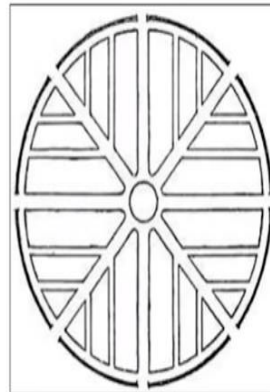
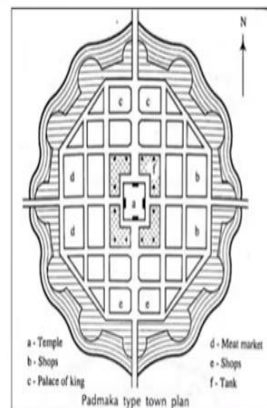
(London, J. Murray, 1911)

This plan is commonly used for construction of town and not for villages it is generally adopted for the sites either circular or square in shape ranging or covering 3000 to 4000 houses.

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Types of Plan: Mansara

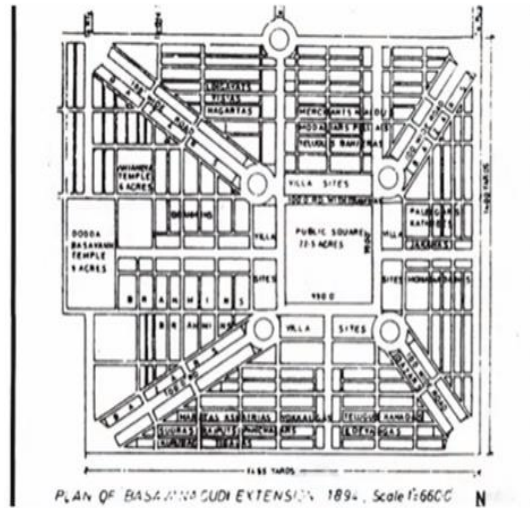
PADMAKA



(Rangwala, 2021)

Likewise we see Padmaka this type of plan was practiced for building of towns with fortress all around with pattern of the plan resembled the petals of lotus radiating outwards from the center.

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Basavanagudi, Bangalore fort, Karnataka

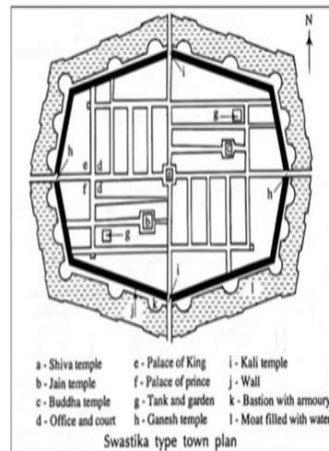
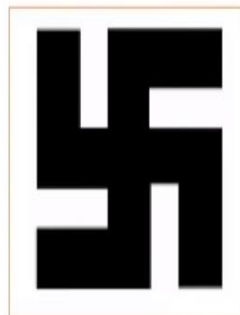
(Dinesh Nayak, 2021)

The city used to be practically an island surrounded by water having no scope for expansion. Likewise we see Swastika type of plan which contemplates some diagonal streets divided the site into certain rectangular plots. The site need not be marked are into a square, rectangle and it may be of any shape.

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Types of Plan: Mansara

SWASTIKA



- a - Shiva temple
- b - Jain temple
- c - Buddha temple
- d - Office and court
- e - Palace of King
- f - Palace of prince
- g - Tank and garden
- h - Ganesh temple
- i - Kali temple
- j - Wall
- k - Bastion with armoury
- l - Moat filled with water

Swastika type town plan

(Rangwala, 2021)

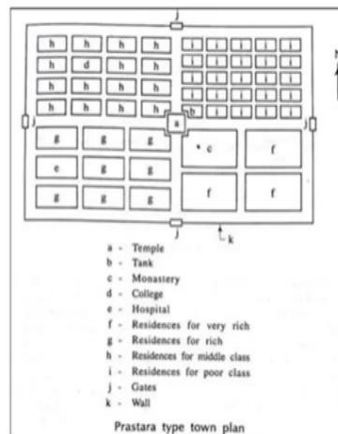
Our impart walls surrounds the town with a Mott at its foot filled with water 2 main streets cross each other center running south to north and west to east. The characteristics feature of this plan is that the site may be either square or rectangular but not triangular or circular the sides are set up art from the poor. The middle class the rich and the very rich the sizes of sites increasing according to the capacity of each to purchase or built upon.

There were much distinct main roads in the plan which was one of the key attributes of this type of plan compare to other patterns.

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Types of Plan: Mansara

PRASTARA



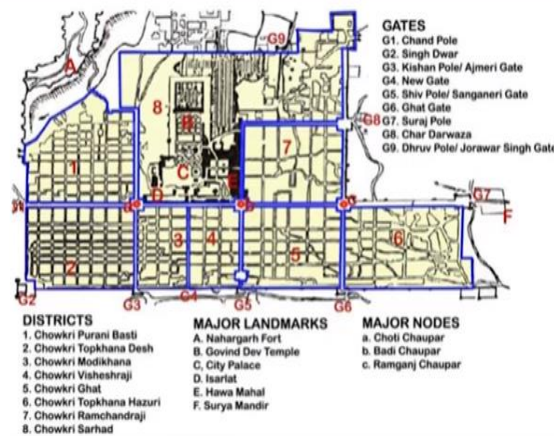
(Rangwala, 2021)

The town may or may not be surrounded by a fort so we see that the fort would not be an essential requirement for such cities. We see that old Jaipur in Rajasthan was founded in November 1727 by King Sawai Jai Singh who rules from 1700 to 1743 and this particular plan was based on Prastara plan. The architect who conceives the plan of the town was Vidyadhar Bhattacharya.

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Types of Plan: Mansara

PRASTARA



Plan of Old Jaipur

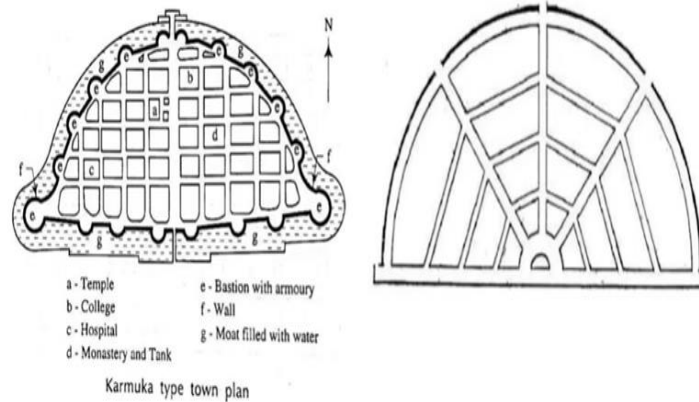
(fuzail, 2014)

Many scholars have attributed the basic concept plan of old Jaipur as being a Prastara type of Mandala mentioned in Mansara. Next we see Karmuka plan which is said to be suitable for the place where the site of the town was inform of a bow or a semi-circular or parabolic.

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Types of Plan: Mansara

KARMUKA



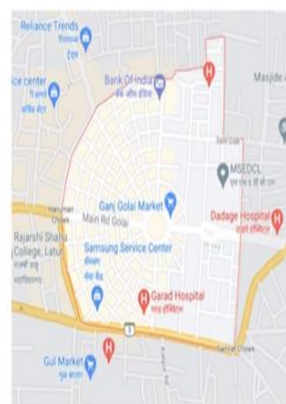
(Rangwala, 2021)

This plan was mostly applied on towns located on the sea shore or river banks. We can see that old Banaras situated at the bank of river Ganga is based on this plan. The main streets of town run from north to south or east west and cross streets run at right angle to them dividing the whole area into blocks. The presiding deity commonly a female deity installed in the temple built in any convenient place.

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Types of Plan: Mansara

KARMUKA



Ganj Golai, Latur, Maharashtra (Google Map, 2021)



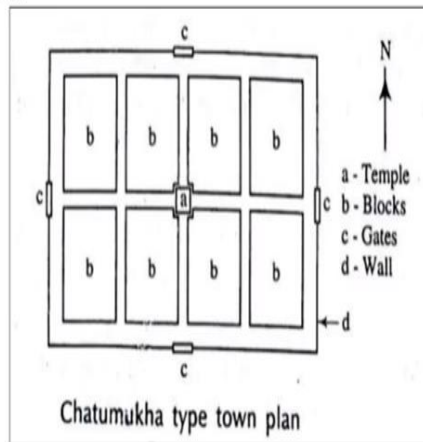
Old Banaras City Layout (Internet, 2021)

We find Ganj Golai, Latur in Maharashtra and old Banaras city layout built on the principles of Karmuka. Further seeing the Chaturmuka type of plan as we see in the plan of Angkor Wat the city may be either square or rectangular having 4 phases. The town is laid out east to west length wise with 4 main streets the temple of the preceding deity will be always at the center.

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Types of Plan: Mansara

CHATURMUKHA



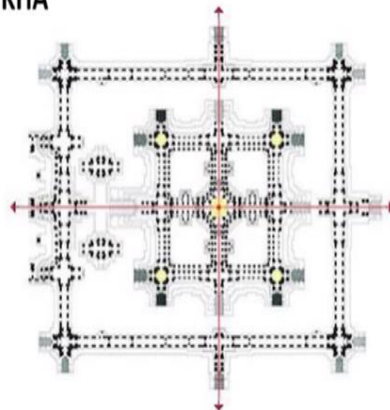
(Rangwala, 2021)

Chaturmuka type of plan is applicable to all towns starting from largest town to the smallest villages.

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Types of Plan: Mansara

CHATURMUKHA



ANGKOR WAT, CAMBODIA, 12th century.

(Guy Nafilyan, 1969)

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Angkor wat . Cambodia

Internet, 2021)

It is interesting to see Angkor Wat in Cambodia built in twelfth century was developed on this concept of Chaturmuka. We also see that even plot size variations for worked out as per the zones location social economic structure of the society. Moving on the Vedic period we see that even plot size variation were worked out as per the zones locations the social economic structure of the society.

The whole Vaastu Purusha Mandala was divided into 81, 64, 49 pads or landed parcels inner most and the central locations of the square was reserved for god Brahma. So we see that as this period religion was at the center stage of planning and the community life. So we see how these spatial planning and physical planning understanding prevailed in this period. We also see the information on land suitability from the purpose of site selection for the development of settlement.

The Vedas provides site classification as per house study in 1995 barren land called Jungula with qualitative assessment like hot, wind and black soil was mentioned. Further we see another typology which was Anupama suggested as beautiful land and we also see Sadharna considered as average quality of land. We also see great knowledge noted by the writings of Sukrachariya on geographical locations of capital city.

The Mansara describe soil testing procedure and information on topography further we see in this period. Town planning process also evolved and it gave lot of inputs on the shape of the

town like we have already seen earlier. We also see details of site planning process coming up in this period. We see descriptions such as what step should be followed to determine the direction, shape, size and ground coverage? Most important example of town planning according to Vaastu principle was first depicted in Arthashastra.

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(British museum ,1895)

In the Medieval period known as Patliputra and Taxila which; is in present day in Pakistan.

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- Another well- known example is the city of Jaipur.
- Modern architects have applied *Vaastu Purusha Mandala* in some towns and cities, such as Jaipur .
- Chandigarh has been also studied to resemble the pattern by many scholars.

Another well-known example is the city of Jaipur modern architects have applied *Vaastu Purusha Mandala* in some town and cities such as Jaipur. Chandigarh has been also studied to resemble the pattern by many scholars. Another very interesting fact is to see the Chanakya's

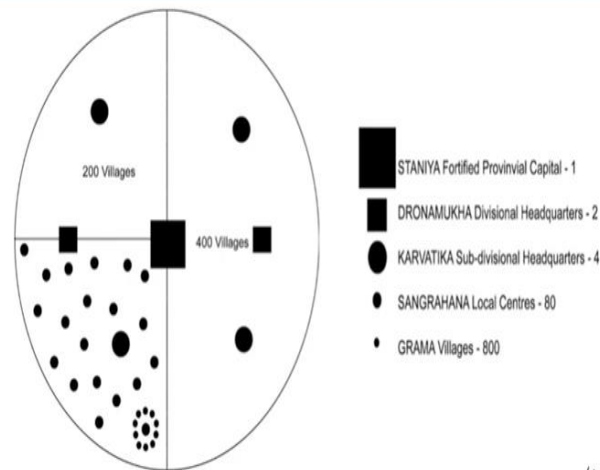
Arthashastra which is an ancient Indian Sanskrit is called on government. Economic policy and military strategy which is given by Chanakya was philosopher, economist and state men who wrote the Indian political treatise the Arthashastra which means economics.

In this seminal work he had compiled almost every aspect of what had been written in India up to that time regarding the property, economics or materials success. Arthashastra provided this course on how the population should be handled like it gave input on the congested town where it is highlighted that. How the surplus population should be relocated in the new place? And how the town should be this position to help each other?

We also see that in the current times that we plan counter magnets to diverse the population and to work in sync with each other. We see that these were this courses which addressed the current regional planning issues. We see that the Arthashastra also addresses the financing part. It talked about Sangrahan collection register and tax collector. Arthashastra talks about governance as well.

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Vedic Village Governance



(Armin Schmidt ,2015)

We find word like Sarvathik which was like appointed person among 200 villages Dronamukha chief among a 400 villages and Staniya among 800 villages. As you can see in the diagram it is very interesting to see the Arthashastra also address the issue of migrants it acknowledges how they have to be supported by complete relaxation from paying taxes in the new settlement? It is interested to note that there are descriptions of due villages in the land of ancient India.

Which talks about other demographic profiles are, we see describes like higher proportion of agricultures and Sudras in the villages. The description also indicates the existence of the market place for the sale of goods received from traders on the high way. We also find use of terms, dams which were constructed over rivers and Nalas. So we can see existence of these constructions techniques in the period and usage of this for the agriculture purpose.

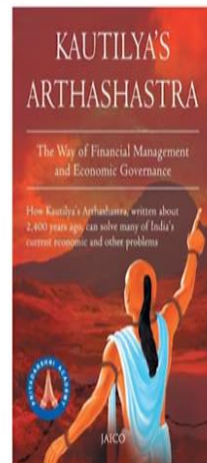
We also see that temples and gardens were specified to be provided arrangements for the aged the children's and information persons were also addressed. Indicating the presence of guidelines of development and provisions of open spaces and accommodating differently abled persons. The way we follow guidelines today it also address the focus area for economy, setting vision and perspective for the place.

Like we see it takes about how series and wells will go if agriculture's are kept busy. And attempt should be made to protect increase queries, forest and canals.

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Chanakya's Arthasasthra (Kautilya Niti)

- Arthasasthra provides input on town planning.
- It specifies how the Cities should be located?
- It suggest the central location to facilitate trade and commerce.
- Further it provides input on Site – like the area should be large and should be near a perennial water body .



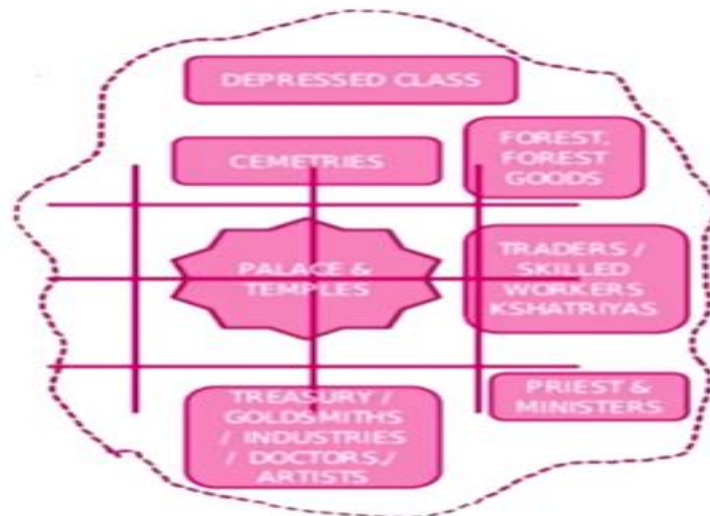
Arthashastra also provides input and town planning it is species us how the city should be located it suggest the central location to facilitate trade and commerce. Further it provides input on site like the area should be large and should be near the perennial body. And also the destitution took place from the standing of the topography and related shape which should be

adopted like it should be mentioned that circular, rectangular or square should be adopted as per the topography.

The document also indicates they need for spatial segregation of users such as separate areas for marketing different goods and as per the protection concerns at that time. The document also provided guidelines for high wall around the town like it also gave the measurements like 6 Dandas high and 12 Dandas wide. And provision of layered moat system like 3 modes of 14, 12, 10 feet why to be constructed 4 arm lengths; apart with the depth 3 fourth of the width.

The document also provided the guidelines for road layout to favor uniform accessibility with concern for health and ventilation. Like it provided input on 3 east-west and 3 north-south roads should divide the towns. And the main roads should be 8 Dandas wide and another road 4 Dandas wide. Further inputs; given on provision of common infrastructure to provide access to water such as 1 well for 10 houses.

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As we; can see in the image the outer layered moat and street pattern advice during the period. Further we see that the principles of town planning are mentioned in some sacred books like Viswa, Karma, Prakasan. It is mentioned first layout towns and then plans the houses. Mansara Shilpa Sastra deals with many aspects of town planning the importance of studies like study soil climatic condition topography.

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SUMMARY

Fixing orientation to get maximum advantage of sun and red so we see that in this period is strong understanding of man and his relationship environment was established. The relationship was studied at intermediate level and also at the large scale level with interpretation of properties of universe as a whole. We also see form of building bylaws responding with the environment and plot size, soil type and topography.

We also see that Vedic period say that emergence of hierarchy of social classes early Vedic age was organized into tribes rather than kingdoms political hierarchy was determined by rank were Rajan stood at the top and Dasi at the bottom. The autonomy of Rajan was restricted by the tribal council called sabha and sammiti. In the later Vedic period the tribes had consolidated into small kingdoms which had a capital and rudimentary administrative systems.

Later Vedic age led to distancing of the Rajan from the people and the emergence of Varna hierarchy. The society was divided into 4 social groups (()) (28:44) Kshatriyas, Vaishyas and Sutras. We further see economy in Vedic period was sustained by combination of pastoralism and agriculture. There are references in Rig Veda to the leveling of fields seed processing and storage of grains in (()) (29:04) war bound (()) (29:05) was also a major source of wealth.

Economic exchange were conducted by gift giving particularly to kings and priest and barter using cattle as the unit of currency while gold is mentioned in some hymes there is no indication of the use of coins. We further see education system and the Vedic period the ancient system of

education was spaced on Veda's and therefore it was given the name of Vedic educational system.

The Vedic era education had a very prominent place in society it was being considered as ((29:43)) important for this society. Education, emphasize the development of spirituality the ashram system was adopted for paying of the individuals death towards the god its forefather is teachers and society. Ultimate objective as moksha or self-realization we see in this system Vedic education included for pronunciation and recitation of Veda.

The rules of sacrifice grammar understanding, secrets of nature reasoning including logic; the science and the skills necessary for inoccupation.

(Refer Slide Time: 30:22)

Summary

① Indian Vedic Planning System

② Concept of Manasara

So in this session we have covered the Vedic period and we saw how much understanding we had about cities in this particular time and how the processes and details like guidelines. And kind of building blocks all came up in this period that understanding evolved during this period.

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Suggested Reading and Watch



(to contemplate different layers of planning system in Vedic Period)




- <https://www.youtube.com/watch?v=slqzvgfzCeU>
- <https://www.youtube.com/watch?v=E1OM79D-19w>
- <https://www.youtube.com/watch?v=Okp-fzUuf6U>
- <https://www.youtube.com/watch?v=C5jpbwizxBs>
- <https://www.youtube.com/watch?v=m-fndvEPG30>
- https://www.youtube.com/watch?v=9_UlJOkwFog



Our coverage was limited with the scope to make you aware of the topic there are enormous readings and movies available to explore. Few are suggested here this is not an extensive list you may feel free to suggest more from your experience.

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 Please feel free to ask Questions. 

Let us know about any Concerns you have .

 Do share your Opinions, Experiences and Suggestions.

Looking forward to Interacting and  Co-learning with you while exploring Cities and Urban Planning. 

Please feel free to ask questions let us know about your concerns you have to share your opinion, experiences and suggestions. Looking forward to; interacting and co-learning with you while exploring cities and urban planning that is all for this session now will continue in the another session the Greek and Roman part of civilization thank you.